

ARTICLES

THE PROMISE AND PERIL OF CORPORATE GOVERNANCE INDICES

*Sanjai Bhagat**

*Brian Bolton***

*Roberta Romano****

In recent years, financial economists and commercial providers of governance services have created measures of corporate governance quality that collapse into one number (a governance rating or index) the multiple dimensions of a company's governance, measures which commercial providers market to institutional investors as aids for portfolio and proxy voting decisions. The aim of this Article is twofold: to analyze the effectiveness 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 system depends on context and on firms' specific circumstances. It would therefore be difficult for an index, or any one variable, to capture nuances critical 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 making 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, because there is considerable variation in the relation between indices and measures of corporate performance, our analysis suggests that corporate governance is an area where a regulatory regime of

* Professor of Finance, University of Colorado at Boulder Leeds School of Business.

** Assistant Professor of Finance, University of New Hampshire Whittemore School of Business & Economics.

*** Oscar M. Ruebhausen Professor of Law, Yale Law School; Research Associate, National Bureau of Economic Research; Fellow, European Corporate Governance Institute. We would like to thank Jon Macey; Paul Mahoney; and participants at presentations at the Columbia, Stanford, Western Ontario, and Yale law schools, the Concordia University John Molson School of Business, and the Chinese University of Hong Kong for helpful comments, as well as attendees at the 2006 Canadian Law and Economics Association meeting, where an early version of the paper was presented as the dinner address.

ample, flexible variation across firms that eschews governance mandates is particularly desirable.

INTRODUCTION	1805
I. MEASURING CORPORATE GOVERNANCE	1809
A. Institutions of Corporate Governance	1809
1. The Board of Directors	1810
2. The Shareholder Franchise and Block Ownership	1811
3. Executive Compensation	1812
B. Governance Mechanisms and Firm Performance	1814
C. Aggregated Measures of Corporate Governance: Governance Indices	1819
1. Gompers, Ishii, and Metrick's G-Index	1819
2. Bebchuk, Cohen, and Ferrell's E-Index	1821
3. Brown and Caylor's Gov-Score Index	1823
4. Proprietary Governance Indices	1824
II. IS THERE A RELATION BETWEEN GOVERNANCE QUALITY AND PERFORMANCE?	1826
A. Robustness of the Relation Identified by Academic Index Creators	1827
1. Lehn, Patro, and Zhao: Causation Runs from Performance to Governance	1828
2. Core, Guay, and Rusticus: Market Anticipation of Relation Between Governance and Performance ..	1828
3. Cremers and Nair: Effect of Interaction of Governance Mechanisms of Performance	1830
B. Might a Single Governance Mechanism Be Preferable to an Index? Methodological Issues with Governance Indices	1832
C. Econometric Issues: Performance and Governance Are Endogenous	1838
1. Comparing the Relative Performance of Governance Indices and Single Attributes of Governance in Predicting Future Performance....	1843
2. Comparing the Relative Performance of Governance Indices and Single Attributes of Governance in Predicting Management Turnover After Poor Performance	1853
III. IMPLICATIONS FOR INVESTORS AND POLICYMAKERS	1858
A. Choice of an Index	1858
B. Choice of a Regulatory Regime	1862
C. Caveats for Courts	1868
CONCLUSION	1868

APPENDIX A: CORPORATE GOVERNANCE INDICES	1870
A. Academic Governance Indices	1870
1. Gompers, Ishii, and Metrick's G-Index	1870
2. Bebchuk, Cohen, and Ferrell's E-Index	1870
3. Brown and Caylor's Gov-Score Index	1870
B. Proprietary Governance Indices	1872
1. The Corporate Library's Board Effectiveness Rating	1872
2. GovernanceMetrics International's Market and Industry Indices	1873
3. Institutional Shareholder Services's Corporate Governance Quotient	1874
4. Egan-Jones Proxy Services's Corporate Governance Rating	1875
5. Glass, Lewis & Company's Board Accountability Index	1875
APPENDIX B: NOTE ON INSTRUMENTAL VARIABLES ANALYSIS	1877
A. Choice of Instrumental Variables	1877
1. Performance: Treasury Stock	1877
2. Governance: Currently Active CEOs on Board	1877
3. Governance: Director Ownership	1877
4. Ownership: CEO Tenure-to-Age	1878
5. Leverage: Altman's Z-Score	1878
B. Evaluating the Instrumental Variables Estimation	1878

INTRODUCTION

Corporate governance took on a new urgency in the aftermath of Enron's collapse and a succession of accounting scandals. It became a topic of intense media and activist institutional investor interest, in the hope that closer scrutiny of firms' governance could prevent further Enrons.¹ At the same time, corporations were being forced to reconsider

1. For example, there were 426 news stories containing the term "corporate governance" in the *New York Times* in 2002, compared to only sixty-nine in 2000, as found in a LEXIS search in the *New York Times* file in the News library conducted on August 31, 2008. A search of the entire News library in LEXIS found similar results, although the order of magnitude differs: There were 38,745 articles referring to corporate governance in 2002, compared to 18,134 articles in 2000. Activist institutions, such as union and public pension funds, directed their engagement in the post-Enron proxy process 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 1,900 firms, including the Fortune 500 and S&P 500—increased by almost forty percent after 2001, averaging 275 over the four years before 2001 and 380 the four years after. The topicality of corporate governance in the media has not abated: In the seven years since Enron filed for Chapter 11 bankruptcy on December 2, 2001, there have been 1,760 *New York Times* news stories containing the phrase "corporate governance" (as searched in LEXIS on September 19, 2008), whereas to reach a comparable count prior to that date, one has to cumulate news stories over seventeen years back to 1984 (totaling 1,718).

their governance by federal legislation and stock exchange listing requirements that were enacted in reaction to the scandals and that emphasized corporate governance solutions.² And mutual funds were pushed to become more involved in governance under regulation adopted by the U.S. Securities and Exchange Commission (SEC), which required funds to adopt written policies on proxy voting and to disclose their specific votes.³ In turn, the heightened attention accorded corporate governance increased the demand for third-party corporate-governance-related services—by institutional investors for research and advice on proxy voting and by corporations for advice on how to improve their governance ratings.

Shortly before the surge in interest in corporate governance, a team of financial economists—Paul Gompers, Joy Ishii, and Andrew Metrick (GIM)—wrote a seminal paper in which they constructed an index of corporate governance quality for a large number of publicly traded U.S. firms. They found that higher-quality governance as defined by their index was associated with improved future stock performance.⁴ The focus on corporate governance following Enron's collapse made GIM's findings of great interest to a far wider audience than corporate governance scholars.

In particular, the relation between governance and performance identified in GIM's paper offered intellectual support for commercial governance-ranking services. This connection was not lost on commercial governance service providers. Although GIM had been assiduously careful in interpreting their data and did not draw causal connections

2. See Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, § 301, 116 Stat. 745, 775–77 (codified as amended at 15 U.S.C. § 78j-1 (2006)) (requiring that all audit committee members be independent); Order Approving NYSE and NASD Proposed Rules Changes Relating to Corporate Governance, 68 Fed. Reg. 64,154 (Nov. 12, 2003) (approving NYSE Final Rule to be codified at NYSE Listing Manual 303A and NASD Amendments to Rules 4200 and 4350(c), requiring that majority of board and all compensation and nomination committee members be independent).

3. Disclosure of Proxy Voting Policies and Proxy Voting Records by Registered Management Investment Companies, 68 Fed. Reg. 6564 (Feb. 7, 2003) (codified at 17 C.F.R. pts. 239, 249, 270, 274).

4. Paul Gompers et al., Corporate Governance and Equity Prices 18–26 (Nat'l Bureau of Econ. Research, Working Paper No. 8449, 2001), available at <http://www.nber.org/papers/w8449.pdf> (on file with the *Columbia Law Review*) [hereinafter Gompers et al., Corporate Governance Working Paper]. The paper was presented at NBER's 2001 summer conference; however, it was not published until two years later. GIM's research was both a response to and an outgrowth of an important finance-literature move in which countries were classified by the quality of their corporate law's protection of shareholders and correlations were identified between the quality of the regime and favorable economic features such as growth and market capitalization. Cf., e.g., Rafael LaPorta et al., Law and Finance, 106 J. Pol. Econ. 1113, 1113 (1998) (examining and comparing shareholder and creditor protection laws and legal enforcement in forty-nine different countries). Because that comparative literature did not operate at the firm level in analyzing corporate governance but instead used laws "on the books," GIM's paper was both a natural and influential extension of that literature's finding that "law mattered."

between good governance and superior performance, commercial governance service providers, and some institutional investor activists, exercised no such caution.⁵ This incaution fed the demand for and supply of governance services, which accelerated post-Enron. Today, a market for corporate governance ratings exists, with proxy-advising firms—such as the dominant market leader, Institutional Shareholder Services, Inc. (ISS)⁶—using ratings to formulate voting recommendations and other governance-rating providers using them to advise on investment decisions.⁷

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

5. Cf. Institutional S'holder Servs., *An Overview of the ISS CGQ® Methodology Changes 1* (2005), at <http://www.issproxy.com/pdf/CGQOverviewChanges.pdf> (on file with the *Columbia Law Review*) [hereinafter *ISS Overview*] (stating ISS's marketing claims regarding relation between its governance ranking and performance); The Corp. Library, *About The Corporate Library's Governance Ratings*, at <http://www.thecorporatelibrary.com/info.php?id=53> (last visited Sept. 19, 2008) (on file with the *Columbia Law Review*) [hereinafter *The Corp. Library, About*] (stating that its ratings are based on factors "tested against actual investment returns"); The Corp. Library, *The Most Intelligent Assessment of Corporate Governance*, at <http://www.thecorporatelibrary.com/info.php?id=52> (last visited Sept. 19, 2008) (on file with the *Columbia Law Review*) [hereinafter *The Corp. Library, Assessment*] (stating that it identified set of "proven dynamic indicators" that determine when boards are "most likely to enhance and preserve shareholder value"); *infra* note 65 (noting Glass, Lewis & Co.'s use of academic research in construction and marketing of its governance ranking system).

6. Note that ISS has since been acquired by RiskMetrics, but because sources cited in this Article predate the name change we use "ISS" here.

7. See Paul Rose, *The Corporate Governance Industry*, 32 *J. Corp. L.* 887, 898–99 (2007). In marketing their products and services, commercial index providers often emphasize the usefulness of their indices in portfolio decisions, with voting decisions listed as an additional use or service. See, e.g., Glass, Lewis & Co., *What We Do*, at <http://www.glasslewis.com/solutions/index.php> (last visited Sept. 19, 2008) (on file with the *Columbia Law Review*) ("In addition to research, Glass Lewis provides . . . complete proxy voting services . . ."); GovernanceMetrics Int'l, *Who Uses GMI Ratings?*, at [http://www.gmiratings.com/\(rvmrks5545fmmmd25cuzkhjrl\)/RatingProcess.aspx](http://www.gmiratings.com/(rvmrks5545fmmmd25cuzkhjrl)/RatingProcess.aspx) (last visited Sept. 19, 2008) (on file with the *Columbia Law Review*) ("GMI Ratings and Rating Reports are designed primarily as a risk measurement tool to complement traditional security analysis and financial modeling."). Because ISS also provides governance consulting services to firms, some commentators have criticized its use of its own governance index in its proxy voting advice as creating an inherent conflict of interest. See Rose, *supra*, at 906–07; Jeffrey Sonnenfeld, *Good Governance and the Misleading Myths of Bad Metrics*, 18 *Acad. Mgmt. Executive* 108, 111 (2004). ISS's position is that there is no conflict because it has established "firewalls" between its consulting division and its index division, similar to the practice in investment banks for mitigating conflicts across the various services banks 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.

quality. However, establishing a relation between governance and performance is technically difficult. The two variables, governance and performance, are plausibly endogenous, meaning that their relationship is bidirectional rather than unidirectional. And using existing indices can magnify that problem because their construction 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 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. This 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.⁸ Because the precise construction of commercial indices is viewed as proprietary information by their owners and thus is not publicly disclosed, our analysis focuses on the relation between corporate performance and existing academic indices, some of which are, fortunately for our purposes, closely linked to commercial ones. Nevertheless, we believe that conclusions from this analysis are equally applicable to the use of commercial indices. This judgment is bolstered by a recent study that finds no systematic relation between commercial governance ratings and firms' future performance.⁹

Our core conclusion is that there is no consistent relation between the academic and related commercial governance indices and corporate performance. In short, there is no one "best" measure of corporate governance: The most effective governance institution depends 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 governance measure. If we had to make a choice between using an index and one variable to predict performance from the quality of a firm's governance, we

8. For other commentators' concerns about the leading governance indices, see, e.g., Rose, *supra* note 7, at 906–19 (outlining concerns in three areas: conflict of interest, methodology, and consequent governance homogenization); Sonnenfeld, *supra* note 7, at 108 (criticizing governance index creators' methodologies, conflicts-of-interest, and results).

9. Robert Daines et al., *Rating the Ratings: How Good Are Commercial Governance Ratings?* (Stanford Law Sch. John M. Olin Program in Law & Econ., Working Paper No. 360, 2008), available at http://www.law.yale.edu/images/CBL_Workshop/DGL_2008-09-26.pdf (on file with the *Columbia Law Review*). That paper and related findings in research by two of us are discussed *infra* Part II.C.1.

would in fact select one variable: the median independent director's stockholdings. We conclude from the research that two of us have undertaken that this one variable performs better overall with respect to evaluating corporate performance.

Most important, our analysis implies that corporate governance is an area where a flexible regulatory regime allowing ample variation across firms is particularly desirable as there is considerable variation in the relation between different governance indices and different measures of performance. In essence, mandatory governance terms are the functional equivalent of a governance index that has the force of law, because such terms 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 constructor in selecting his index's components.

This Article proceeds in three parts. Part I briefly summarizes the principal mechanisms of corporate governance and the 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. Part II 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. Finally, in Part III, 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

In the years since GIM's watershed contribution, a number of academic and commercial indices have been created to measure the quality of firms' governance. After identifying the principal corporate governance mechanisms from which the indices are derived, we review research investigating the relation between those governance mechanisms and firm performance. We then discuss the leading governance indices and the initial findings regarding their relation to performance. The identification of any relation between individual governance mechanisms and firm performance has been elusive. By reducing multiple dimensions of governance to one number, indices theoretically have the potential to illuminate a relation between governance and performance that cannot 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 what is referred to as an agency problem: an organizational concern that arises when the owners—in a corporation, the shareholders—are not the managers who are in control. When owners and managers

are not identical, the managers can take actions that benefit themselves at the owners' (shareholders') expense. For example, managers may not work as diligently as they could because the increase in firm value that their hard work produces is shared with stockholders (in proportion to stockholders' equity investments), while managers bear the full cost of their greater exertion. Corporate law seeks to mitigate the agency problem by providing an organizing framework to facilitate and support mechanisms of firms' corporate governance by which managers are incentivized and constrained to act in the shareholders' interest. The most elemental components of a corporate governance system are the board of directors, shareholder meetings and voting, and executive compensation.¹⁰

1. *The 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.¹¹ Congress and the stock exchanges, under the 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 and a majority of the board.¹² In addition, investor organizations identified most closely with public pension and union funds have outlined best practices, the

10. Cf., e.g., Council of Institutional Investors, *The Council of Institutional Investors Corporate Governance Policies 1* (2008), available at <http://www.cii.org/UserFiles/file/council%20policies/CII%20Corp%20Gov%20Policies%204-11-08%20Final.pdf> (on file with the *Columbia Law Review*) [hereinafter CII Policies] (outlining Council of Institutional Investors corporate governance policies, which consist of governance guidelines in the areas of "The Board of Directors," "Shareholder Voting Rights," "Shareholder Meetings," "Executive Compensation," and "Director Compensation"). The first three components—boards, shareholder voting, and shareholder meetings—are typically codified in state corporation laws. See, e.g., Del. Code Ann. tit. 8, §§ 141, 211, 212 (2007). The New York Stock Exchange's corporate governance listing requirements focus on boards of directors and shareholder voting on compensation plans. See NYSE, Inc., *Listed Company Manual* §§ 303A.00–.08, at <http://www.nyse.com/regulation/listed/1182508124422.html> (last visited Oct. 8, 2008) (on file with the *Columbia Law Review*).

11. See, e.g., Cal. Pub. Employees' Ret. Sys., *Global Principles of Accountable Corporate Governance 8* (2008), available at <http://www.calpers-governance.org/principles/docs/2008-8-18-global-principles-accountable-corp-gov-final.pdf> (on file with the *Columbia Law Review*) (noting CalPERS's opinion that "independent boards are essential to a sound governance structure" and recognizing that "[n]early all corporate governance commentators agree that boards should be comprised of at least a majority of 'independent directors'"); CII Policies, *supra* note 10, §§ 2.3–.4, at 3 (requiring that two-thirds of directors be independent and that certain board committees be wholly independent). The classic academic work advocating independent directors is Melvin A. Eisenberg, *The Structure of the Corporation: A Legal Analysis* (1976).

12. Sarbanes-Oxley Act of 2002 § 301, 15 U.S.C. § 78j-1(m) (2006) (regulating composition of audit committees); NYSE, Inc., *Listed Company Manual* §§ 303A.00–.06 (setting composition of boards and nominating and executive committees). All exchange rules, which include these listing requirements, must be approved by the SEC. Securities Exchange Act § 19(b), 15 U.S.C. § 78s(b) (2006).

central component of which is a board that consists principally of independent directors, including the board chair.¹³

2. *The Shareholder Franchise and Block Ownership.* — Shareholder meetings and, more specifically, the voting rights exercised at them, provide the shareholder-owners with an opportunity to select and replace directors, to approve or reject management initiatives offered for their consideration, and to present proposals for management's consideration and otherwise interact directly with management. In recent years, institutional investor activism has focused on the voting governance mechanism by sponsoring proposals on a variety of governance issues—such as takeover defenses and executive compensation—as well as by negotiating with management over the proposals' substance.¹⁴ 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.

Shareholders owning significant blocks of stock (blockholders) are often separately characterized in the academic literature as a mechanism of corporate governance.¹⁵ As the cost of a blockholder's activism is more likely to be recouped by the pro rata benefits obtained—because it is spread over more shares—blockholders are better able to use their ownership to monitor managers than are small shareholders. The most acute example of the working of this governance mechanism is the hostile takeover, as a takeover results in a complete concentration of ownership and control that fully internalizes the costs and benefits of the agency problem. Concomitantly, even the threat of a takeover can function as a mechanism to discipline managers. Thus, 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, thereby reducing those costs.

Firms that adopt devices to impede control changes are, accordingly, conventionally characterized as firms with poor corporate governance,

13. See, e.g., CII Policies, *supra* note 10, §§ 2.3, .5d, at 3–4 (setting CII policy that minimum of two-thirds of board should be independent).

14. See Roberta Romano, *Less is More: Making Institutional Investor Activism a Valuable Mechanism of Corporate Governance*, 18 *Yale J. on Reg.* 174, 175–76 (2001) [hereinafter Romano, *Less is More*]; cf., e.g., CII Policies, *supra* note 10, § 2.5a–c, at 3 (outlining ISS policies that directors generally respond to shareholder communications and votes and that they seek shareholder views on important corporate matters).

15. See, e.g., Andrei Shleifer & Robert W. Vishny, *Large Shareholders and Corporate Control*, 94 *J. Pol. Econ.* 461, 463–65 (1986) (modeling how large shareholders, even when they cannot monitor management themselves, can discipline management by facilitating takeovers); Andrei Shleifer & Robert W. Vishny, *A Survey of Corporate Governance*, 52 *J. Fin.* 737, 754–55 (1997) (explaining how large shareholders internalize monitoring costs and exert pressure on managers by exercising voting rights, and thereby mitigate the agency problem).

because the managers of those firms are not subject to the disciplining force of hostile bids. Correlatively, the absence of such devices is identified as a feature of good corporate governance. The market for control is referred to in the literature as an “external” governance mechanism—it is an institution that disciplines managers but is external to the firm—in contrast to firms’ “internal” governance mechanisms, such as the board of directors, which are institutions that constrain the agency problem but that exist within the boundaries of the firm and are thus institutions over which firms exert greater control.

3. *Executive Compensation.* — 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 managers’ actions and shareholders’ interests through the use of stock and stock option compensation.¹⁶ Compensation in the form of stock and stock options has therefore often been 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 equity-based executive incentive 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 was considered to be trivial responsiveness of executive compensation to stock per-

16. See, e.g., Bengt Holmström, *Managerial Incentive Problems: A Dynamic Perspective*, in *Essays in Economics and Management in Honour of Lars Wahlbeck* 209, 221–25 (Björn Wahlroos et al. eds., 1982) (modeling principal-agent problem in dynamic setting and finding that contracts providing for incentive compensation such as options dependent on outcomes are necessary to induce labor supply and optimal risk-taking); Bengt Holmström, *Moral Hazard and Observability*, 10 *Bell J. Econ.* 74, 81–83 (1979) (suggesting that where principal is unable to perfectly monitor agent’s actions, interests can be aligned by providing incentive compensation—by adjusting remuneration in accord with observable information that serves as proxy for information on unobservable agent conduct).

17. I.R.C. § 162(m) (2006). The provision was enacted as part of the Omnibus Budget Reconciliation Act of 2003, Pub. L. No. 103-66, 107 Stat. 312 (codified as amended in scattered sections of 7, 12, 20 U.S.C.), at a time of public criticism of executive compensation. See Nancy L. Rose & Catherine Wolfram, *Regulating Executive Pay: Using the Tax Code to Influence Chief Executive Officer Compensation*, 20 *J. Lab. Econ.* S138, S139 (2002). Some commentators have attributed the Enron and related corporate scandals to that legislation, contending that because managers could receive substantial compensation only 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*, *Nat’l Rev. Online*, Sept. 25, 2002, at http://www.nationalreview.com/nrof_bartlett/bartlett092502.asp (on file with the *Columbia Law Review*).

formance.¹⁸ Jensen and Murphy viewed this disconnect to be a matter of considerable policy concern and advocated increasing equity incentive compensation.¹⁹

The tide of popular opinion turned against equity- and option-based compensation after 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 was unreasonably high. This turn of events was not an altogether surprising development, as executive compensation has a long history of being a target of 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 to hundreds of millions of dollars from exercising stock options before their firms imploded, and those gains were then 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 in 2002 of widespread accounting frauds.

Managerial incentive alignment through equity ownership has not, however, been entirely discredited or jettisoned as an important mechanism of corporate governance by those who consider executive compensation to be excessive. Rather, even the most severe critics of executive compensation have not advocated elimination of incentive pay but have instead endorsed structural reforms that give shareholders greater control over director elections, under the assumption that the outcome will be lower total compensation and better incentivized equity pay packages.²¹ In addition, the Council of Institutional Investors (CII), an associ-

18. See Michael C. Jensen & Kevin J. Murphy, *Performance Pay and Top-Management Incentives*, 98 *J. Pol. Econ.* 225, 227 (1990) (calculating that CEO compensation changed by only \$3.25 for a \$1,000 change in stock value).

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

20. See Joel Seligman, *The Transformation of Wall Street 25–26* (3d ed. 2003) (describing how critical focus of Pecora hearings that provided basis for federal securities regulation in 1930s was compensation of bank executives); Michael C. Jensen & Kevin J. Murphy, *Performance Pay and Top-Management Incentives* 42–43 (June 4, 1989) (unpublished manuscript, on file with the *Columbia Law Review*), available at <http://www-rcf.usc.edu/~kjmurphy/jmjpe.pdf> (updated version published at 98 *J. Pol. Econ.* 225 (1990)) (listing newspaper headlines from the 1980s attacking high executive compensation).

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

ation 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, which has since been incorporated into its statement of corporate governance policies.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 in the importance of governance mechanisms for resolving agency problems, the empirical literature investigating the effect of individual corporate governance mechanisms on corporate performance has not been able to identify systematically 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 has found no relation between director independence and performance, whether measured by accounting or stock return measures.²⁴ Similarly, most studies seeking to measure the impact

22. See CII Policies, *supra* note 10, § 5, at 9–17.

23. The Shareholder Vote on Executive Compensation Act, H.R. 1257, 110th Cong. (2007), was passed on April 20, 2007 by a vote of 269 to 134. 153 Cong. Rec. H3713 (daily ed. Apr. 20, 2007). 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, 921–50 (1999); Roberta Romano, *Corporate Law and Corporate Governance*, 5 *Indus. & Corp. Change* 277, 284–90 (1996). In fact, in a few instances, researchers have found a positive impact on performance from the presence of inside (rather than outside) directors, and a negative impact of independent directors. See, e.g., Bhagat & Black, *supra*, at 944–45 (reporting negative relation between board independence and performance, driven by poor performance at firms with supermajority-independent boards, and interpreting results as “suggest[ing] that it may be valuable for boards to include at least a moderate number of inside directors”); April Klein, *Firm Performance and Board Committee Structure*, 41 *J.L. & Econ.* 275, 300 (1998) (finding positive correlation between firm performance and insider director participation on certain board committees). The literature reviews by Bhagat and Black and by Romano also summarize the results of the many studies examining whether independent boards make different decisions than nonindependent boards and whether the outcomes benefit shareholders; the data are mixed, with occasional examples of independent boards outperforming nonindependent ones. See Bhagat & Black, *supra*, at 923–40; Romano, *supra*, at 290–97. For example, studies have found a higher probability of a CEO's termination after poor performance and positive stock price effects from the adoption of poison pills when a majority of directors are independent. See James A. Brickley et al., *Outside Directors and the Adoption of Poison Pills*, 35 *J. Fin. Econ.* 371, 372 (1994) (finding that “average stock-price reaction to poison-pill adoptions is significantly positive when the board is controlled by outside directors and significantly negative when it is not”); Michael S. Weisbach, *Outside Directors and CEO Turnover*, 20 *J. Fin. Econ.* 431, 453 (1988) (finding that

on performance of shareholder activism through shareholder proposals find no significant stock price effect from that activity.²⁵ When negotiations over proposals that result in a proposal's withdrawal have been studied, the findings are inconsistent 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, regardless of whether 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 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 premia accorded to the voting shares where both classes trade.²⁸ Moreover, there is some evidence that the closer voting rights approximate one share-one vote—that is, the closer the fraction of insiders' voting rights is to their fraction of economic ownership (dividend rights)—the higher the value of the firm.²⁹

Because voting rights run with 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,

“outside boards rely more frequently than inside boards on performance . . . when making removal decisions”).

25. For literature reviews, see Bernard Black, *Shareholder Activism and Corporate Governance in the United States*, in 3 *The New Palgrave Dictionary of Economics and the Law* 459, 459–64 (Peter Newman ed., 1998); Romano, *Less is More*, *supra* note 14, at 176–82. The results in the literature are mixed concerning whether shareholder proposals result in firms undertaking significant structural changes or governance reforms. Romano, *Less is More*, *supra* note 14, at 219–21.

26. See Romano, *Less is More*, *supra* note 14, at 209–19 (reviewing empirical literature on proposal negotiations).

27. See *id.* at 182, 221–22.

28. See, e.g., Luigi Zingales, *What Determines the Value of Corporate Votes?*, 110 *Q.J. Econ.* 1047, 1053–55, 1059 (1995) (modeling and providing evidence that superior voting shares bear higher market premia).

29. Paul A. Gompers et al., *Extreme Governance: An Analysis of Dual-Class Firms in the United States* 40 (Rodney L. White Ctr. for Fin. Research, Working Paper No. 12-04, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=562511 (on file with the *Columbia Law Review*) [hereinafter Gompers et al., *Extreme Governance*]. The relation is significant in only some model formulations.

30. See, e.g., John J. McConnell & Henri Servaes, *Additional Evidence on Equity Ownership and Corporate Value*, 27 *J. Fin. Econ.* 595, 601, 604 (1990) [hereinafter

presumably from monitoring. As control increases, however, the benefits from blockholding decrease, either because there are no economies of scale from blockholding or because the benefits are offset by potential expropriation (the thesis often advanced in the academic literature).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 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 have identified stronger results: Several studies have found positive price effects upon the formation of outsider blocks.³⁴ Those findings can be reconciled with the results of the rela-

McConnell & Servaes, Additional Evidence]; Randall Morck et al., Management Ownership and Market Valuation: An Empirical Analysis, 20 J. Fin. Econ. 293, 308, 311–12 (1988). There is some evidence of a similar nonlinear effect for dual class firms as well. Gompers et al., Extreme Governance, *supra* note 29, at 34–35. In Part II 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 Morck et al., *supra* note 30, at 293–94 (listing articles adopting offsetting expropriation thesis).

32. Compare McConnell & Servaes, Additional Evidence, *supra* note 30, at 601–02 (finding no relation), with Morck et al., *supra* note 30, at 308 (finding nonlinear relation, positive for small blocks of outside directors and negative for large blocks). But in a study controlling for growth opportunities, McConnell and Servaes then found a similar nonlinear relation holds for outside as for inside blockholdings. See John J. McConnell & Henri Servaes, Equity Ownership and the Two Faces of Debt, 39 J. Fin. Econ. 131, 153–54 (1995).

33. Sanjai Bhagat et al., Relational Investing and Firm Performance, 27 J. Fin. Res. 1, 2 (2004) [hereinafter Bhagat et al., Relational Investing] (examining relational investing over thirteen-year period from 1983–1995).

34. For a literature review, see, e.g., Gregg A. Jarrell et al., The Market for Corporate Control: The Empirical Evidence Since 1980, 2 J. Econ. Persp. 49, 63 (1988) (examining 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' repurchase. Similarly, more recent studies of the impact of hedge-fund block ownership find positive price effects on the announcement of the initial block investment or the initiation of activism, or both, while much of their activism takes the form of proxy fights or otherwise results in firm-level changes, such as CEO turnover, increased payouts, and improved operating performance. See Alon Brav et al., Hedge Fund Activism, Corporate Governance, and Firm Performance, 63 J. Fin. 1729, 1730–31 (2008); April Klein & Emanuel Zur, Entrepreneurial Shareholder Activism: Hedge Funds and Other Private Investors, 64 J. Fin. (forthcoming Feb. 2009), available at <http://www.afajof.org/afa/forthcoming/4442.pdf> (manuscript at 24–28, on file with the *Columbia Law Review*); Nicole M. Boyson & Robert M. Mooradian, Hedge Funds as Shareholder Activists from 1994–2005, at 13–15 (July 31, 2007) (unpublished manuscript, on file with the *Columbia Law Review*), available at <http://ssrn.com/abstract=992739>; Nick A. Stokman, Influences of Hedge Fund Activism on the Medium Term

tional 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.³⁵ The source of the gains in both studies, accordingly, appears to be related to the same phenomenon of corporate restructuring: in the case of block formations, market expectations of potential takeover premia, which incorporate gains acquirers expect to recoup from restructuring; and, in the case of relational investments, blockholders “encourag[ing] restructuring that translated . . . into better stock market performance.”³⁶

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,³⁷ and other studies have found a positive relation between management compensation, particularly the equity component, and performance.³⁸ Studies of the impact of director stock ownership similarly have ambiguous findings; in part the difference depends on the ownership calculation. While some studies found no significant relation between performance and ownership, calculated as the percentage of shares owned by outside directors,³⁹ Sanjai Bhagat and Brian Bolton found a significant positive relation, using the dollar value of the stock ownership of the median outside director as the governance measure.⁴⁰ They provide two ra-

Target Firm Value 48–55 (Aug. 2007) (unpublished manuscript, on file with the *Columbia Law Review*), available at <http://ssrn.com/abstract=1019968>.

35. See Jarrell et al., *supra* note 34, at 52.

36. Bhagat et al., *Relational Investing*, *supra* note 33, at 27.

37. See Richard A. DeFusco et al., *The Effect of Executive Stock Option Plans on Stockholders and Bondholders*, 45 *J. Fin.* 617, 617 (1990); Angela G. Morgan & Annette B. Poulsen, *Linking Pay to Performance—Compensation Proposals in the S&P 500*, 62 *J. Fin. Econ.* 489, 504–07 (2001). But see James A. Brickley et al., *The Impact of Long-Range Managerial Compensation Plans on Shareholder Wealth*, 7 *J. Acct. & Econ.* 115, 123–28 (1985) (showing positive stock-price effect from introduction of long-term compensation plans but no significant differences in positive stock-price effect among differing types of plans, including those 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, 67–69 (2005) (finding insignificant stock price effects for full sample of plans, but significant negative reaction to plans with high levels of potential dilution).

38. See Hamid Mehran, *Executive Compensation Structure, Ownership, and Firm Performance*, 38 *J. Fin. Econ.* 163, 176–77 (1995) (finding positive relation between performance and equity compensation); Kevin Murphy, *Corporate Performance and Managerial Remuneration: An Empirical Analysis*, 7 *J. Acct. & Econ.* 11, 25–40 (1985) (finding positive relation between performance and total compensation).

39. See, e.g., Mehran, *supra* note 38.

40. See Sanjai Bhagat & Brian Bolton, *Corporate Governance and Firm Performance*, 14 *J. Corp. Fin.* 257, 266–67 (2008). Because most boards today consist almost entirely of independent directors, the median voter on the board is almost certain to be an outside director. See James S. Linck et al., *The Determinants of Board Structure*, 87 *J. Fin. Econ.* 308, 315–16 (2008) (reporting that, for 6,931 firms from 1990 to 2004, the average board had 66% outsiders, with only 22% of firms having majority of insiders—the respective

tionales 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 the percentage owned.”⁴¹

In sum, the empirical literature focusing on individual governance mechanisms has not consistently identified a relation between governance and performance. Nevertheless, the appropriate conclusion to draw from this extensive line of research is not that efforts at improving corporate governance are nearly always 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. In all likelihood, however, the more compelling reason for the success of indices is the elegant simplicity of having one summary number for capturing the multiple dimensionality of governance.⁴²

percentages for large firms being 73% and 9%, and for small firms 58% and 36%). Moreover, given most firms’ policies on director stock ownership—mandating a targeted ownership amount within five years of appointment, see, e.g., McDonald’s Corp., Stock Ownership Guidelines for Directors 1 (2007), at http://mcdonaldsemail.com/corp/invest/gov/ownership_guide/director_stock.html (on file with the *Columbia Law Review*) (stating older, New York Stock Exchange-listed company’s guidelines requiring that directors “own McDonald’s stock equal in value to the lesser of five times the annual cash Board retainer or ten thousand shares within five years of joining the Board”); NETGEAR, Inc., Stock Ownership Guidelines 1 (2005), at <http://files.shareholder.com/downloads/NTGR/0x0x92124/8b3d1703-9706-46f6-a7e7-66cd66c66240/StockOwnershipGuidelines.pdf> (on file with the *Columbia Law Review*) (stating newer, NASDAQ-traded company’s guidelines requiring that directors hold at least 5,000 shares within five years of appointment)—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, 2285–87 (2004) (finding that new directors hold few shares compared to directors on board more than five years and that over twenty-five percent of directors serve on board less than five years).

41. Bhagat & Bolton, *supra* note 40, at 260. The incentive effect can be illustrated by the following simple example. Suppose that Director A owns a 0.01% 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 is B.

42. The import of this feature of indices is discussed further *infra* Part III.

C. *Aggregated Measures of Corporate Governance: Governance Indices*

The corporate governance indices that are currently in use by academics and commercial 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 the line of research rapidly generated 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's G-Index.* — The creation of firm-level corporate governance indices began with GIM's research, which was published in 2003⁴³ but widely circulated in 2001.⁴⁴ 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 served institutional investors.⁴⁵ 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 twenty-two provisions in firms' corporate documents (seventeen of which are takeover-related) and six types of state takeover statutes, resulting in twenty-four distinct items after accounting for overlaps between tracked provisions and statutes.⁴⁶ The firm-level provisions tend to cluster: That is, correlations across most of the twenty-two firm-level provisions are positive, many significantly so.⁴⁷

From these data, GIM constructed a governance index that they considered to reflect the "balance of power between shareholders and man-

43. Paul Gompers et al., *Corporate Governance and Equity Prices*, 118 Q.J. Econ. 107 (2003) [hereinafter Gompers et al., *Corporate Governance and Equity Prices*].

44. Gompers et al., *Corporate Governance Working Paper*, supra note 4.

45. See Gompers et al., *Corporate Governance and Equity Prices*, supra note 43, at 109–11.

46. 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 were 1990, 1993, 1995, and 1998. *Id.* at 110. In the analysis relating governance to performance, because index values were 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 tbl.7. The IRRC obtained the governance data from public information sources, such as SEC filings, and the number of firms covered increased over the period. *Id.* at 110–11.

47. Of 231 total pairwise correlations, 169 were positive, and of those 111 were significant, whereas only nine of the remaining sixty-two negative correlations were significant. *Id.* at 111.

agers.”⁴⁸ Relying on the IRRC’s judgment as to which corporate governance mechanisms investors considered to be important, GIM added up the number of provisions that each firm had of the twenty-four items, assigning one point for each provision that they viewed as restricting shareholder rights, and one point for the absence of either of two provisions that they viewed as constraining manager power and thereby enhancing shareholder rights.⁴⁹ GIM thus equally weighted the governance features tracked by IRRC in fashioning their measure of corporate governance quality. The sum of the components is the “Governance Index” or “G index” (G-Index).

GIM grouped sample firms into ten portfolios in relation to their G-Index scores, approximating deciles of governance quality.⁵⁰ They then examined 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.⁵¹ The examination of the relation between corporate governance and performance focused on a comparison between the highest and lowest G-Index portfolios, which they called the “Dictatorship” and “Democracy” portfolios, respectively.⁵² GIM found a significant relation between the governance index and stock returns and Tobin’s Q: Firms with the poorest corporate governance consistently underperformed those with the best corporate governance. In particular, quantifying the effect, the impact of governance on performance appeared 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% a year; or a one-point increase in G was associated with an 11.4% decrease in Tobin’s Q by the end of the sample period.

Finding a relation between the G-Index and subsequent performance does not, of itself, indicate that better corporate governance caused superior performance. GIM considered three possible explanations of their finding: (1) investors underestimated the cost of poor governance at the outset of the period under study (1990, the first year of the sam-

48. *Id.* at 109.

49. *Id.*

50. We use the phrase “approximate” deciles because the number of firms in each of the ten portfolios is not identical. See *id.* at 116 tbl.2.

51. *Id.* at 119, 129. 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. Tobin’s Q is the ratio of a firm’s market value to the replacement cost of its assets (in practice computed from book values); ratios greater than one 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.

52. Although the G-Index has a potential range of zero to twenty-four, the actual range is from two to seventeen, with higher scores indicating lower quality; the mean and median G-Index score are nine. *Id.* at 116. The portfolio cutoffs are (1) less than six for the “Democracy” portfolio, consisting of firms with the strongest shareholder rights; (2) each of six through thirteen; and (3) greater than thirteen for the “Dictatorship” portfolio, consisting of firms with the weakest shareholder rights. *Id.* at 115–16.

ple); (2) 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); and (3) poor governance is correlated with other unspecified firm characteristics that caused the firms' subsequent abnormal performance in the 1990s. They attempted to test which hypothesis was correct and found some evidence supporting the first and the third hypotheses (industry classification explained between one-sixth to one-third of the abnormal performance).⁵³ They concluded with an appropriately cautionary statement that called for further study to determine which hypothesis is correct because of the hypotheses' "starkly different policy implications."⁵⁴

2. *Bebchuk, Cohen, and Ferrell's 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.⁵⁵ Accepting as the most probable explanation of GIM's results that corporate governance positively affects performance, BCF sought to construct what they regarded to be a better-motivated index in relation to theory and intuition regarding the efficacy of particular defenses. They selected the six IRRC takeover-defense provisions that they considered to contribute the most to managerial entrenchment.⁵⁶ These provisions included poison pills and staggered boards—the combination of which Bebchuk had previously emphasized was the most potent of takeover defenses⁵⁷—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 that, at odds with BCF's contention, suggests that golden parachutes in fact facilitate takeovers.⁵⁸

In constructing their index, BCF followed GIM's approach, according equal weight (one point) to the presence of any of the six provisions.⁵⁹ The index is called the "Entrenchment Index" or "E-Index." BCF expected their index to outperform GIM's as a predictor of corporate performance because the E-Index contained the provisions that, in

53. *Id.* at 132–43.

54. *Id.* at 145.

55. See Lucian Bebchuk et al., *What Matters in Corporate Governance? 1–3* (Harvard Law Sch. John M. Olin Ctr. for Law, Econ. & Bus., Discussion Paper No. 491, 2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=593423 (on file with the *Columbia Law Review*) [hereinafter *Bebchuk et al., Corporate Governance*].

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

57. See Lucian Bebchuk et al., *The Powerful Antitakeover Force of Staggered Boards: Theory, Evidence, and Policy*, 54 *Stan. L. Rev.* 887, 887 (2002).

58. See, e.g., David Baron, *Tender Offers and Management Resistance*, 38 *J. Fin.* 331, 340 (1983) (outlining theoretical model in which golden parachutes encourage hostile bids); Richard Lambert & Donald Larcker, *Golden Parachutes, Executive Decision-Making and Shareholder Wealth*, 7 *J. Acct. & Econ.* 179, 192–96, 200–01 (1985) (finding positive price effects upon adoption of golden-parachute defense).

59. *Bebchuk et al., Corporate Governance*, *supra* note 55, at 13.

BCF's view, were most likely to thwart a hostile takeover.⁶⁰ The six provisions that BCF identified as most entrenching turned out to be the only ones of the twenty-four components of the G-Index that were statistically significant in regressions on performance when the estimation was separately undertaken for each component.⁶¹ Accordingly, BCF concluded that the correlation between governance and performance in GIM's study was driven entirely by the subset of governance factors in the E-Index.

Examining the relation between the E-Index and industry-adjusted Tobin's Q and stock returns (the same performance measures used by GIM but with a few more years of available data), BCF confirmed the correlation between governance and future performance found in GIM's study.⁶² They also confirmed GIM's finding that a portfolio of low entrenchment/good governance (GIM's Democracy) firms outperformed a portfolio of high entrenchment/poor governance (GIM's Dictatorship) firms.⁶³

BCF concluded 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, is better motivated, and it outperforms the G-Index.⁶⁴ 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, 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."⁶⁵ BCF

60. Given the later date of BCF's study, they had two more years of IRRC governance data than GIM had. For years when no IRRC volume was published, BCF equated firms' index value to the value from the last published volume, as did GIM. As both GIM and BCF noted, this assumes that firms' governance provisions are unchanged over the interval between IRRC publication. *Id.* at 15.

61. *Id.* at 22-24.

62. *Id.* at 27-39.

63. *Id.*

64. See *id.* at 4-7.

65. Glass, Lewis & Co., Board Accountability Index: Governance-Enhanced S&P 500 Index (2008), at <http://www.glasslewis.com/solutions/bai.php> (on file with the *Columbia Law Review*) [hereinafter Glass, Lewis & Co., BAI]. Glass Lewis further 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

were more cautious regarding the use of their results than are Glass Lewis, however. BCF did not conclude that they had demonstrated causation; rather, they stated that the evidence was “suggestive” that the set of entrenching governance provisions that they had identified affects performance.⁶⁶

3. *Brown and Caylor's 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.⁶⁷ Brown and Caylor's index, which they call “Gov-Score,” is a sum of fifty-one factors (a subset of the sixty-one factors and three combination measures collected by ISS)—nine are in the G-Index, and a tenth, incorporation in a state with a takeover statute, is a composite of the four state-takeover-statute components of the G-Index.⁶⁸ Following BCF's refinement of the G-Index, Brown and Caylor also constructed “Gov-7,” a subindex consisting of seven of the components in Gov-Score.⁶⁹

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.⁷⁰ It is also derived from a larger database than the other two indices (over 2,000 firms). 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. 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

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.

Id. The provision from the BCF index that Glass Lewis omits is a supermajority requirement (hence a restriction) on charter amendments. See *id.*

66. Bebchuk et al., *Corporate Governance*, *supra* note 55, at 40.

67. Lawrence D. Brown & Marcus L. Caylor, *Corporate Governance and Firm Valuation*, 25 *J. Acct. & Pub. Pol'y* 409, 411 (2006).

68. *Id.* at 414–15 & nn.13–14. Gov-Score thus can range from zero to fifty-one, but as with the G-Index, the actual range—from thirteen to thirty-eight—is substantially narrower than the theoretical range. The mean score of sample firms is 22.52, with a standard deviation of 3.45. *Id.* at 416. Brown and Caylor used a point system that is the opposite of GIM and BCF, assigning one point to “acceptable,” as opposed to “unacceptable,” corporate governance practices: Consequently, a higher Gov-Score signifies higher quality corporate governance, in contrast to G- and E-Index values. *Id.* at 414–15. Appendix A details the composition of the Gov-Score index.

69. The components in Gov-7 were identified empirically from the factors that were most strongly correlated with performance. *Id.* at 411, 418–23. Two of the seven components are takeover defenses also in the G and E indices. See *infra* Appendix A.

70. See Brown & Caylor, *supra* note 67, at 411.

indices, which are derived from pre-Enron data. Gov-Score is therefore arguably more germane for contemporary policy considerations.⁷¹

Brown and Caylor examined the relation between Gov-Score and Tobin's Q, one of the two performance measures emphasized by GIM and BCF. They did not adjust performance by industry, as GIM and BCF did, nor did they examine stock returns. They found that Gov-Score is significantly positively related to Tobin's Q—i.e., that superior performance is associated with higher quality governance.⁷²

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 the board and compensation factors in their index were more highly associated with good performance than were most of the takeover defenses,⁷³ which are the principal components of the G and E indices. They then disaggregated the index and found that a subset of the fifty-one components drove the significant correlation between Gov-Score and Tobin's Q.⁷⁴ Identifying seven elements as consistently significant, Brown and Caylor used those seven to form the Gov-7 governance index, which they analogized to BCF's E-Index—both being parsimonious subsets of larger, related indices. Brown and Caylor then investigated which of the two indices had greater predictive power, and, after eliminating the overlapping provisions (two components were in both the E-Index and Gov-7), they found that Gov-7 still had explanatory power while the E-Index did not.⁷⁵ Brown and Caylor were careful not to attribute causation to their findings. But they did conclude that it is preferable to use a small index of factors capturing more governance dimensions than simply takeover defenses as a measure of governance quality.⁷⁶

4. *Proprietary Governance Indices.* — The commercial indices ranking public corporations' governance quality, which are provided by proxy research and advisory services,⁷⁷ differ distinctively from the academic indi-

71. The commercialization of governance ratings, discussed *infra* Part I.C.4, 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 for its proprietary product are annually updated and have been backfilled to 2001.

72. Brown & Caylor, *supra* note 67, at 430.

73. See *id.* at 418–22.

74. See *id.* at 422–23.

75. See *id.* at 427.

76. In this regard they considered their work as confirming the finding in K.J. Martijn Cremers & Vinay B. Nair, *Governance Mechanisms and Equity Prices*, 60 *J. Fin.* 2859 (2005), discussed *infra* Part II.A.3, that it is a combination of internal and external governance mechanisms that relate governance to performance. Brown & Caylor, *supra* note 67, at 430.

77. Commercial providers of 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 discussed *infra* Appendix A. The proxy services offered by the firms vary, and include: research and recommendations on proxy voting, automated vote execution,

ces 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.⁷⁸ Second, commercial indices deemphasize takeover defenses, in contrast to the indices constructed by GIM and BCF; for example, 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).⁷⁹ 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.⁸⁰ Finally, the leading provider by far of this type of service, ISS, updates the factors in its 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).⁸¹

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.

78. See, e.g., GovernanceMetrics Int'l, Research Methodology, at [http://www.gmiratings.com/\(hgwaa055h0jyiu55scbird45\)/about.aspx#methodology](http://www.gmiratings.com/(hgwaa055h0jyiu55scbird45)/about.aspx#methodology) (last visited Sept. 24, 2008) (on file with the *Columbia Law Review*) (describing GovernanceMetrics's overall rating derived from sophisticated statistical algorithm assigning weights to various individual metrics in relation to other firms in its universe); ISS Overview, *supra* note 5, at 1 (describing how ISS assigns weights to components of its Corporate Governance Quotient as function of their correlations with several measures of firm performance).

79. See Appendix A for details on the components of the commercial indices, which include numerous factors besides defenses. The governance index of the newest entrant into the market, Egan-Jones, does not even contain an express reference to takeover defenses. See, e.g., Egan-Jones Proxy Servs., Proxy Report (ID#2731), at http://ejproxy.com/client/report_display.aspx?report_id=2731 (last visited Sept. 24, 2008) (on file with the *Columbia Law Review*) (describing corporate governance rating for China Mobile (Hong Kong) Ltd.); Egan-Jones Proxy Servs., Proxy Report (ID#2829), at http://ejproxy.com/client/report_display.aspx?report_id=2829 (last visited Sept. 24, 2008) (on file with the *Columbia Law Review*) (describing corporate governance rating for Research in Motion Ltd.). Glass Lewis's index—which is derived from BCF's work, Glass, Lewis & Co., BAI, *supra* note 65, and is therefore not summarized in this section—is the one exception, consisting solely of takeover defenses.

80. As described *infra* Appendix A, this is true of the ratings provided by GovernanceMetrics and ISS.

81. Press Release, Institutional S'holder Servs., Institutional Shareholder Services Releases New CGQ® Ratings Criteria (Nov. 13, 2006) (on file with the *Columbia Law Review*). The constant tweaking of the index could explain why ISS's 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. E.g., ISS Overview, *supra* note 5, at 1 ("[T]he higher the

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 choice is twofold. First, they do not hold themselves out to be experts in assessing governance quality, compared to the vendors from which they acquired the data. Second, given the absence of a theoretical model relating attributes to performance, equally weighting attributes identified by third-party governance experts plausibly immunizes their work from charges of “stacking the deck.” By contrast, commercial vendors are actively marketing governance expertise and would be expected to exercise judgment on the weights accorded to the different components of an index as well as across firms, and, of course, do not operate under the canons of scholarly research. Expertise is, for example, underscored in the marketing strategy of The Corporate Library (TCL). TCL emphasizes its staff of experts⁸² and that its governance ratings are not based on “compliance with best practices checklists”⁸³ but rather on a proprietary set of quantitative screens that are “refined” by their researchers’ “in-depth analysis.”⁸⁴

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 governance-index market, the academic literature that introduced indices has

rating factor’s correlation significance with specific performance measures, the relatively higher weight allocated for the rating issue. The lower the correlation significance between the rating issue and the performance metrics, the lower the weight assigned to the rating factor.”). That suggestion is in contrast to Brown and Caylor’s finding that only a few of the ISS attributes were highly correlated with their performance measures. See Brown & Caylor, *supra* note 67, at 422–23.

82. TCL advertises itself as providing “[e]xpert corporate governance research and advisory services” and having researchers that are “leaders in the fields of corporate governance and executive compensation policy and practice.” The Corp. Library, *Corporate Governance: Independent Information and Analysis*, at <http://www.thecorporatelibrary.com/> (last visited Sept. 24, 2008) (on file with the *Columbia Law Review*).

83. The Corp. Library, *Assessment*, *supra* note 5.

84. The Corp. Library, *About*, *supra* note 5. In addition, Paul Rose considers the subjectivity of TCL’s rating to be one of its more attractive features, compared to the “objective” quantitative approach of other indices. See Rose, *supra* note 7, at 907–15. Rose further suggests a subtle explanation for the difference between TCL’s subjective approach to governance and the more objective, checklist approach underlying other commercially provided measures: the fact that TCL does not offer consulting services to corporations while 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.

not satisfactorily established that there is a causal relation between governance and performance. Although GIM, BCF, and Brown and Caylor found positive associations between their indices' rankings of governance quality and firm 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 (i.e., that they do not hold up under further investigation), 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 showing 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,⁸⁵ at least in part because the overwhelming balance of the literature on individual governance characteristics until then had not identified a systematic relation to performance. In addition, it appeared from their research that an investor could profit by trading on firms' publicly disclosed governance characteristics, a finding inconsistent with a central tenet of modern financial economics: market efficiency. Not surprisingly, financial economists therefore sought to test the robustness of GIM's findings and of their explanation of the data. Several of these studies found that neither the relation between governance and performance nor GIM's explanation of their data held up when more closely examined. We review three of the more important studies both 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 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.

85. For example, the article was cited in fifty articles in the Social Sciences Citation Index within three years of its 2003 publication (as searched in the Social Sciences Research database in Westlaw on June 3, 2006). And the rate of citation has not decreased over time: The article has today been cited in 177 articles in the Social Sciences Citation Index since its publication (as searched in the ISI Web of Science on September 24, 2008). Another measure that indicates the work's continued influence is its position on the SSRN electronic abstract database. As of August 11, 2008, the working paper had over eight thousand downloads and was the fiftieth most-downloaded paper (of over 150,000 papers available for downloading); nine months earlier it ranked sixty-third with over six thousand downloads, and twenty-five months earlier, it ranked 113th with over four thousand 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.

1. *Lehn, Patro, and Zhao: Causation Runs from Performance to Governance.* — Kenneth Lehn, Sukesh Patro, and Mengxin Zhao (LPZ) investigated the issue of causality concerning GIM's findings 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 found was correlated with the G-Index.⁸⁶ The idea was that because governance mechanisms preventing takeovers were not in place in the early 1980s, valuation measures from that time period could not have been affected by those governance devices.

LPZ found that, after controlling for performance in the 1980s, the relation identified by GIM and BCF between governance and Tobin's *Q* in the 1990s disappeared. The 1980s Tobin's *Q* valuations were correlated with both the 1990s governance measures and 1990s valuations.⁸⁷ Moreover, a regression to explain the G-Index was run on both lagged and leading values of Tobin's *Q*, and the lagged valuations from the 1980s explained the governance ratings of the 1990s but the leading valuations from the 1990s did not.⁸⁸ LPZ interpreted these data as supporting the hypothesis that causation runs from performance to governance rather than the other way around, as conjectured by GIM. Namely, 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.⁸⁹ LPZ suggested two possible explanations for the association: Either low-valued firms are poorly managed or they have few growth opportunities and, as a consequence, make attractive takeover targets.⁹⁰ In either scenario, the low-valued firms would thereby be more likely to adopt takeover defenses, which would affect the value of the G-Index, as opposed to GIM's explanation going in the other direction, from governance to performance.

2. *Core, Guay, and Rusticus: Market Anticipation of Relation Between Governance and Performance.* — John Core, Wayne Guay, and Tjomme Rusticus (CGR) also questioned GIM's explanation of their findings and the issue of causation.⁹¹ CGR 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

86. See Kenneth Lehn et al., *Governance Indices and Valuation: Which Causes Which?* 1 (Apr. 2006) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=810944.

87. *Id.* at 5, 13–14.

88. *Id.* at 19. All of the results reported in the text for the G-Index were the same for the E-Index.

89. *Id.* at 12. Of the three hypotheses that GIM proposed to explain their data, this is the one that they rejected.

90. *Id.* at 19–20.

91. See John E. Core et al., *Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations*, 61 *J. Fin.* 655, 655 (2006) [hereinafter Core et al., *Weak Governance*].

earnings. They hypothesized that if the explanation for the findings is, as GIM suggested, that investors misperceived the relation between governance and performance at the start of the period under study, then the market should be surprised if earnings are higher than expected for good-governance firms or lower than expected for poor-governance firms. CGR also examined a second question, which they considered to be a further implication of GIM's findings: whether takeover probabilities are higher than expected for good-governance firms or lower than expected for poor-governance firms.

Using operating return on assets, which CGR asserted the accounting literature considers to be the "more powerful measure" of operating performance,⁹² rather than GIM's accounting measure of return on equity, they documented a significant negative relation between operating performance and the G-Index, in contrast to GIM.⁹³ Next, to determine whether the abnormal stock returns were 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. CGR hypothesized that if investors misunderstood the effect of governance on performance, then they would have been surprised when the earnings of poorly governed firms were low and well-governed firms were high relative to forecasted earnings. Over a variety of intervals (one quarter to five years), CGR found that analysts' forecasts predicted the poor performance of high G-Index (poor governance) firms.⁹⁴ They also found no difference in stock returns surrounding earnings announcements between poorly governed and well-governed firms (low and high G-Index firms, respectively).⁹⁵ These results suggest, CGR contended, that neither analysts nor investors were surprised by the performance of firms in relation to their governance.⁹⁶ The study therefore refutes the investor-misperception hypothesis suggested by GIM.

CGR further concluded that differences in the probability of takeover, based on completed takeovers for their sample firms, did not explain the abnormal returns in GIM's study across the two extreme G-Index portfolios (the Democracy and Dictatorship portfolios). In fact, the Dictatorship portfolio firms had a higher takeover probability in the mid-1990s than the Democracy portfolio firms, which had a higher takeover probability in the early and late 1990s.⁹⁷ Moreover, the differences in annualized probabilities over the entire period were too small to explain the difference in abnormal returns that GIM reported. Lastly, eliminating the acquired firms from the analysis did not eliminate the return differential across the two portfolios.

92. *Id.* at 656.

93. *See id.* at 668.

94. *Id.* at 671.

95. *Id.* at 674–76.

96. *See id.* at 685.

97. *Id.* at 677.

What did they propose, then, as the explanation? They suggested that the GIM result may have been time-specific. In examining the returns on the investment strategy of 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 (2000–2003), they found that all of the significant abnormal returns to the trading strategy occurred from 1997–1999 and that the relation did not hold up in the later interval, 2000–2003.⁹⁸ In fact, the value of the hedge portfolio sharply declined in that period (compared to its increase in GIM's period of study). This is because the returns to the Democracy portfolio (good governance firms) decreased in the four later years. CGR therefore concluded that the data did not support the hypothesis that governance causes performance.⁹⁹

3. *Cremers and Nair: Effect of Interaction of Governance Mechanisms on Performance.* — Finally, Martijn Cremers and Vinay Nair also found 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.¹⁰⁰ They constructed portfolios of firms sorted according to their rank on the G-Index and their rank with regard to block ownership, and they examined the relationship between firms' governance and their performance.¹⁰¹ Cremers and Nair found that the relation between governance and performance identified by GIM was no longer independently significant when a block ownership variable was included in the analysis.

In particular, they found that neither governance mechanism alone affected performance but that specific combinations did, an interaction effect implying that the mechanisms are complements rather than substitutes.¹⁰² Specifically, blockholder ownership was important only for firms

98. *Id.* at 682–83.

99. *Id.* at 685.

100. Cremers & Nair, *supra* note 76, at 2859. Block ownership was 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 2863. They also constructed an Alternative Takeover Index (ATI) that consisted of a subset of G-Index factors that were the takeover defenses they considered, from their reading of the legal literature, the more effective mechanisms for preventing hostile bids (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 was not properly characterized as solely proxying for external governance. *Id.* at 2865. The results were unchanged when firms were ranked by the ATI rather than the G-Index. *Id.* at 2878–83.

101. See *id.* at 2866–72.

102. *Id.* at 2871–72. A study by Stuart Gillan, Jay Hartzell, and Laura Starks, discussed *infra* notes 115–121 and accompanying text, found that a different internal governance mechanism—the board of directors—substituted for the market for control, as opposed to

without takeover defenses (lowest quartile G-Index firms), and the absence of takeover defenses was important only for firms with an active blockholder (highest quartile of block ownership); those complementary portfolios were the only portfolios that could be used to create trading strategies that generated abnormal profits. With more years of performance data than 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.¹⁰³

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 additional explanations include that the trading strategy's abnormal returns were (1) unrelated to fundamental performance and instead derived from the market's view of corporate governance, (2) due to abnormal returns accruing to future targets or acquirers on the acquisition announcement dates, or (3) associated with an omitted risk factor that may or may not be related to governance.¹⁰⁴ To test these hypotheses, they examined the relation between their two governance variables and other performance measures (accounting measures and Tobin's Q). The findings using accounting measures duplicated those for stock returns, which they viewed as inconsistent with the first alternative, that governance is unrelated to changes in performance, although they noted that this did not demonstrate causality. They also rejected the second hypothesis because when targets and acquirers were removed from the portfolios the findings were unchanged.

The results involving Tobin's Q were somewhat different. While Cremers and Nair found that firms with only one high-quality governance mechanism (high block ownership or low takeover defenses) did not exhibit abnormal stock returns, they found that those firms had higher Tobin's Q valuations.¹⁰⁵ They interpreted these findings as evidence that investors "price the importance of each individual governance mechanism correctly," and hence as the explanation for why there were no abnormal returns.¹⁰⁶ Considering the findings regarding trading strategies of the complementary portfolios and the Tobin's Q valuations, they winnowed 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 examined the relation between the different combinations of governance portfolios and the variability of performance, as a proxy for risk.

the internal governance device examined by Cremers and Nair and found to be a complement—institutional blockholding.

103. See Cremers & Nair, *supra* note 76, at 2861–62.

104. See *id.* at 2883–89.

105. See *id.* at 2886–89.

106. *Id.* at 2889.

They found that the complementary portfolios (those comprised of firms with high-quality governance on both dimensions) were indeed associated with more variable performance measures than portfolios where only one such mechanism of good governance was present.¹⁰⁷

Cremers and Nair interpreted 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 were an artifact of the higher discount rate investors applied to these firms because of their greater risk.¹⁰⁸ They concluded 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),¹⁰⁹ a finding, as earlier noted, replicated in Brown and Caylor's comparative analysis of the Gov-Score and Gov-7 indices.

B. *Might a Single Governance Mechanism Be Preferable to an Index?*
Methodological Issues with Governance Indices

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.¹¹⁰ 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 can 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 to or as effective a measure of corporate governance as an index. If a single board characteristic can dominate an index as a proxy for good governance, then it could be a more parsimonious proxy for predicting performance. Moreover, it would diminish or eliminate the need and/or attractiveness to institutional investors of using commercial services to measure a portfolio firm's governance quality. We therefore think it useful to set out the rationale for why a single governance mechanism re-

107. See *id.* at 2888–89.

108. See *id.* at 2886.

109. See *id.* at 2889–90.

110. E.g., Benjamin E. Hermalin & Michael S. Weisbach, Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature, 9 *Econ. Pol'y Rev.* 7, 10–11 (2003) [hereinafter Hermalin & Weisbach, Survey] (discussing various scholars' beliefs in critical importance of board and director independence as components of firm governance); see also Bhagat & Bolton, *supra* note 40, at 271 (proposing directors' stock ownership as key element of firm governance).

lated 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 the 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 board attributes in order to identify a single governance variable that might serve as an alternative to an index. It is both 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.¹¹¹ Accordingly, board independence or outside board members' stock ownership appear to be excellent candidates for a single characteristic that could best serve 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. 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 by nor affiliated (i.e., have material relations) with a firm, but there are data indicating that not all such independent directors are

111. 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, 293–94 (1980); Eugene Fama & Michael Jensen, *Separation of Ownership and Control*, 26 *J.L. & Econ.* 301, 315 (1983). The legal literature has long held a monitoring view of independent directors. See, e.g., Eisenberg, *supra* note 11, at 164–67. 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 *Am. Econ. Rev.* 96, 111 (1998). The legal literature has also advocated directors' stock ownership to improve monitoring incentives. See, e.g., Charles M. Elson, *The Duty of Care, Compensation, and Stock Ownership*, 63 *U. Cin. L. Rev.* 649, 651–54 (1995) (arguing that director stock ownership can help combat problem of CEO overcompensation).

equal with respect to monitoring effectiveness.¹¹² Using board independence alone as a proxy for governance may therefore result in misspecification of statistical analyses. However, in our judgment, 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 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 will be drawn regarding the relation between governance and firm performance, even if the governance components in the index are correctly measured.

Another problem with a weighting system for an index of governance quality is that good governance features may well be substitutes and the interactions among them may also be complex and subtle. Given these possibilities, it is incorrect to treat them simply as complements, which 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.¹¹³ Although hardly any modeling of corporate

112. See, e.g., Eliezer M. Fich & Anil Shivdasani, *Are Busy Boards Effective Monitors?*, 61 J. Fin. 689, 691–92 (2006) (finding evidence that even an outsider-dominated board is generally an ineffective monitor when a majority of the independent directors on the board hold three or more directorships). There are also a number of studies finding that, with respect to audit committee composition, it is not director independence but rather the presence of independent directors with appropriate financial accounting expertise that improves firm value. See, e.g., Mark L. DeFond et al., *Does the Market Value Financial Expertise on Audit Committees of Boards of Directors?*, 43 J. Acct. Res. 153, 179 (2005) (finding that “the market reacts positively to the appointment of [financial experts] to [a firm’s] audit committee, but only when the director has accounting-related expertise and only when the appointing firm has relatively strong corporate governance”); Roman L. Weil et al., *Audit Committee Financial Literacy: A Work in Progress* 17 (Mar. 11, 2005) (unpublished manuscript, on file with the *Columbia Law Review*), available at <http://faculty.chicagogsb.edu/finance/papers/CoatesMaraisWeil-11MarRevised.pdf> (concluding that “shareholders appear to benefit from” companies having “financial[ly] literate” audit committee members); cf. Andrew J. Felo et al., *Audit Committee Characteristics and the Perceived Quality of Financial Reporting: An Empirical Analysis* 30 (Apr. 2003) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=401240 (finding that “financial/accounting expertise of the audit committee . . . is significantly positively related to financial reporting quality”). 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. See John E. Core et al., *Executive Equity Compensation and Incentives: A Survey*, 9 Econ. Pol’y Rev. 27, 31 (2003).

113. 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

governance has been undertaken, and there is therefore no satisfactory theory of when or whether different aspects of good governance should be understood to be substitutes or complements,¹¹⁴ empirical research indicates that the concern is not hypothetical: In fact, at least several such mechanisms are substitutes. This finding severely complicates an assessment of good governance practices using a simply constructed index.

In particular, in an important contribution, Stuart Gillan, Jay Hartzell, and Laura Starks (GHS) conducted an exhaustive analysis and found that measures of high-quality governance are, in fact, substitutes.¹¹⁵ More specifically, characteristics related to board independence, which GHS collectively termed “internal governance,” were inversely correlated with the G-Index, which—like Cremers and Nair—GHS characterized as a measure of “external governance.”¹¹⁶ In other words, firms with a more independent board had more defenses (higher G-Index scores). Although GHS did not examine the relation between governance and performance, their research bears importantly on how to interpret GIM’s finding, for GHS’s 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.¹¹⁷

because the index is, of course, a one-dimensional construct. David Larcker, Scott Richardson, and Irem Tuna analyzed the relation between governance and accounting performance by a principal components analysis that collapses thirty-nine governance devices into fourteen dimensions. See David F. Larcker et al., *Corporate Governance, Accounting Outcomes, and Organizational Performance*, 82 *Acct. Rev.* 963, 963 (2007). The large number of factors that remained in their analysis suggest that it may not be possible to construct a one-dimensional governance index that has predictive power. However, most of the fourteen factors were not significantly related to the accounting measures they examined, a finding that may suggest that the desire for parsimony and ease of comparability across firms—which underlies the effort to create governance indices that collapse multiple dimensions into one—may not be entirely off the mark.

114. For example, comprehensive reviews of certain key governance mechanisms—boards of directors and outside blockholders—emphasize that the theoretical modeling of these devices is extremely limited. See Hermalin & Weisbach, *Survey*, supra note 110, at 7; Clifford G. Holderness, *A Survey of Blockholders and Corporate Control*, 9 *Econ. Pol’y Rev.* 51, 52 (2003).

115. Stuart L. Gillan et al., *Tradeoffs in Corporate Governance: Evidence from Board Structures and Charter Provisions 25–26* (Apr. 2007) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://www.law.yale.edu/documents/pdf/cbl/starks_paper.pdf.

116. *Id.* at 1, 12. 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’s finding; Brown and Caylor’s Gov-Score and the commercial indices are directly challenged because they include both types of governance mechanisms.

117. Examples of other papers also finding that different attributes of good governance are substitutes include Morris G. Danielson & Jonathan M. Karpoff, *On the Uses of Corporate Governance Provisions*, 4 *J. Corp. Fin.* 347, 365–67 (1998) (finding that firms with poison pills have low inside ownership, high institutional ownership, and high proportion of outside directors); David Mayers et al., *Board Composition and Corporate*

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.¹¹⁸ 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. If firms with independent boards adopt few defenses (have low G-Index values), then internal and external governance mechanisms are functioning as complements, whereas if firms with such boards adopt many defenses (have high G-Index 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 chair—in relation to defenses, along with univariate comparisons of board features with defenses.¹¹⁹ No matter which methodology was applied, they found 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.¹²⁰ Hence, in what would appear to be perverse to many corporate governance activists, a conventional metric of good corporate governance—independent boards—is associated with a conventional measure of poor corporate governance—entrenched management, as indicated by the extent of the firm’s takeover defenses. Such associations strongly suggest that evaluating firms according to how they do with respect to the reigning governance indices, which do not take into account the complexity of the relation of the components or govern-

Control: Evidence from the Insurance Industry, 70 *J. Bus.* 33, 56–57 (1997) (concluding that mutuals employ more outside directors than stock insurance companies, a finding that is consistent with independent boards being substitutes for the market for corporate control); Mehran, *supra* note 38, at 179 (finding that blockholding substitutes for use of executive incentive compensation). We discuss exclusively 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 examined 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 related to the endogeneity of governance choices that we discuss *infra* Part II.B. Larcker, Richardson, and Tuma found that underlying governance components do not always load with the same sign on fourteen governance factors that they identify from thirty-nine governance devices, see Larcker et al., *supra* note 113, at 986 tbl.5, a finding providing additional support for the contention that governance mechanisms are sometimes substitutes rather than complements.

118. See Gillan et al., *supra* note 115, at 2–3.

119. The two techniques used to identify commonalities across firms’ governance characteristics are a cluster analysis that groups firms by their board and charter choices (so that within each of 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. *Id.* at 13, 19–20.

120. *Id.* at 12, 18.

ance 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 found 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, and capital expenditures).¹²¹ 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 across 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 of endogeneity for traditional statistical analyses, and virtually all studies of governance—including those by GIM, BCF, and Brown and Caylor—have that limitation. This could explain, for instance, why research focused on single governance mechanisms does not identify a relation between governance and performance.¹²² It may also explain why GIM's findings were not robust. Accordingly, Part II.C elaborates more fully the endogeneity problem and introduces the econometric technique used to address it. We then report the results of a study by two of us applying a statistical technique that takes endogeneity into account in evaluating the relation between governance indices and performance. Given the theoretical and empirical issues arising from 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.

121. *Id.* at 24.

122. 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.

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 governance and performance are not independent. The presence of some governance features may be motivated by incentive-based economic models of managerial behavior, models that 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 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 governance devices like managerial ownership can be used to induce managers to act in a manner that is consistent with the shareholders' interest.¹²³

Adverse selection models are founded on the hypothesis that managers possess differing levels of ability, which cannot be observed by shareholders. In this setting, ownership may be used to induce revelation of the manager's private information, which the shareholders cannot observe directly, such as information about cash flow or the manager's ability to generate cash flow. Performance provides information to the principal about the ability of the manager and is therefore reflected in managerial payoffs, including through dismissal for poor performance.¹²⁴

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. Analyzing the relation between governance and performance requires different statistical techniques if the two variables are endogenously related rather than if they are exogenously related (that is,

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

124. For a classic treatment of the adverse selection problem, see generally Roger B. Myerson, *Incentive Compatibility and the Bargaining Problem*, 47 *Econometrica* 61 (1979).

if the relation is bidirectional rather than one-way, with governance affecting performance). An exogenous relationship is, however, universally assumed in the literature on governance indices.

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,¹²⁵ economists have emphasized the costs of diffused share ownership—that is, the impact of ownership structure on performance. But as Harold Demsetz argues, because we observe many successful public companies with diffused share ownership, there must be offsetting benefits—such as better risk-bearing—rendering it difficult to assert that concentrated ownership should be positively associated with performance.¹²⁶ 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 observable and unobservable ways.¹²⁷ 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 creditors¹²⁸—that may be endogenously determined with performance.

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

126. See Harold Demsetz, *The Structure of Ownership and the Theory of the Firm*, 26 *J.L. & Econ.* 375, 387–89 (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 United States toward protecting minority-shareholder rights increases the costs of holding large blocks. Mark J. Roe, *Strong Managers, Weak Owners: The Political Roots of American Corporate Finance* 3–8 (1994); Bernard S. Black, *Shareholder Passivity Reexamined*, 89 *Mich. L. Rev.* 520, 530–36 (1990).

127. Charles P. Himmelberg et al., *Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance*, 53 *J. Fin. Econ.* 353, 381 (1999). The endogeneity of management ownership has also been noted by many others. See, e.g., Michael C. Jensen & Jerold B. Warner, *The Distribution of Power Among Corporate Managers, Shareholders, and Directors*, 20 *J. Fin. Econ.* 3, 4 (1988) (noting “the interrelations between ownership, firm characteristics, and corporate performance”).

128. Michael Jensen provides another explanation of how debt reduces agency problems: By binding managers to pay out cash to creditors, debt reduces free cash flow—cash in excess of the positive net present value projects available to the firm—that

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.¹²⁹ An initial entrepreneur seeks to maximize firm value by employing a disciplinary mechanism that forces him to choose the value-maximizing level of debt. Extending that idea, Sanjai Bhagat, Brian Bolton, and Ajay Subramanian show that the optimal choice of debt from the viewpoint of shareholders differs from the optimal choice of debt from the managers' perspective.¹³⁰

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 in the firm, have their human capital tied to the firm.¹³¹ Second, as suggested by Michael Jensen, a larger level of debt precommits the manager to working harder to generate and pay off the firm's cash flows to outside investors.¹³² Third, commentators have hypothesized 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.¹³³

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. Two separate works, one by Sanford Grossman and Oliver Hart and the other by 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.¹³⁴ In such an incomplete contracting environment, the allocation of control rights to management through stock ownership, rather than the 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.

managers could otherwise waste on negative net present value projects rather than return to shareholders. See Michael C. Jensen, *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers*, 76 *Am. Econ. Rev.* 323, 323–24 (1986).

129. See Grossman & Hart, *Principal-Agent Problem*, *supra* note 123, at 7.

130. See Sanjai Bhagat et al., *Manager Characteristics and Capital Structure* 10 (July 17, 2008) (unpublished manuscript, on file with the *Columbia Law Review*).

131. Fama, *supra* note 111, at 291–92.

132. See Jensen, *supra* note 128, at 324.

133. Milton Harris & Artur Raviv, *Corporate Control Contests and Capital Structure*, 20 *J. Fin. Econ.* 55, 56–59 (1988); René M. Stulz, *Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control*, 20 *J. Fin. Econ.* 25, 25–28 (1988).

134. 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 Nature of the Firm*, 98 *J. Pol. Econ.* 1119 (1990).

This brief overview of the interrelationships among corporate governance—including capital and ownership structure, and corporate performance—suggests, from an econometric viewpoint, that 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 system of four simultaneous equations, which captures the interrelationships among the aforementioned variables:¹³⁵

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

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

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

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

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.¹³⁶

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.¹³⁷ What hap-

135. See Bhagat & Bolton, *supra* note 40, at 260.

136. *Id.*

137. 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 if certain assumptions hold. *Id.* at 13–14. The most important assumption for this Article's analysis is 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. Moreover, as discussed in the next section, Bhagat and Bolton empirically tested the nature of the relation between the two variables and found that OLS is biased due to endogeneity. See Bhagat & Bolton, *supra* note 40, at 264–66. Both the 2SLS and 3SLS estimation techniques address the violation of the exogeneity assumption and therefore retain desirable statistical properties as estimators; 2SLS does this by considering each equation at a time, while 3SLS considers the entire system of equations, allowing for cross-correlation of the error terms in all of the equations. Kennedy, *supra*, at 181, 188–91. In theory, 3SLS is “better” econometrically than 2SLS (the estimators are more efficient, a desirable statistical property), but in practice the results are usually similar, as was true in Bhagat and Bolton's empirical analysis. See *infra* Appendix B.

pens if one estimates a system of simultaneous equations using OLS? Let us assume, for the sake of exposition, that there is no relationship between (a specific measure of) governance and (a specific 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.¹³⁸ 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.¹³⁹

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

138. 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." Kennedy, *supra* note 137, at 180. In addition, Maddala observes, "[T]he simultaneity problem results in inconsistent estimators of the parameters, when the structural equations are estimated by ordinary least squares." G.S. Maddala, *Introduction to Econometrics* 389 (3d ed. 2001).

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

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

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

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

$$C = h_3 (A, \text{control variables})$$

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

mental 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, an instrumental variable is needed for each of the endogenous variables in an equation.¹⁴⁰ 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 properly estimated 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 a sample of the largest 1,500 U.S. corporations over the period 1998–2002 and the simultaneous equation setup described supra in equations 1a–1d.¹⁴¹ Tables 1 and 2 summarize their results regarding the relationship between governance and performance. While previous studies have used both stock-market- and accounting-based measures of performance, Bhagat and Bolton emphasized accounting measures rather than stock returns as the appropriate performance measure for this analysis: 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.¹⁴² Accounting measures, by contrast, do not suffer from such an anticipation problem.

140. E.g., Kennedy, supra note 137, at 188. Technically, an instrument is an explanatory variable that is uncorrelated with the residual or error term of the regression but is correlated with the endogenous variable for which it is an instrument. Id. at 159. 2SLS is the instrumental variables (IV) approach to a single equation, and 3SLS is the IV approach to a system of equations. In IV regression models, the estimation proceeds in stages: A first stage is estimated using the instruments to obtain predicted values for the potentially endogenous variables; in the second stage, the predicted values are regressed on the dependent variable in question. Id. at 189–91.

141. Bhagat & Bolton, supra note 40. The instruments used to estimate the system of equations (1a–1d) are: in equation (1a), the ratio of treasury stock to assets; (1b), the percentage of 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 262–63. The choice of instruments and the appropriateness of using instrumental variables rather than OLS are discussed in Appendix B.

142. 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, Jr., *The Econometrics of Corporate Governance Studies* 17–20 (2002).

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 G-Index; the Bebchuk, Cohen, and Ferrell E-Index; the Glass Lewis Board Accountability Index; The Corporate Library (TCL) Benchmark score; the Brown and Caylor Gov-Score and Gov-7 (data are 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 1,500 of the largest U.S. corporations for the period 1998–2002; in some cases data constraints allow for consideration of only a shorter period.

Governance Variable:	ROA _t	ROA _{t+1}	ROA _{t+1 to t+2}
GIM G-Index	-0.013 (0.01)	-0.011 (0.03)	-0.004 (0.16)
BCF E-Index	-0.034 (0.01)	-0.031 (0.02)	-0.015 (0.07)
Glass Lewis	-0.014 (0.01)	-0.017 (0.00)	-0.011 (0.06)
TCL Benchmark Score	-0.005 (0.05)	-0.003 (0.27)	-0.002 (0.21)
Brown & Caylor Gov-Score	-0.004 (0.60)	-0.005 (0.61)	—
Brown & Caylor Gov-7	-0.001 (0.44)	-0.001 (0.53)	—
\$ Value of Median Director's Holdings	0.006 (0.01)	0.005 (0.04)	0.002 (0.16)
CEO-Chair Duality (=1 if Dual)	-0.029 (0.00)	-0.029 (0.00)	-0.017 (0.00)
% of Directors Independent	-0.131 (0.00)	-0.001 (0.00)	-0.068 (0.01)

Neither table includes Tobin's *Q* as a performance measure even though prior studies, notably those by GIM and BCF, have treated it as a key performance measure.¹⁴³ This omission is justified because Tobin's *Q* has two serious shortcomings, even if it does not suffer from the anticipation problem of stock returns. First, if a firm has a high fraction of its assets as intangible assets rather than tangible assets and if monitoring intangible assets is difficult for shareholders, then shareholders will likely require a higher level of managerial ownership to align incentives properly. But, because the firm has a high fraction of its assets as intangibles, it will have a high Tobin's *Q*: The numerator of the Tobin's *Q* ratio (market price) will impound the present value of the cash flows generated by the intangible assets, while the denominator (book value) usually does not include investments the firm has made in its intangible assets.¹⁴⁴ As a consequence, these intangible assets will generate a positive correlation between ownership and performance, but 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

143. Bhagat & Bolton, *supra* note 40, also considered the relationship between Tobin's *Q* and the seven governance measures examined in the tables. They did not find any significant or consistent relationship between any governance measure (including the G and E indices) and future Tobin's *Q*. See *id.* at 264, 266; *infra* Appendix B.

144. Under current accounting conventions, the denominator will not include the replacement value of these intangible assets. Goodwill and Other Intangible Assets, Statement of Fin. Accounting Standards No. 142, ¶ 10 (Fin. Accounting Standards Bd. 2001) (stating that internally developed intangible assets are not recognized as assets in accounting statements).

product market, will, in all probability, require managers of such a company to own more stock. This is because greater managerial ownership will be expected to align better managers' incentives with shareholder interests and to 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 indicate a significant negative correlation between the G-Index and next year's return on assets (ROA).¹⁴⁵ 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, although the sign is still negative, when we consider operating performance over the next two years. These findings are consistent with GIM's finding of a positive relation between good governance and performance for the period 1990–1999, and the results extend GIM's findings to 2000–2004.

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.¹⁴⁶ 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 or any other measure of

145. The accounting measure of performance in Table 1 is ROA because a comprehensive study comparing accounting performance measures provides evidence supporting its use. See Brad M. Barber & John D. Lyon, *Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test Statistics*, 41 *J. Fin. Econ.* 359, 387–93 (1996).

146. Consistent with the findings reported here, CGR also found a positive relation between the G-Index and next year's ROA, although they also did not take into account the endogeneity of the relationships among corporate governance, performance, capital structure, and corporate ownership structure. See Core et al., *Weak Governance*, *supra* note 91, at 668–69.

governance and contemporaneous, next year's, or next two years' stock returns.¹⁴⁷

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 governance variables considered are described in Table 1. The sample consists of about 1,500 of the largest U.S. corporations for the period 1998–2002; in some cases data constraints allow for consideration of only a shorter period.

147. These findings are consistent with those of John Core, Robert Holthausen, and David Larcker, who concluded that their governance measures relating to board structure (size, director composition, age and tenure, and identity of chair) and ownership structure (blockholdings) "more consistently predict future accounting operating performance than future stock market performance." John E. Core et al., Corporate Governance, Chief Executive Officer Compensation, and Firm Performance, 51 J. Fin. Econ. 371, 403–04 (1999) [hereinafter Core et al., Corporate Governance].

Governance Variable:	Return _t	Return _{t+1}	Return _{t+1 to t+2}
GIM G-Index	-0.010 (0.75)	-0.013 (0.71)	-0.007 (0.64)
BCF E-Index	-0.044 (0.59)	-0.021 (0.81)	-0.001 (0.97)
Glass Lewis	-0.007 (0.87)	-0.007 (0.85)	-0.033 (0.32)
TCL Benchmark Score	-0.018 (0.12)	0.000 (0.97)	0.003 (0.64)
Brown & Caylor Gov-Score	0.011 (0.73)	-0.049 (0.41)	—
Brown & Caylor Gov-7	0.018 (0.69)	0.001 (0.76)	—
\$ Value of Median Director's Holdings	0.012 (0.44)	0.008 (0.64)	0.003 (0.72)
CEO-Chair Duality (=1 if Dual)	-0.024 (0.70)	-0.064 (0.29)	-0.025 (0.30)
% of Directors Independent	-0.157 (0.53)	-0.250 (0.33)	-0.092 (0.40)

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

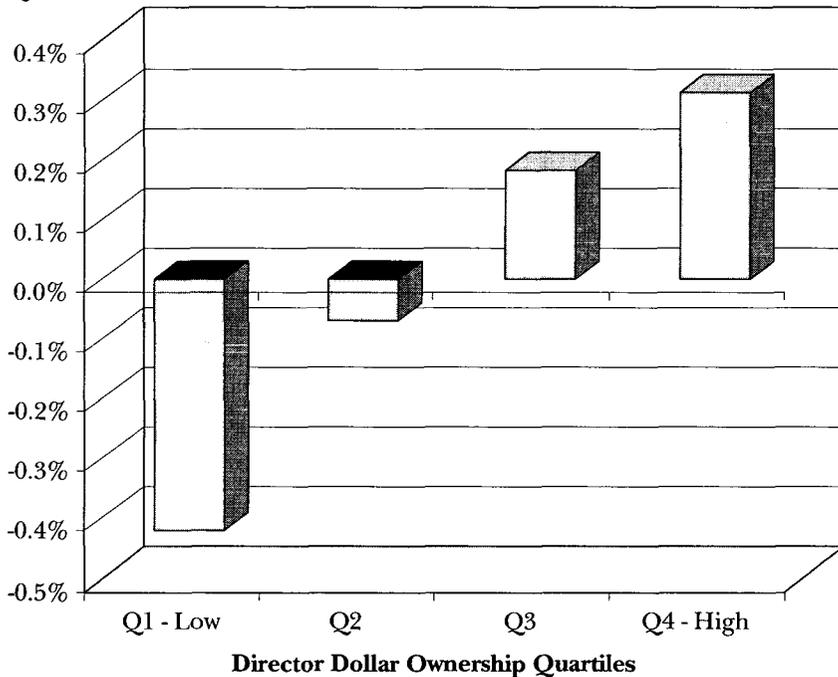
Single governance variables related to the board of directors also exhibit significant relationships with accounting performance. There is a significant and positive relation between the dollar value of the median director's stock ownership and contemporaneous, next year's, and next two years' operating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

TABLE 3: RELATIONSHIP BETWEEN DOLLAR BOARD OWNERSHIP AND RETURN ON ASSETS FOR THE SUBSEQUENT TWO YEARS

The sample consists of about 1,500 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%

FIGURE 1: RELATIONSHIP BETWEEN DOLLAR BOARD OWNERSHIP BY QUARTILES AND RETURN ON ASSETS FOR THE SUBSEQUENT TWO YEARS



Similarly, the separation of the positions of CEO and board chair (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.¹⁴⁸ This finding, along with the results for the G

148. Having an independent (i.e., non-CEO) chair is frequently included as one of the components indicating the strength of a board's independence. See, e.g., *infra* Appendix A (indicating that Brown and Caylor's Gov-Score includes CEO-Chair duality as positive governance factor). 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.

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.¹⁴⁹ Board independence, however, is negatively and significantly related to contemporaneous, next year's, and next two 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;¹⁵⁰ however, it is consistent with prior literature on boards.¹⁵¹

Table 1 also contains some probative evidence 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.¹⁵² Furthermore, Brown and Caylor's Gov-Score (which uses the components of 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 various components.¹⁵³ The failure to find a relation between these multiple-dimension indices and performance may well be a function of inapposite.

149. See, e.g., Ram Baliga et al., *CEO Duality and Firm Performance: What's the Fuss?*, 17 *Strategic Mgmt. J.* 41, 45-51 (1996) (finding no significant relation between CEO-Chair duality and future performance); James A. Brickley et al., *Leadership Structure: Separating the CEO and Chairman of the Board*, 3 *J. Corp. Fin.* 189, 192 (1997) (same); Maria Carapeto et al., *Does Duality Destroy Value?* 4 (Jan. 12, 2005) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=686707 (confirming same results for U.K. data). 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 in Bhagat and Bolton. Compare Bhagat & Bolton, *supra* note 40, at 261 (using sample sizes ranging from approximately 6,000 to 24,000), with Baliga et al., *supra*, at 44-45 (using sample sizes ranging from approximately 10 to 375), and Brickley et al., *supra*, at 197-98 (using sample size of 661), and Carapeto et al., *supra*, at 5 (using sample size of 250).

150. The NYSE and NASDAQ required independent nominating and compensation committees and majority board independence after the enactment of the Sarbanes-Oxley Act. See *supra* note 2 and accompanying text.

151. The literature suggests that there may be a negative relation between performance and the proportion of a board that is independent. See Hermalin & Weisbach, *Survey*, *supra* note 110, at 18 (reviewing the literature). For reviews of the literature on the relation more generally between performance and board independence, see *supra* note 24.

152. Bhagat and Bolton analyzed TCL's benchmark compliance rating rather than its effectiveness governance rating in their study. TCL's compliance rating is more comparable to the other indices Bhagat and Bolton study, though TCL did not consider it to be an appropriate measure of governance quality. See *infra* Appendix A.

153. See *supra* Part II.B.

weights on the components, rather than the true absence of a relation between performance and governance. Even when a smaller set of ISS variables is used—as is the case with Brown and Caylor's Gov-7 index—there is no consistent and significant relationship between better governance and better performance. By contrast, when the same analysis was performed using Glass Lewis's Board Accountability Index, which is related to BCF's E-Index,¹⁵⁴ not surprisingly the results were qualitatively very similar to those for the G and E indices: Better governed firms (lower index values) have higher contemporaneous and subsequent operating performance, but there is no significant relation between the Board Accountability Index and stock returns.

Finally, Bhagat and Bolton found that the G-Index and median director ownership were uncorrelated. This finding suggests that a composite measure of governance that combines the information contained in the G-Index and median director ownership might be a more powerful predictor of operating performance than either measure by itself. For each year, all firms are ranked from best governed 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 Bhagat and Bolton's hypothesis, the combined measure of governance outperforms either of the two measures taken separately. They found that a 1% improvement in governance as measured by the composite index led to a 1.874% change in operating performance in the current period, a 1.567% change in next year's operating performance, and a 1.520% change in the next two years' operating performance—the respective changes per 1% governance improvement for the G-Index alone were 0.854%, 0.763%, and 0.287%.

The analysis by Bhagat and Bolton summarized in Tables 1–3 does not compare the performance of the most prominent commercial index, that devised by ISS, and other commercial indices, as providers do not publicly disclose the details of their indices' construction. It does include TCL's compliance benchmark rating (the index that TCL deemphasized of its two rankings), Glass Lewis's index (which is a minor tweaking of the E-Index), Brown and Caylor's Gov-Score (as the closest approximate to ISS's index, by straightforwardly tallying fifty-one governance components out of the over sixty factors that are employed by ISS in a more complicated, proprietary weighting system), and Brown and Caylor's Gov-7, which uses only seven of the Gov-Score components.¹⁵⁵

But there is no plausible 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,

154. As previously noted, Glass Lewis's Board Accountability Index consists of five of the six corporate charter provisions that comprise BCF's E-Index. See *supra* note 65. The correlation between these two indices is 0.99.

155. See *supra* notes 65, 68, 69, 84 and accompanying text.

the burden of proof concerning whether ISS's index would perform better than its simplified version, the Gov-Score, ought to be placed on ISS, because it is in possession of the relevant data. In support of this contention, ISS describes a process in which it constantly updates the weighting algorithm,¹⁵⁶ suggesting that the index might not predict performance because the firm feels 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.¹⁵⁷ 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, has 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, Ian Gow, and David Larcker investigated whether three commercial indices (ISS, TCL, and GovernanceMetrics) can predict future performance.¹⁵⁸ Their study 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.¹⁵⁹ 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 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

156. See *supra* note 81 and accompanying text.

157. The same problem would explain the other index that fared equally as poorly as Gov-Score, TCL's compliance benchmark rating. In contrast to the G-Index, TCL's rating includes more than one governance dimension. See *infra* Appendix A for a description.

158. See Daines et al., *supra* note 9, at 4–5.

159. See *id.* at 22–27, 32, 56 tbl.8. 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 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.* at 22–23, 25–27.

are not even related to future performance. The combination of only one of those dimensions, median 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.¹⁶⁰

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 estimated a multinomial logit regression in which the dependent variable was equal to zero if no turnover occurred in a firm-year, one if the turnover was disciplinary (i.e., the manager appeared to have been dismissed because of poor performance), and two if the turnover was nondisciplinary (i.e., the dismissal was not based on performance).¹⁶¹ Using the past two years' stock return as the performance measure, they estimated the following baseline equation:

$$\text{Type of CEO Turnover} = g_i(\text{Past 2 years' stock return}, Z_i, \varepsilon_i) \quad (2a)$$

160. See, e.g., Hermalin & Weisbach, Survey, *supra* note 110, at 17.

161. CEO turnover is classified as "nondisciplinary" if the CEO died, if the CEO was older than sixty-three, if the change was the result of an announced transition plan, or if the CEO stayed on as chair 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), Bhagat and Bolton estimated a system of five equations: 1a, 1b, 1c, 1d, and 2b. Results from taking turnover endogeneity into account are entirely consistent with the results reported *infra* notes 162–165 and accompanying text. These disciplinary/nondisciplinary classification criteria are similar to those used in past literature. See, e.g., Kathleen A. Farrell & David A. Whidbee, Impact of Firm Performance Expectations on CEO Turnover and Replacement Decisions, 36 *J. Acct. & Econ.* 165, 172 (2003) (classifying as "forced" all turnovers "other than those arising from retirement, normal management succession, death, illness, or those involving the CEO's departure for a prestigious position elsewhere" and "assum[ing] a voluntary retirement for any departing CEO at least 64 years old unless . . . information [is uncovered] suggesting the departure is performance-related"); Stuart C. Gilson, Management Turnover and Financial Distress, 25 *J. Fin. Econ.* 241, 251 tbl.5 n.A (1989) (classifying as "forced" all turnovers "except those due to retirement, death, illness, normal management succession and other factors unrelated to firms' poor financial performance or insolvency"); Mark R. Huson et al., Internal Monitoring Mechanisms and CEO Turnover: A Long-Term Perspective, 56 *J. Fin.* 2265, 2273 (2001) (classifying as "forced" all turnovers except those resulting from "death, poor health, or the acceptance of another position" and those where age or other conditions of change plausibly suggest turnover was voluntary).

The Z_1 vector of controls includes CEO ownership, CEO age, CEO tenure, firm size, industry return, and year dummy variables.¹⁶² The baseline results indicate that a firm's stock market returns during the previous two years, CEO stock ownership, and CEO tenure are significantly and negatively related to disciplinary CEO turnover; these findings are consistent with the prior literature.¹⁶³ Bhagat and Bolton further found that prior two years' returns of firms in the industry are significantly and positively related to disciplinary CEO turnover. In other words, if prior industry performance has been good, the probability of disciplinary CEO turnover increases, regardless of the particular company's performance. Similarly, if prior industry 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 created 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 more likely to replace the CEO. To measure this effect, they estimated the following modified version of equation 2a:

$$\text{Type of CEO Turnover} = g_2(\text{Past 2 years' stock return, Governance, Past 2 years' stock return} \times \text{Governance, } Z_1, \varepsilon_2) \quad (2b)$$

As summarized in Tables 4 and 5, Bhagat and Bolton found that when the governance variables were included, the prior return variable was not significant in seven of the nine cases, suggesting that poor performance alone is not enough to lead to a change in senior management. In addition, the governance variable by itself was statistically not significant in most cases.¹⁶⁴ 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).

162. These control variables are motivated by a substantial literature on performance and CEO turnover. See, e.g., Ellen Engel et al., *CEO Turnover and Properties of Accounting Information*, 36 *J. Acct. & Econ.* 197, 211–20 (2003) (using CEO age and industry-adjusted returns); Farrell & Whidbee, *supra* note 161, at 166–67 (using CEO age, CEO tenure, firm size, and industry-adjusted performance); Huson et al., *supra* note 161, at 2283–92 (using CEO age and year dummies); Michael S. Weisbach, *Outside Directors and CEO Turnover*, 20 *J. Fin. Econ.* 431, 448–59 (1988) (using CEO share ownership).

163. See, e.g., Huson et al., *supra* note 161, at 2287–88, 2290 (noting that forced turnover is negatively related to prior two years' stock returns, CEO stock ownership, and CEO tenure).

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

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 = Nondisciplinary 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. The governance variables considered are described in Table 1. Dependent Variable: Disciplinary turnover

Governance Variable	Baseline Performance	GIM G-Index	BCF E-Index	Glass Lewis	TCL Benchmark Score	BC Gov-Score	BC Gov-7	\$ Value of Median Director's Holdings	CEO-Chair Duality (≠1 if Dual)	% of Directors Independent
Last 2 Years' Stock Return	-2.029 (0.00)	-0.404 (0.74)	-0.860 (0.18)	-1.617 (0.19)	-4.390 (0.02)	-2.474 (0.57)	-3.738 (0.44)	0.529 (0.66)	-1.526 (0.00)	0.234 (0.72)
Governance	—	-0.040 (0.38)	-0.009 (0.92)	0.005 (0.93)	0.018 (0.24)	-0.064 (0.21)	-0.077 (0.16)	-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)	-0.116 (0.57)	0.033 (0.49)	0.038 (0.84)	0.062 (0.76)	-0.284 (0.00)	-1.381 (0.04)	-4.416 (0.00)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Years Included	2000-2002	2000-2002	2000-2002	2000-2002	2001-2002	2002	2002	2000-2002	2000-2002	2000-2002
Sample Size	3,364	2,036	2,036	2,036	2,195	788	788	3,166	3,228	3,228

TABLE 5: MULTINOMIAL LOGIT MODEL FOR NONDISCIPLINARY 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 = Nondisciplinary 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. The governance variables considered are described in Table 1. Dependent Variable: Nondisciplinary turnover

Governance Variable	Baseline Performance	GIM G-Index	BCF E-Index	Glass Lewis	TCL Benchmark Score	BC Gov-Score	BC Gov-7	\$ Value of Median Director's Holdings	CEO-Chair Duality (=1 if Dual)	% of Directors Independent
Last 2 Years' Stock Return	-0.333 (0.05)	0.327 (0.70)	0.113 (0.80)	-0.430 (0.21)	-0.048 (0.97)	-1.744 (0.66)	-0.903 (0.83)	-1.507 (0.12)	-0.268 (0.33)	0.229 (0.63)
Governance	—	0.014 (0.70)	0.078 (0.26)	-0.011 (0.80)	0.002 (0.87)	-0.067 (0.13)	-0.059 (0.21)	-0.028 (0.55)	-1.133 (0.00)	0.236 (0.57)
(Return, Last 2 years' x Governance)	—	0.017 (0.88)	0.034 (0.88)	0.115 (0.39)	0.006 (0.82)	0.045 (0.79)	0.013 (0.95)	0.084 (0.27)	-0.152 (0.68)	-0.875 (0.37)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Years Included	2000-2002	2000-2002	2000-2002	2000-2002	2001-2002	2002	2002	2000-2002	2000-2002	2000-2002
Sample Size	3,364	2,036	2,036	2,036	2,195	788	788	3,166	3,228	3,228

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 suggest that good governance, as measured by those single board attributes, increases the probability of disciplinary turnover for poorly performing firms.¹⁶⁵ The interactive term is significantly negative for CEO-Chair duality, which means that when the CEO is also the chair, he is more likely to experience disciplinary turnover given poor firm performance.¹⁶⁶

The governance indices do not fare as well as the single governance measures in predicting good performance when performance is measured by forced CEO turnover following poor financial performance. The interaction terms with GIM's, BCF's, and Glass Lewis's measures of good governance are negatively related to the probability of disciplinary turnover for poorly performing firms. These findings indicate that better governed firms, as measured by those three indices, are less likely to experience disciplinary management turnover in spite of their poor performance. In addition, the interaction terms with the TCL compliance rating, Gov-Score, and Gov-7 measures of good governance are unrelated to the probability of disciplinary turnover for poorly performing firms. These findings 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.

In sum, of all the measures of governance quality evaluated by Bhagat and Bolton, only the outside directors' stock ownership measure was related to multiple measures of performance, firms' future accounting profitability, and disciplinary management turnover upon poor performance. This finding indicates more convincingly than the findings regarding accounting performance that the more complex measures of firms' governance quality generated by index construction need not be

165. 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 Hermalin & Weisbach, Survey, *supra* note 110, at 10–18.

166. This result is counterintuitive, given that a CEO-Chair is thought to be more powerful, and hence more entrenched, than a CEO who is not chair. One speculative explanation of this finding is that if the board is actively engaged in policymaking 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 to indicate that the prior analysis may have obscured nonlinearities in the relation between performance and governance, or that the relation between board independence and structure, as represented by the identity of the chair, and CEO entrenchment is more subtle than that suggested by the governance literature and the relation captured by the system of equations 1a–1d.

superior to a single governance variable. It also provides support for proposals to compensate directors with stock.¹⁶⁷

III. IMPLICATIONS FOR INVESTORS AND POLICYMAKERS

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.

A. *Choice of an Index*

The initial lesson that should be drawn from our analysis of the relation between governance and performance 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 an appropriate proxy to investors who wish to use governance to predict performance. For example, if accounting measures of performance are of concern, then the G and E indices may be sensible measures to use. However, those measures are inappropriate if

167. Charles Elson has been a persistent proponent of outside director stock compensation as a solution to governance problems. See, e.g., Charles M. Elson & Christopher J. Gyles, *The Enron Failure and Corporate Governance Reform*, 38 *Wake Forest L. Rev.* 855, 859 (2003) (issuing a "call for truly independent, equity-owning directors as the solution to the governance conundrum raised by Enron and other corporate debacles"); Charles M. Elson, *Executive Overcompensation—A Board-Based Solution*, 34 *B.C. L. Rev.* 937, 944 (1993) (proposing that "corporations . . . pay their directors their annual fees in restricted company stock"). 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, 63 (2006) (finding that CEO 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 to directors is far less than that awarded to managers, a fact that should lessen the risk of such perverse incentives from option compensation. Moreover, 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 et al., *Chief Executive Officer Equity Incentives and Accounting Irregularities 2-3*, 22 (May 12, 2008) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1132411 (conducting propensity matching of firms so as to differ solely on dimension of executive incentive compensation, rather than on whether firm has issued a restatement).

the performance criterion is whether top management will be replaced following poor performance. Indeed, the single governance variable of the median outside director's 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, is helpful. In short, consumers of indices should 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 potential 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 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 method of ranking firms' governance quality that is superior to the more complex governance indices. Director stock ownership information 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 products¹⁶⁸). Rather, to our minds, there are 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-maxi-

168. Both Glass Lewis and ISS, for example, assert that their indices are positively correlated with performance. See Glass, Lewis & Co., BAI, *supra* note 65; ISS Overview, *supra* note 5.

mizing decisions in some cases.¹⁶⁹ 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 and to explain to others as the basis for an investment or voting decision, compared with recourse to a more complicated, multifaceted description of a firm's combination of governance features.

However, the simple elegance of an index—in which one summary number describes a complicated phenomenon—is its most perilous feature as well as its most promising. That is because, as we have hopefully by now made clear, the idea that one number can capture everything an investor needs to know about a firm's governance can 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 seemingly instinctive human predisposition that favors summary measures over more complex data processing, as they reduce cognitive transaction costs by providing a ready-made means of comparison.¹⁷⁰

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,

169. 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 Regulation 13* (Yale Program for Studies in Law, Econ. & Pub. Policy, Research Paper No. 349, 2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=982493 (on file with the *Columbia Law Review*). Cremers and Romano found 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 offered as a possible explanation that the funds began keying on this good governance feature—it is one of ISS's index components—as a defensive strategy to deflect criticism against their supporting management in what had become an increasingly controversial voting context. Moreover, Daines et al. offer several reasons why ISS can be expected to use its governance ratings to determine its proxy voting recommendations and provide evidence of a statistically significant, albeit very small, positive relationship: A one-point increase in a firm's ISS governance rating increases the probability of a recommendation in support of a management compensation plan proposal by 0.0022. Daines et al., *supra* note 9, at 27–32. Although Daines et al. did not find a consistently significant position relation between ISS's governance rating and voting outcomes (it was sometimes negative, i.e., more support for firms with worse ratings), *id.*, they did find that an ISS recommendation for a proposal increases voting support. *Id.* at 30–31, 53 tbl.7 panel C.

170. There is an extensive cognitive decisionmaking literature on consumer choice, identifying individuals' use of simpler strategies to reduce complexity in the number of products and product attributes compared in order to make a decision. For a summary of that literature as it might apply to standard form contracts, see Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 U. Chi. L. Rev. 1203, 1225–29 (2003).

which identified a single variable, beta, as the measure of an asset's risk and hence the determinant of its market price.¹⁷¹ But a substantial body of empirical research testing the model has rejected it, and some suggest that multifactor models may do better at prediction.¹⁷² 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.¹⁷³ As a prominent financial economist put it in explaining beta's persistence, "[beta] is a simple, easy-to-understand measure" even though "no single measure is likely to capture [an asset's risk] adequately."¹⁷⁴ 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: In contrast to governance indices, beta has a sound foundation in economic theory,¹⁷⁵ whereas we have a near total absence of theoretical work on the interaction of corporate governance institutions and performance.¹⁷⁶

171. Stephen A. Ross et al., *Corporate Finance* 284–87, 295 (7th ed. 2005).

172. Burton G. Malkiel, *A Random Walk down Wall Street* 206–14 (9th ed. 2007).

173. For the capital asset pricing model's centrality in the leading textbooks, see, e.g., Richard A. Brealey et al., *Principles of Corporate Finance* 214–22 (9th ed. 2008); Ross et al., *supra* note 171, at 255–87. For real world use, see Rutheford B. Campbell, Jr., *The Impact of Modern Finance Theory in Acquisition Cases*, 53 *Syracuse L. Rev.* 1, 35 tbl.16 (2003) (finding that fifty-three percent of Delaware appraisal cases decided after the Delaware Supreme Court permitted use of modern finance techniques used capital asset pricing model or weighted average cost of capital for the discount rate calculation); John R. Graham & Campbell R. Harvey, *The Theory and Practice of Corporate Finance: Evidence from the Field*, 60 *J. Fin. Econ.* 187, 203 fig.3 (2001) (finding that seventy-three percent of surveyed CFOs used capital asset pricing method "always or almost always" to estimate cost of capital).

174. Malkiel, *supra* note 172, at 214.

175. See Brealey et al., *supra* note 173, at 192–97 (discussing why beta measures a security's risk in context of a portfolio). 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 221.

176. 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 et al., *Activists, Raiders, and Directors: Opportunism and the Balance of Corporate Power 1* (Mar. 4, 2008) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=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 *supra* Tables 1–5 corroborate its effectiveness.

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. 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 a one-size-fits-all approach to governance mandates. That approach has, post-Enron, been the regulatory approach to governance preferred by both Congress—as exemplified by the Sarbanes-Oxley Act (SOX)—and the stock exchanges—in their implementation and expansion of SOX requirements, which are adopted as rules under the aegis of the SEC. Those rules, as earlier noted, mandated most prominently that key board committees consist only of independent directors. Mandates dictate firms' adoption of governance components that the mandator considers best practices, whether or not those practices are suitable for a particular firm, just as an index ranks firms by how closely their practices accord with what the index creator considers good governance rather than by whether those “good governance” practices are a good fit. Because there is no one best governance index—as we have discussed, none of the indices is correlated with many measures of performance widely thought to be relevant, and by construction none takes into account the complex relations among governance institutions—shoehorning 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, because for some firms the provisions would be working at cross purposes. Yet governance mandates require precisely that. For example, the independent director mandates of SOX and the stock exchanges permit no exceptions,¹⁷⁷ and this requirement prevents firms from adapting their governance institutions to fit their individual circumstances. As a consequence, firms can no longer engage in the govern-

177. See Standards Relating to Listed Company Audit Committees, 68 Fed. Reg. 18,788, 18,792–93 (Apr. 16, 2003) (codified at 17 C.F.R. pts. 228, 229, 240, 249, 274); Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance*, 114 Yale L.J. 1521, 1595 n.214 (2005) (noting SEC's implementation of SOX's audit committee mandate altered former stock exchange approach permitting deviations from fully independent audit committees).

ance tradeoff identified by GHS—as firms did before the adoption of those mandates—by, for example, replacing independent boards with the market for corporate control as the monitor of management in order to obtain operational benefits from the expertise provided by nonindependent (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.¹⁷⁸ 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.¹⁷⁹ GHS’s 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: GHS speculate that takeover defenses are adopted by boards to obtain the benefit of avoiding myopic behavior, such as underinvestment, by managers concerned about takeover threats.¹⁸⁰

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’s mandatory approach.¹⁸¹ Comply-or-explain is the approach to governance taken by regulators in, among others, Canada, the

178. See, e.g., *Cal. Pub. Employees’ Ret. Sys.*, supra note 11, at 7.

179. See, e.g., *id.* at 16–17.

180. Gillan et al., supra note 115, at 24–26. For a model of managerial myopia in response to takeovers, see Jeremy C. Stein, *Takeover Threats and Managerial Myopia*, 96 *J. Pol. Econ.* 61, 61 (1988).

181. See, e.g., George S. Dallas & Hal S. Scott, *Mandating Corporate Behavior: Can One Set of Rules Fit All?* 18 (2006) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=907346 (identifying U.K./European comply-or-explain model as “viable . . . alternative” or “rival” to the United States’s prescriptive approach).

United Kingdom, and many nations of the European Union.¹⁸² 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. 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 reason to require an explanation for nonconformance. Likewise, 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.

Because noncompliers 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 noncompliant firms find that compliers do not outperform noncompliers.¹⁸³

182. See Paul L. Davies, Introduction to Company Law 131 (2002) (discussing U.K. approach); Statement of the European Corporate Governance Forum on the Comply-or-Explain Principle 1 (Feb. 22, 2006), available at http://ec.europa.eu/internal_market/company/docs/ecgforum/ecgf-comply-explain_en.pdf (on file with the *Columbia Law Review*) (European Union); Anita Anand et al., Voluntary Adoption of Corporate Governance Mechanisms 2 (May 10, 2006) (unpublished manuscript, on file with the *Columbia Law Review*), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=921450 (Canada).

183. Cf. Nikoe Vafeas & Elena Theodorou, The Relationship Between Board Structure and Firm Performance in the UK, 30 *Brit. Acct. Rev.* 383, 384–85 (1998) (finding no relation between certain board attributes—many included in the U.K. best practices list—and performance); Charlie Weir et al., Internal and External Governance Mechanisms: Their Impact on the Performance of Large UK Companies, 29 *J. Bus. Fin. & Acct.* 579, 581 (2002) (“We find only weak evidence that board structural mechanisms [such as those included in the U.K. best practices list] affect performance . . .”); Carol Padgett & Amama Shabbir, The UK Code of Corporate Governance: Link Between Compliance and Firm Performance 15–25 (Univ. of Reading ICMA Ctr., Discussion Paper

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 or a mandatory governance regime, as such a disclosure regime would be most consistent with the spirit of the findings of the governance literature.¹⁸⁴ That is because a straightforward disclosure approach of a firm's 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

No. DP2005-17, 2005) (on file with the *Columbia Law Review*) (finding positive relation between compliance—using index of what authors consider “spirit” of compliance rather than “formal” compliance used in other studies—and performance as measured by capital gains and dividends, but finding no relation between authors’ compliance index and accounting measures of performance). But see Igor Goncharov et al., Does Compliance with the German Corporate Governance Code Have an Impact on Stock Valuation? An Empirical Analysis, 14 Corp. Governance 432, 442 (2006) (finding compliance by German firms—as defined by deviations from governance code—to be 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 Elisabeth Dedman, The Cadbury Committee Recommendations on Corporate Governance—A Review of Compliance and Performance Impacts, 4 Int’l J. Mgmt. Rev. 335, 336 (2002) (reviewing studies on impact of board independence and duality to evaluate whether United Kingdom’s comply-or-explain regime has improved performance); supra notes 24 and 149 (collecting references to studies on independent boards and board duality, respectively).

184. 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, 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. See Roberta Romano, The Advantage of Competitive Federalism for Securities Regulation 172–74 (2002).

practices of a majority of firms might cause some investors to question a firm for nonconformance. In such a scenario, firms whose governance regimes were nonconforming to most other firms or some prominent investors' or proxy advisory services' governance checklists 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 would be generated by financial markets. This is the more appropriate source of give-and-take in the pricing of stock, as opposed to the dictates of a regulatory authority.¹⁸⁵

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.¹⁸⁶ Is the same agnostic approach to

185. Iain MacNeil and Xiao Li provide some evidence that explanations offered by noncompliers in the United Kingdom'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 486, 488-92 (2006) (finding that share prices of U.K. comply-or-explain noncompliers outperformed the market but that firms' explanations of noncompliance were, in the authors' view, completely uninformative and could therefore not have served as bases for investor decisions to accept noncompliance). 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 489-90.

186. 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, 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. Cf. Legal Vice Presidency, World Bank, Initiatives in Legal and Judicial Reform 8 (2002), available at <http://siteresources.worldbank.org/BRAZILINPOREXTN/Resources/3817166-1185895645304/4044168-1186409169154/18initiativesFinal.pdf> (on file with the *Columbia Law Review*) ("Promoting markets and private sector development frequently requires reform in areas such as finance and banking laws, companies law, corporate governance and insolvency, infrastructure and property rights."); 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) (discussing methodologies of various studies and noting that "[a]ll of these studies generally find positive correlations between the legal variables that they employ and measures of development, and their results are commonly cited in key World Bank publications advocating legal reforms in developing countries"). 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. Mike Lubrano, Why Corporate Governance?, Dev. Outreach, Mar. 2003, available at <http://www1.worldbank.org/devoutreach/march03/article.asp?id=194> (on file with the *Columbia Law Review*); see also Curtis J. Milhaupt & Katharina Pistor, Law and Capitalism 2 (2008) (noting pressure from "international organizations such as the World Bank" on countries facing governance

governance that we advocate for U.S. firms sensible to apply to firms operating in developing economies? The empirical research supporting our analysis of governance indices, and hence of best practices approaches, of course only examines the relation between governance and performance of U.S. firms and is therefore not directly applicable to firms in other environments.

We believe that the background components of good governance regarding a legal and political system 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.¹⁸⁷ 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 are critical in defining the relation between “rule of law” institutions and economic development.¹⁸⁸ 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 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

crises to adopt legal reforms inspired by “recent economics scholarship linking favorable economics outcomes to ‘good’ law”).

187. 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, 1095 (2007).

188. 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, 57 *Am. J. Comp. L.* (forthcoming 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1124045&rec=1&srcabs=1105209 (manuscript at 1, on file with the *Columbia Law Review*); Michael J. Trebilcock & Ronald J. Daniels, Rule of Law Reform and Development 1–42, 332–55 (2008). Curtis Milhaupt and Katarina Pistor also contend that different legal systems are appropriate for different countries, thereby rendering the relation between law and economic development nonuniform, although their explanatory focus is on political economy rather than cultural sources of differences. See Milhaupt & Pistor, *supra* note 186, at 219–24.

performance may not be relevant to firms in emerging markets because of dramatic differences in corporate ownership structures across nations. The primary agency problem for public corporations in the United States (along with the United Kingdom) is 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 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 plaintiffs' 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 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.

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 firm's 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, the median outside director's 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 (the approach of most other developed economies, including Canada, the United Kingdom, and continental Europe) 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

A. *Academic Governance Indices*

1. *Gompers, Ishii, and Metrick's G-Index*. — The groupings of the governance provisions in the index are as follows:

- (1) "Delay": 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) "Voting": 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) "Protection": 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) "Other": Six other takeover defenses (the presence of antitakeover charter provisions, fair price provisions, other constituent provisions, poison pills, silver parachutes, and pension parachutes);
- (5) "State": Incorporation in a state with one of six state takeover laws (antitakeover, business combination freeze, control share acquisition, fair price, other constituencies, and redemption rights statutes).

Because of overlap between some of the tracked firm-level provisions and state takeover laws, the twenty-eight tracked provisions are collapsed into twenty-four unique provisions. Note that the groupings can be questioned for lack of internal coherence. For example, blank check preferred is classified in the "delay" category, but it is used in the creation of poison pills, which are placed in the "other" category.

2. *Bebchuk, Cohen, and Ferrell's E-Index*. — The subset of provisions in the G-Index (GIM's grouping in parentheses) are as follows:

- (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's Gov-Score Index*. — The groupings of ISS minimally acceptable corporate governance standards comprising Gov-Score (factors also in the G-Index are in italics) are as follows:

- (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" (seventeen factors): Managers respond to shareholder proposals within twelve 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 fifteen; 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 chair 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; nonemployees 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 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% ("option burn rate"); prohibition on option repricing; stock options are expensed;
- (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 “State” grouping.

The subset of factors in Gov-7 (ISS grouping in parentheses; factors also in the E-Index in italics) are as follows:

- (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 fifty-one factors in Gov-Score drove the relation identified between that index and firm value:

- (1) A regression of Tobin’s Q on the fifty-one factors and controls;
- (2) BCF’s methodology, which separately regresses Tobin’s Q on each factor, Gov-Score minus the factor, and controls;
- (3) Stepwise regression using a forward-selection technique in which variables are retained if they are significant at 10% (two-tailed test).

B. *Proprietary Governance Indices*

1. *The Corporate Library’s Board Effectiveness Rating.* — The Corporate Library (TCL), an investor research firm established by investor activist Nell Minow, produces research reports and commentary on corporate governance and does not provide consulting or other services to firms that it evaluates. It has developed a proprietary measure of the quality of firms’ governance, which measures a “Board’s Effectiveness,” and is a letter grade from A to F, representing an assessment of the effectiveness of

four governance components of the company's governance quality. The components of the rating are as follows:

- (1) Board Composition and Succession Planning;
- (2) CEO Compensation;
- (3) Takeover Defenses;
- (4) Board Level Accounting Concerns.

TCL notes that its rating focuses on "board actions [rather than] board policies and structures," with the exception of the specific board composition component (number (1) above).¹⁸⁹ The component analysis is not based on compliance with a best practices "checklist" but on quantitative screens related to board behavior and decisionmaking and on what it considers to be poor governance practices, containing "more than 1,100 individual data points."¹⁹⁰ The quantitative screening is supplemented by the more subjective analysis of its staff to compute the final rating.

TCL has also calculated a Best Practices Compliance score or benchmark, developed from other organizations' guidelines, that ranged from 0 to 100, and included such factors as whether the firm has a classified board, majority outside directors, independent chair or lead director, audit committee of only independent directors, formal governance policy, and the characteristics of directors (number who are over seventy years old, serve on more than four other boards, and have more than fifteen years of service). However, it considered the effectiveness rating and not the compliance score as the preferable metric of a company's governance quality, and it no longer refers to the compliance benchmark in the publicly available material on its website.

2. *GovernanceMetrics International's 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 non-profit 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 one to ten 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). The governance areas ("Research Categories") are as follows:

- (1) Board Accountability;
- (2) Financial Disclosure and Internal Controls;
- (3) Shareholder Rights;
- (4) Executive Compensation;

189. The Corp. Library, Assessment, *supra* note 5.

190. *Id.*

(5) Market for Control and Ownership Base;

(6) Corporate Behavior and Corporate Social Responsibility Issues.

3. *Institutional Shareholder Services's 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 IRRIC in 2005, before it was itself acquired in 2006). ISS rates companies according to a "Corporate Governance Quotient," which is derived from sixty-three 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's statistical algorithm combining governance factors. The governance areas and weights are as follows:

(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

(1) Audit committee with all independent outside directors;

(2) Average options granted in past three years are no more than 2% of basic shares outstanding, or within one standard deviation of industry mean ("option burn rate");

(3) All audit committee members are financial experts;

(4) Board controlled by supermajority (over 90%) of independent outside directors;

(5) Board has only one nonindependent director;

(6) Directors subject to stock ownership requirements;

(7) Board controlled by supermajority (between 75% and 90%) of independent outsiders;

(8) 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 follows:

(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 on Investment; Net Profit Margin; EBITDA Margin; Sales Growth; Free Cash Flow to Sales.

The factors that ISS uses 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' agendas 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.

4. *Egan-Jones Proxy Services's 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 services evaluating the impact on shareholder value, it provides voting guidelines tailored to certain labor union funds' needs, which ensure that "the rights and interests of labor are respected."¹⁹¹ 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).

5. *Glass, Lewis & Company's Board Accountability Index.* — 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

191. Egan-Jones Proxy Servs., About Egan-Jones Proxy, at <http://www.ejproxy.com/about.aspx> (last visited Oct. 23, 2008) (on file with the *Columbia Law Review*).

a “governance-enhanced” S&P 500 index.¹⁹² 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.¹⁹³ The component that Glass Lewis excludes is the supermajority requirement for charter amendments.

192. Glass, Lewis & Co., BAI, *supra* note 65.

193. *Id.*

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 interrelationships among corporate governance, firm performance, capital structure, and ownership structure, using the set of simultaneous equations described supra Part II.C (equations 1a–1d).¹⁹⁴ 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.

A. Choice of Instrumental Variables

1. *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.¹⁹⁵ 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, thus making it a valid instrument for performance.

2. *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.¹⁹⁶ 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.

3. *Governance: Director Ownership.* — Several studies suggest that the percentage of stock owned by a firm's directors may be a governance or

194. See supra notes 135–136 and accompanying text.

195. See Darius Palia, *The Endogeneity of Managerial Compensation in Firm Valuation: A Solution*, 14 *Rev. Fin. Stud.* 735, 743–44 (2001).

196. See, e.g., Kevin F. Hallock, *Reciprocally Interlocking Boards of Directors and Executive Compensation*, 32 *J. Fin. & Quantitative Analysis* 331, 332–40 (1997) (finding that managers of firms whose boards have certain reciprocally interlocking director relationships enjoy higher compensation than managers at firms whose boards lack such relationships); James D. Westphal & Poonam Khanna, *Keeping Directors in Line: Social Distancing as a Control Mechanism in the Corporate Elite*, 48 *Admin. Sci. Q.* 361, 363, 385–91 (2003) (summarizing theoretical literature on social effects of interlocking board membership and finding that directors who take actions contrary to interests of managers are subjected to social sanctioning by directors on other boards of which they are members).

monitoring mechanism.¹⁹⁷ Thus, it should be correlated with the governance measures. However, other research finds no consistent relationship between percentage stock ownership of directors and performance.¹⁹⁸ These findings suggest that director ownership could also make a valid instrument for governance in the performance equation.

4. *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 incentives and reputational and career concerns.¹⁹⁹ Therefore, we use the ratio of CEO tenure to CEO age as a measure of CEO quality and as an instrument for CEO ownership.

5. *Leverage: Altman's Z-Score.* — Following the literature, the modified Altman's Z-score, which is a measure of the probability a firm will go bankrupt, is used as the instrument for leverage.²⁰⁰ In robustness tests, lagged leverage is also used as an instrument for leverage; the results using this alternative instrument are qualitatively unchanged.

B. *Evaluating the Instrumental Variables Estimation*

Bhagat and Bolton's analysis involved three steps:

197. See, e.g., Core et al., *Corporate Governance*, supra note 147, at 374–75, 388–89 (summarizing prior literature on effects of director stock ownership and finding that presence of five percent outside blockholder or non-CEO inside director correlates with lower CEO compensation); Linck et al., supra note 40, at 312, 320 (examining effects of director stock ownership and reporting results “consistent with the notion that fewer outside monitors are needed when each director has stronger incentives to monitor”).

198. See Sanjai Bhagat et al., *Director Ownership, Corporate Performance, and Management Turnover*, 54 *Bus. Law.* 885, 904–08 (1999).

199. 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, 478–86 (1992).

200. See Edward I. Altman, *Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy*, 23 *J. Fin.* 589, 594–98 (1968) (developing original Z-score as predictor of corporate bankruptcy); Jeffrey K. MacKie-Mason, *Do Taxes Affect Corporate Financing Decisions?*, 45 *J. Fin.* 1471, 1475–76 (1990) (using Altman's Z-score “to measure [firm] financial condition” in study of tax effects on “choice between issuing debt and equity”); Ivan E. Brick et al., *The Joint Impact of Corporate Governance Mechanisms on Firm Performance and Each Other* 17 (Nov. 2006) (unpublished manuscript, on file with the *Columbia Law Review*) (using “MacKie-Mason's . . . modified Altman's Z-score” as “proxy for [a firm's] financial distress” and “expect[ing] a positive relationship between leverage and [modified Altman Z-score]”). Ultimately, whether this is an appropriate instrument is an empirical question. Through the diagnostic tests discussed *infra* in this Appendix, Bhagat and Bolton determined that the Altman's Z-score is indeed a valid instrument for leverage. See Bhagat & Bolton, supra note 40, at 263, 268 (noting that authors used “modified Altman's Z-score . . . suggested in MacKie-Mason (1990) as instrument for leverage” and confirming appropriateness of that use through application of various validity and strength tests). They also considered using marginal tax rate as an instrument for leverage, but it failed the Stock and Yogo weak instruments test, discussed *infra* note 201 and accompanying text, and was consequently not used.

- (1) Estimate the system of equations (1a–1d) 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);²⁰¹ and,
- (3) Use the Hausman specification test to determine which estimation technique is most appropriate.²⁰²

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 Bhagat and Bolton used. However, two other weak instrument tests were 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.²⁰³ If the instruments 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 Bhagat and Bolton’s analyses.

201. See generally James H. Stock & Motohiro Yogo, Testing for Weak Instruments in Linear IV Regression, *in* Identification and Inference for Econometric Models: Essays in Honor of Thomas J. Rothenberg 80 (D.W.K. Andrews & J.H. Stock eds., 2005) (outlining “quantitative definitions of weak instruments based on the maximum [instrumental variable] estimator bias, or the maximum Wald test size distortion, when there are multiple endogenous regressors”).

202. See generally Jerry A. Hausman, Specification Tests in Econometrics, 46 *Econometrica* 1251, 1264–66 (1978) (outlining Hausman specification test for simultaneous equation systems).

203. See Jinyong Hahn & Jerry Hausman, A New Specification Test for the Validity of Instrumental Variables, 70 *Econometrica* 163, 166–69 (2002). The “reverse” 2SLS estimator exchanges the left-hand side and right-hand side endogenous variables.

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, and 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 cell. For example, in looking at the effect that the G-Index has on next year's Tobin's *Q*, we note that there is a negative and significant relationship in OLS. This result is consistent with GIM's findings, which are discussed *supra* Part I.C.1. 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 return on assets (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+1*}, 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 crit-

ical 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 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 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).

	Next Year's ROA			Next Year's Stock Return			Next Year's Tobin's Q		
	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)
Glass Lewis BA Index	-0.004 (0.00)	-0.017 (0.00)	-0.017 (0.00)	-0.003 (0.69)	-0.008 (0.85)	-0.007 (0.85)	-0.167 (0.00)	-0.339 (0.17)	-0.324 (0.16)
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 Gov-Score	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)
BC Gov-7	-0.001 (0.53)	-0.006 (0.28)	-0.006 (0.26)	0.001 (0.76)	0.005 (0.64)	0.007 (0.49)	-0.008 (0.37)	-0.03 (0.41)	-0.023 (0.53)
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 and 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)
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	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)	
Stock & Yogo Weak Instruments Test									
	FStatistic	Critical Value		FStatistic	Critical Value		FStatistic	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									
	FStatistic	Critical Value		FStatistic	Critical Value		FStatistic	Critical Value	
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	