# Contextualizing the Link between Corporate Governance and Performance: Governance Changes As a Signal of Managerial Quality

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## Abstract

Prior scholarship reports a relationship between firms with good corporate governance index scores and those best at creating shareholder value, but little work explores why. We hypothesize that at least one explanation is that a score-changing alteration in governance structure can be a signal of the quality of a firm's management. The idea is that a poor governance with a poor score is more costly to bad managers than good ones because it imposes a higher risk of job loss on the bad managers. As well, adoption of governance changes that result in a poorer governance score do not run the risk of better managers sending false signals of poor quality.

We test this hypothesis by comparing ordinary times with 2000-2002, a period of unprecedented corporate accounting scandals leading to greater uncertainty as to the quality of firm managers. Fixed effects tests reveal that a change in governance index score in the accounting scandal years is associated with a much larger change in Tobin's Q than a comparably sized rating change occurring in the years before and after the accounting scandal period. OLS tests show no significant difference in the relationship between a firm's score and its Q during the crisis period versus the surrounding years, which suggest that the market's perception of the effectiveness of a highly-rated governance structure at better incentivizing managers or at filtering out bad ones did not change during the scandal years. Signaling -- the third possible causal link between good scores and higher Tobin's Q – must have been at work because a clarifying signal would be expected to have a bigger effect in a period of greater uncertainty as to which firms had good managers.

These results are strong evidence that the impact of governance is in important respects contextual, depending on the particular circumstances of the time involved and the particular characteristics of the firms involved. This point, largely missed to date, helps illuminate the current debate concerning the corporate governance index studies. It suggests that that there is theory that can explain the index studies' strong empirical results linking governance structure with firm value creation, but that, rather than a single link between the specified corporate governance provisions and performance, a range of linkages are possible whose direction and intensity depend centrally on the particular context in which a firm is operating.

# Contextualizing the Link between Corporate Governance and Performance: Governance Changes As a Signal of Managerial Quality

## Merritt B. Fox, Ronald J. Gilson, and Darius Palia

Promoting "good" corporate governance has become a global industry. Large international organizations like the OECD have adopted corporate governance codes of best practice.[1] Major institutional investors like the Norwegian Government Fund Global (a sovereign wealth fund), the California Public Employees Retirement System and BlackRock have similar codes to guide their choices as to where to invest and how to vote the shares in their portfolio.[2]

Corporate governance concerns have also animated regulatory change. They were at the center of the conditions that the IMF imposed on financial assistance to countries after the East Asian financial crisis.[3] Country specific codes, like the Cadbury Code in the United Kingdom, have proliferated.[4] In the United States, both the Sarbanes-Oxley legislation following the Millennium accounting scandals and the Dodd-Frank legislation following the "Great Recession"

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[1] *See, e.g.*, G20/OECD Principles of Corporate Governance (2015), available at http://www.oecd-ilibrary.org/docserver/download/2615021e.pdf; Swiss Code of Best Practice for Corporate Governance (2014), available at http://www.ecgi.org/codes/documents/swiss_code_26sep2014_en.pdf.

[2] *See* California Public Employment Retirement System, "CalPERS Global Principles of Accountable Corporate Governance," (Nov. 14, 2011), http://www.calpers-governance.org/principles/home accessed 11/18/13; BlackRock, Global Corporate Governance & Engagement Principles (June 2014)**,** *available at* http://www.blackrock.com/corporate/en-ca/literature/fact-sheet/blk-responsible-investment-1engprinciples-global-122011.pdf.

[3] *See, e.g.,* John M. Broder, "Asia Pacific Talks Vow Tough Action on Economic Crisis", *The New York Times*, 11/26/97, at A1; Timothy Lane et al., IMF-Supported Programs in Indonesia, Korea, and Thailand: A Preliminary Assessment, pp. 72-3 (International Monetary Fund, Occasional Paper No. 178, 1999).

[4] Various country codes are available at European Corporate Governance Institute web site. *See* Index of Codes, European Corporate Governance Institute, http://www.ecgi.org/codes/all_codes.php (last visited November 11, 2016).

sought, among other things, to improve the corporate governance practices of the companies they cover.[5]  In turn, Delaware courts over the last 25 years have devoted a great deal of attention to reshaping and highlighting the governance content of Delaware corporate law.[6]

Most of these efforts are built on the premise that a "better" corporate governance structure will leads to greater firm value.  However, nagging concerns remain as to whether this is in fact so.[7]  These concerns suggest two central questions: which governance provisions can actually improve firm performance, and under what circumstances?

A large academic literature in law and finance has arisen that seeks to test empirically the link between certain corporate governance attributes and firm value.[8] One genre in particular – the index study – has suggested a clear positive relationship between the two.  In each of these studies, the author posits a list of corporate governance attributes that she believes help the firm create value.[9]  For each attribute, a firm is awarded a score depending on whether or not the firm has the attribute.  A firm's score with respect to each attribute is summed to obtain its overall

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[5]  Sarbanes-Oxley, for example, aims to improve auditor  , *see* 15 U.S. C. §§ 201-209 (2012); promote the independence of audit committees of listed corporations, *see id*. § 78j-1; and increase corporate managers' responsibility for financial disclosures, *see id.* § 7241.  Dodd-Frank implemented a host of governing reforms as well, focusing in particular on executive compensation structures. *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§ 951-957, 124 Stat. 1376, 1899-1907

[6] *See, e.g.*, Jack B. Jacobs, *Fifty Years of Corporate Law Evolution: A Delaware Judge's Retrospective*, 5 HARV. BUS. L. REV. 141 (2015).

[7] For example, empirical studies generally do not show that independent directors, the centerpiece of the post-1970s corporate governance reforms, are associated with higher firm value. See, e.g., Sanjai Baghat & Bernard Black, The Uncertain Relationship between Board Composition and Firm Performance, 54 Bus. Law. 921 (1999().

[8] This literature is discussed in Part I and IV *infra*.  As an example of the subject's attraction, over the years 1995 through August 29, 2013, more than a quarter of all articles published by the Journal of Financial Economics were related to corporate governance. Out of a total of 1,533 articles, 414 (27 percent) dealt with corporate governance (authors' calculation).

[9] The two most prominent indices are the G index and the E index. The G index was originally designed for use in the study reported in Paul Gompers et al., *Corporate Governance and Equity Prices*, 118 Q.J. ECON. 107 (2003). The E index was originally designed for use in the study reported in Lucian Bebchuk, Alma Cohen & Allen Ferrell, *What Matters in Corporate Governance*, 22 REV. FIN. STUD. 783 (2009).  These studies are discussed in more detail in Part I *infra*.

corporate governance rating.  These studies show a statistically and economically significant positive relationship between firms with governance structures that get favorable total scores and their Tobin's Qs, a very widely used measure of firm value.

Some scholars have challenged these index studies, arguing that there is no sensible story to explain how many of the governance attributes could in fact affect firm value.[10]  For example, a firm not currently having a poison pill takeover defense in place is scored as a positive attribute in the index studies.  However, a pill can be adopted quickly and easily when management feels the need.  Some index skeptics then argue that the absence of a pill in advance of an actual immediate takeover threat has no consequence for firm value because one can be adopted when needed.[11] These skeptics make valid points.  In essence, though, they are putting forth a theory as to why the index studies *shouldn't* yield empirical results, but no theory as to why they nevertheless do.  More recent studies using ever more sophisticated econometrics show that, contrary to the index skeptics, certain defensive governance attributes such as having a pill in place result over time in fewer takeovers.  But these studies' authors stress that their results are "atheoretic": no hypotheses are offered to explain the link between these governance attributes and shareholders receiving fewer premium offers.[12]

Our central thesis is that corporate governance is more complicated, and its effects more contingent, than the governance theories used to construct these indices.  This point is largely

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[10] See, e.g., Emiliano Catan & Marcel Kahan, *The Law and Finance of Antitakeover Statutes*, 68 STAN. L. REV. 629 (2016); Michael Klausner, *Fact and Fiction in Corporate Law and Governance*, 65 STAN. L. REV. 1325 (2013); David Larcker, P. Reiss & Y Xiao, *Corporate Governance Data and Measures Revisited* (working paper 2015), available at http://ssrn.com/ abstract=2694802.

[11] John C. Coates, *Takeover Defenses in the Shadow of the Pill: A Critique of the Scientific Evidence*; 79 TEX. L. REV. 271 (2000); Emiliano Catan, *The Insignificance of Clear-Day Poison Pills* (working paper), available at http://ssrn.com/abstract=2836223.

[12] Jonathan M. Karpoff, Robert Schonlau & Eric Wehrly, *Which Antitakeover Provisions Matter* (working paper March 14, 2018), available at http://ssrn.com/abstract=3142195.

missed by the debate to date.[13]  The existing index studies, for example, only measure the

average impact of a set of attributes on firm value across a large number of corporations over a

considerable period of time.  Because the existing studies do not distinguish between different

times and circumstances, they observe only an average, and most firms are not average. That a

more complicated story may be at work should not be surprising.  Careful observers of the

corporate world would find it highly likely that, rather than a single link between the specified

corporate governance provisions and performance, a range of linkages are possible whose

direction and intensity depend centrally on the particular context in which a firm is operating.

From this perspective, the impact of governance on firm performance is second order except

when circumstances make it important.

This Article is a first contribution to a next stage of corporate governance research: a more

focused inquiry into the particular circumstances in which the observed empirical link between

governance and performance can be both supported in theory and demonstrated empirically.[14]

Specifically, we test the hypothesis that corporate governance attributes can serve as credible

signals of the quality of a firm's management and that these signals matter more in situations

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[13] One exception is Black et.al., *What Matters and for Which Firms for Corporate Governance in Emerging Markets?: Evidence from Brazil (and other BRIK Countries)*, 18 J. CORP. FIN. 934 (2012), where the authors argue that the impact of governance elements is context specific, and so can be expected to have different results in different countries.  This is a particularized version of the more general critique that tests of the impact of governance elements too often lack an institutional grounding for the tested hypotheses.

[14] Martijn Cremers and Allen Ferrell in a fashion precede us in this endeavor by identifying a temporal factor affecting the relationship between a good index score and firm value.  They demonstrate a difference between the period before and after the Delaware Supreme Court's decision in *Moran v. Household International*, 500 A.2d 1346 (Del. 1985), in which the Delaware Supreme Court found the adoption of a poison pill as a defense against a hostile takeover attempt to be a valid exercise of board authority. Martijn Cremers & Allen Ferrell, *Thirty Years of Shareholder Rights and Firm Value*, 69 J. FIN. 1167 (2014).  However, the Cremers and Ferrell study also presents institutional problems.  The form of poison pill involved in the *Household* case was a generally ineffective flip over-type pill.  Only some time later was the current more effective flip in pill developed.  *See* RONALD J. GILSON & BERNARD BLACK, THE LAW AND FINANCE OF CORPORATE ACQUISITIONS 740-51 (2d. ed. 1995); *Air Products and Chemicals, Inc. v. Airgas, Inc*., 16 A.3d. 48 (Del. Ch. 2011).

with significant information asymmetry concerning managerial quality. We examine this contextual hypothesis two ways: comparing *time periods* in which the reliability of other information concerning managerial quality is very different, and comparing *types of firms* that differ in these regards. With regard to time periods, we take advantage of a natural experiment that arose when uncertainty concerning management quality was widely reported to be especially high: the 2000-2002 period, when a series of high profile accounting scandals shook the financial world. With regard to types of firms, we compare firms engaging in substantial R&D, which other studies suggest are harder for the market to evaluate,[15] with firms that do not. We report evidence supporting our management quality-based signaling hypothesis in each of these two ways.

This empirical demonstration of our signaling hypothesis is significant. To start, the result is important in itself. It is useful to better understand the reasons for the observed relationship between corporate governance and measures of firm value; our empirical results support an explanation not previously identified in the literature. Moreover, reducing information asymmetry between the market and corporate insiders makes share prices more accurate, which enhances the efficiency of our overall economy. Even more important, however, is the contribution to the law and finance literature concerning corporate governance: the demonstration that the impact of governance is in important respects contextual, depending on the particular circumstances of the time involved and the particular characteristics of the firms

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[15] *See*, e.g., David Aboody & Baruch Lev, *Information Asymmetry, R&D and Insider Gains*, 55 J. FIN. 2747 (2000); Bronwyn Hall & Joshua Lerner, *The Financing of R&D and Innovation* in HANDBOOK OF THE ECONOMICS OF INNOVATION (Bronwyn Hall & Nathan Rosenberg, eds., 2010), volume 1; Pierre Barbaroux, *From Market Failures to Market Opportunities: Managing Innovation Under Information Asymmetry*, 3 J. INNOVATION & ENTREPRENEURSHIP (2014) available at https://link.springer.com/article/10.1186/2192-5372-3-5

involved. Thus our results suggest not just the familiar (though neither well-framed nor well tested) claim that one size of governance does not fit all companies,[16] but also suggest that what size is right for a particular company can differ over time.

Our analysis proceeds as follows. Part I describes the corporate governance index studies that report empirical evidence that firms having better-rated governance attributes have better economic performance. We describe how these indices are created, and how the typical gauge of the firm's success at creating value, Tobin's Q, is measured.

Part II sets outs our signaling hypothesis. It discusses three non-mutually-exclusive theories for explaining the observed relationship between index-rated corporate governance attributes and measures of firm value. The first two theories focus on how better rated corporate governance attributes lead to firms being better managed: first, by filtering out bad managers, and second, by better motivating and informing managers regardless of their ability level. The third theory, in contrast, looks at a causal link running the other way: how better firm managers steer their firms toward having better rated governance structures and poor managers do the opposite. This third theory suggests that a firm's corporate governance is a signal concerning the real quality of its managers, a characteristic that is difficult to observe directly. Specifically, we posit that in periods of greater information asymmetry concerning the quality of a firm's management (the context), or where a firm's particular characteristics lead to more than average levels of such asymmetry, the firm's corporate governance attributes will serve as a stronger signal of management quality.

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[16] *See, e.g.*, Martin Lipton & Paul K. Rowe, *The Inconvenient Truth About Corporate Governance: Some Thoughts on Vice-Chancellor Strine's Essay*, 33 J. CORP. L. 64, 68 (2007) (arguing against imposing a one-size-fits all governance methodology upon corporate managers).

Part III reports our empirical tests of this signaling hypothesis. It first describes the Millennial accounting scandals – Enron, WorldCom and others – and the capital market's reaction to them. We then then set forth our two central empirical findings. The first is that a change in a company's governance index score during the period of the accounting scandals resulted in a very much larger change in Tobin's Q – the measure of firm value – than did score changes in the years both preceding and following the accounting scandal period. We take advantage of differences between ordinary least squares (OLS) and fixed effects regression methodologies to show that it is the signaling link between a firm's governance rating and its Tobin's Q that is responsible for this much bigger change in Q during the scandal period, rather than the two alternative explanations: corporate governance serving to filter out bad managers or to better motivate and inform managers of any quality. Put differently, as other kinds of information concerning management quality, like accounting performance, came to be viewed as less reliable during the scandal period, the signal that we study -- a firm's governance structure – took on greater importance and hence had greater impact on the firm's market valuation.

Our second central finding is that a difference in a company's governance index score has on average a bigger impact on the firm's Tobin Q if it is engaging in substantial R&D activity than if it is not. Substantial R&D independently makes management quality more difficult to observe directly and heightens the importance of a signal of quality.

Part IV explores the larger lessons of these results for the study of corporate governance. We explain how the results illustrate our central point – that corporate governance is in important respects contextual, its influence on firm performance depending on the particular circumstances of the time involved and the particular characteristics of the firm. This central point helps both to

illuminate the index study debate and to enrich our understanding of corporate governance more generally.

Part V concludes.

# I. The Index Studies

Index studies, which score firms based on whether they have particular corporate governance attributes and then test to see whether better rated firms create more value for investor, play a prominent role in the empirical corporate governance literature. As already noted, index studies have shown positive results but have also been the subject of some cogent criticism – that in operation, the attributes that make up the index cannot in practice affect firm performance. We will save discussion of the criticism until Part IV, but it is important at the outset to explain how the index studies work and that, whatever their faults, an important reason for their creation is the endogeneity problems that so often plague event studies of individual governance attributes, whereby it is difficult to tell whether the change in a firm's value that accompanies adoption of the particular attribute is due to whatever factor prompted adoption of the attribute or is due to the attribute change itself.

*A. Governance Index Construction*

The two most commonly used corporate governance indices are the "G index" and the "E index,"[17] on which we will focus here. Each index's authors posit a list of corporate governance attributes that they believe affect the quality of corporate decision making. For example, both the G and E indices include on their attribute lists whether a company has a board whose members are all elected annually or has staggered board. The reasoning is that a poorly

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[17]*See* Gompers et al, *supra* note 9; Bebchuk et al, *supra* note 9.

run firm can be an attractive takeover target because an acquirer can make the firm more valuable by substituting better management. A staggered board, however, reduces the likelihood of management being replaced because, when combined with a poison pill, a staggered board results in a hostile bidder needing to run two annual proxy contests before it can take control of the firm, a highly unattractive prospect.[18] Thus, if a poorly run firm has a staggered board, its incumbent managers have less incentive to improve and there is less chance of a takeover by a hostile bidder who will install better managers. In essence, including the absence of a staggered board on the list of positive attributes reflects an index author's belief that exposing a company's management to capital market discipline improves its governance.

The G index contains 24 such governance attributes. The E index is composed of only six of the G index's attributes, each of which is said to relate to the company's ability to protect itself from a hostile control change and hence to reduce the capital market's ability to discipline poor performance.[19]

For each attribute on an index's list, a firm is assigned a score of zero if it has the positive attribute and one if it does not. A firm's score with respect to each attribute composing the index is summed to obtain its overall corporate governance rating. The lower the total, the more favorable is the rating. As this zero-one scoring indicates, neither index attempts to measure the

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[18] *Air Prods. & Chems, Inc. v. Airgas, Inc.*, 16 A.3d 48, 114-15 (Del. Ch. 2011), illustrates the barriers presented by the combination of a staggered board and a poison pill. In *Air Products,* Chancellor Chandler remarked that the record reflected that no hostile bidder had ever continued its offer for two successive proxy fights.
 *See* Lucian Bebchuk, John C. Coates IV & Guhan Subramanian, *The Powerful Antitakeover Effect of Staggered Boards*, 55 STAN. L. REV. 885 (2002) (explaining the operation of a staggered board of directors and that board structure's interaction with a poison pill).
[19] The six attributes are limits on shareholder amendments to the bylaws, staggered boards, supermajority requirements for shareholder approval of charter amendments, supermajority majority requirements for shareholder approval of mergers, poison pills and golden parachutes. Bebchuk, Cohen & Ferrell, *supra* note 9.

relative importance of, or interaction among, individual attributes.  Nor does either index reflect

an assessment of whether a particular attribute may matter more or less in different contexts.

*B. Tobin's Q as a Measure of Firm Value Creation*

Investors give managers initial resources to work with.  Cash flow in excess of what is

returned to investors in the form of dividends, stock buybacks and debt service provides the firm

additional resources.  Managers use these resources to make real investments.  A company's

expected future cash flow depends on the quality of the real investment choices that the

managers make. The greater these future expected cash flows (discounted present value), the

more value its managers have created with the resources that have been given to them.

Tobin's Q is a measure of how well managers have done in this regard.  Simplifying slightly,

Tobin's Q is the ratio of the firm's stock market capitalization to the book value of its assets.[20]

With respect to the numerator, the higher the market expects a firm's discounted future cash

flows to be, the greater its stock market valuation.  With respect to the  denominator, the

historical cost of acquiring the firm's real assets reflects what investors provided the firm in the

form of equity, debt and retained cash flow, and is the starting point for the calculation of the

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[20] More precisely, to account for resources obtained by debt and retained earnings financing, the formula for Q typically used is the market value of a firm's equity minus the book value of the equity plus the market value of the firm's debt all divided by the book value of its assets. *See* Clifford W. Smith & Ross L. Watts, *The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies*, 32 J. FIN. ECON. 263 (1992).  We follow that practice here.  Some commentators have recently criticized the widespread use of Tobin's Q measured in this fashion, advocating instead the use of "total Q," which takes account of intangible assets not picked up by the traditional measure of Q.  Robert P. Bartlett & Frank Partnoy, *The Misuse of Tobin's Q* available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3118020.  We have chosen to use the traditional measure, however, to maintain comparability with the earlier studies.  We believe we take adequate account of the effect of intangibles on our results because R&D is the primary source of intangibles and we include in our regressions whether or not a firm has significant R&D as a control variable.  In doing so, we confirm the findings of the index studies that there is a highly statistically significant association between firm' index ratings and their Tobin's Qs.

firm's book value.  Thus the ratio of the two is a measure of the capacity of a firm's managers to create value from the resources given to them.[21]

*C. Testing the Relationship between G and E Index Ratings and Tobin's Q*

The claimed link between corporate performance and the G and E indices has been empirically tested as follows.  First, the index score of a large number of U.S. firms are calculated over a significant number of years, the length of the total period typically determined simply by the number of years for which data is available.  Similarly, Tobin's Q is determined for each of these firms for each of these years.  This creates a few thousand firm-year observations.  Econometric techniques are then used to determine whether, based on these observations, firms with better governance scores created more value with the resources given them by investors than firms with poorer scores.  The G and E index studies each show a strong, statistically significant relationship between a favorable governance rating and a firm's value

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[21] It should be noted that maximizing Tobin's Q is not equivalent to maximizing value creation, i.e. maximizing the value of the expected cash flow from the firm's real investment projects over the cost of implementing these projects. Ex ante, a value maximizing firm must identify value creating real investment projects and then should implement every real investment project proposal that is expected to add more to the value of the firm than the cost of assets needed implement it.  If, however, a firm with an already high Tobin's Q took as its goal the maximization of Tobin's Q, it would not proceed with a proposed project where the ratio of the value it adds to the firm over the cost of the assets to implement it is lower than the firm's current Q even where this proposed project's ratio is positive, i.e. where the addition to value exceeds the cost of the needed resources.  Tobin's Q is still, however, a reasonable way of looking for a historical period of time to see which firms on average did better at creating value and which did worse.  It is widely used in this fashion because it is hard to create a test that identifies both the capacity of management to identify   the greatest value creating projects and the willingness to go just to the margin, i.e., to implement all of the expected value increasing projects and none of the expected value decreasing projects.  Growth in share price is not a reliable measure, for example, because the initial price already incorporates the market's then current assessment of management's capacity find value creating projects and willingness to implement them just up to the margin.  Where the question under study is the effect of a particular corporate governance provision on firm generation of value, something amenable to testing by an event study, endogeneity issues often arise.  In other words, did the adoption of the provision result in a change in value or did some other circumstance that affects value induce the adoption of the provision.

creation as measured by Tobin's Q.[22]  These findings are confirmed by our own results[23] and repeatedly by other scholars.[24]

# II. The Signaling Hypothesis: Theory

Our signaling hypothesis is that a change in a firm's governance structure as rated by the G and E indices is a credible signal of the quality of its managers and that this signal is stronger in situations where there is greater information asymmetry between insiders and the market concerning management quality.  In this part, we explore the reasoning behind our hypothesis. Then in Part III we test this hypothesis empirically.

*A. Three Theories Explaining the Observed Relationship Between a Favorable Index Rating and Value Creation*

We start this discussion of the reasoning behind the hypothesis by identifying  three possible (and clearly not mutually exclusive) theories as to the observed relationship between a firm's governance rating and its Tobin's Q.  One is that a structure with a better rating leads over time to a firm having higher quality managers than if it had an inferior rating: good governance serves to select better quality managers.  A second is that managers, regardless of their skills, are better motivated and informed when operating under a more highly rated governance structure. The first theory causes better managers to be chosen; the second makes those chosen perform better given their skill level.  The third theory reverses the direction of causation: a rating-altering change in a firm's governance structure can be a credible signal of the quality of its managers.  We think that all three theories help explain the relationship between governance

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[22] *See* Gompers et al, *supra* note 9; Bebchuk et al, *supra* note 9.
[23] *See* Part III.E *infra.*
[24] Karpoff et. al, *supra* note 12, reviews this literature.

ratings and Tobin's Q, but, for reasons discussed below, the signal's impact will be particularly strong when there is greater information asymmetry concerning management quality

*1. Filtering for higher quality managers.* The first explanation is that over time a highly-rated governance structure does a better job at filtering out bad managers through monitoring and discipline than does a poorly rated structure. Better managers create more value because they make better decisions concerning both new investment projects and how to utilize the firm's existing productive capacity. Thus, they create more shareholder value, which will be reflected in a higher Tobin's Q.[25]

*2. Better incentivized and informed managers.* A second explanation for the governance structure-performance link is that a highly-rated governance structure may provide greater incentives for a firm's CEO and other managers to make the right decisions. That is, whatever the quality of a firm's managers, a highly-rated governance structure causes managers to make better decisions. For example, a governance structure that makes a firm more open to hostile takeovers provides managers greater incentive to perform well because the alternative -- performing poorly -- is more likely to result in their losing their jobs.

A highly-rated governance structure also may provide information and voice to others, for example independent directors or activist shareholders, who can improve the quality of firm decision-making through, respectively, monitoring of managements' decision-making or

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[25] From this perspective, the six entrenchment attributes that compose the E index are a last line of defense. Really good governance acts internally through devices such as a requirement that a majority of the board be independent, resulting in bad managers being weeded out before outsiders can observe the opportunity for improvement. These six governance attributes that facilitate capital market policing of management at a later date are a backstop if the other devices fail.

providing directors information that otherwise might not be available to them.[26]  To illustrate, the recent phenomenon of activist investors providing companies with a detailed alternative strategic plan, often set out in a (very) large PowerPoint deck, may give boards, managers and the market information that they otherwise would not have because of the cost of undertaking a detailed strategic review.  Fewer structural barriers to a tender offer or proxy contest, which translate into a better governance rating under the G and E indices, provide an incentive for activists to make the effort.  Operating decisions based on better information, and the imposition of discipline on the decision-making process, should result in better decisions that lead to greater shareholder value by more and less talented managers alike.

*3. Signaling management quality.* Each of the first two explanations—more effectively filtering out bad managers and better motivating, monitoring and informing managers of all ability levels—directly affects the quality of firm decision-making; it is this direct increase in decision quality that results in the higher Tobin's Q.  The third possible explanation for the observed relationship between good corporate governance index scores and high Tobin's Qs is the signaling theory that is at the center of our analysis.  As previously described, a signaling theory involves a very different mechanism than the first two.  Instead of a highly-rated governance structure leading to higher quality managers as in the first theory, or improving the performance of managers of all ability levels as in the second theory, the direction of causation in the third theory is reversed.  Under this theory, high quality managers choose a highly-rated governance structure for their firm because doing so shows that they do not fear the structure's

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[26] *See* Ronald J. Gilson & Jeffrey Gordon, *The Agency Costs of Agency Capitalism: Activist Investors and the Revaluation of Governance Rights*, 113 COLUM. L. REV.  883 (2013); Ronald J. Gilson & Jeffrey Gordon, *Agency Capitalism: Further Implications of Equity Intermediation*, *in* RESEARCH HANDBOOK ON SHAREHOLDER POWER (J. Hill & R. Thomas eds., 2015).

lower level of protection from capital market discipline and other monitoring as much as would low quality managers. The governance structure chosen, which is observable by the market, conveys information about management quality that is not otherwise observable.

*B. Exploring the Signaling Hypothesis.*

Our signaling hypothesis is that a change in a firm's governance structure is a credible signal of the quality of its managers and that this signal is stronger in periods when there is a greater asymmetry of information concerning management quality between the firm's insiders and the market,. This hypothesis rests on the fact that managers play a major role in shaping the governance structures to which they are subject because changes in these structures usually come at their initiative. Under this hypothesis, their choice of a governance structure provides the market with credible information about a value-relevant, but not fully observable, firm characteristic: management quality.

*1. The information asymmetry between the market and corporate insiders concerning management quality.* To see the value of a credible signal concerning management quality, consider what other characteristics are available to help the market assess management quality. Managers' education and experience are observable; however, they are noisy predictors of future performance. Past firm performance is also observable; however, it too is a noisy measure of management quality. This is because a cacophony of other elements combine with management quality to affect firm performance in any given year. These include external factors such as overall industry demand, the success of the firm's competitors and, importantly, simple luck. While on average good past performance indicates high quality management, it does not

necessarily mean this in any particular case, especially in the short run when, as noted, good luck and good judgment can combine in different proportions that are difficult to observe.

*2. How corporate governance can act as a credible signal to reduce information asymmetry.* A firm's managers have a much better sense of their own quality than does the market. High quality managers would like to communicate this private information to the market. Doing so directly – saying in essence "we are high quality" -- is not very credible, however. Talk is cheap and therefore it is easy for the low quality managers to say the same thing. Managers (like the rest of us) do not often disclaim responsibility for good performance or accept it for bad performance.

What is needed is some indirect action – a signal -- that would be more costly for a low quality manager to undertake than a high quality one. The fact that the signal is more costly for a low quality manager is what makes it credible: because of the higher cost, low quality managers are less likely to send the signal.[27]

A firm's governance structure, we argue, constitutes such a signal. The market knows that managers play a major role in shaping the governance structure to which they are subject. It also knows that when a bad manager is subject to a governance structure that exposes her to greater capital market discipline and other monitoring, she faces a greater risk of losing her job than does a good manager subject to the same governance structure. Therefore, it would be more costly for a bad manager to choose such a structure than for a good manager to do so. The G and

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[27] The seminal article concerning signaling theory is Michael Spence, *Job Market Signaling*, 87 Q.J. ECON. 355 (1973). It was first applied in the context of dealing with adverse selection in capital markets in Stephen A. Ross, *Disclosure Regulation in Financial Markets: Implications of Modern Finance Theory and Signaling Theory*, *in* ISSUES IN FINANCIAL REGULATION 177 (Franklin R. Edwards ed., 1979). *See also* John G. Riley, *Silver Signals: Twenty-Five Years of Screening and Signals*, 39 J. ECON. LIT. 432, 433-36, 467-73 (providing background on signaling theory and its applications in finance).

E indices assign better governance ratings to companies with such governance structures. Thus, our theory goes, a change to a more highly rated governance structure is a positive signal that the managers believe they are of good quality. When the market sees a firm making such a change, it infers that the firm is more likely to have good managers because bad managers would be less likely to expose themselves to an increased job loss risk in order to falsely signal their quality. The credible signal arising from a change to a more favorably rated governance structure is positive information that results in a higher stock price, which in turn results in a higher Tobin's Q.

It such be noted that the signal works both ways. Firm managers who are doing an especially poor job are also likely to know more about how poorly they are doing than the market does. Fearing, for example, that potential acquirers or activist hedge funds will soon figure out what a poor job they are doing, managers make changes in their governance structures that provide more protection against a potential takeover and so worsen their index scores. In this situation, the change in governance structure sends a negative signal concerning management quality to the market. Firms with better managers will be less inclined to make such a change because they are in less need of the protection. In other words, the better managers are not inclined to "jam" the negative signal associated with a lower scoring governance structure.

This kind of signaling theory has important antecedents in the corporate governance and finance literature concerning capital structure decisions. The logic is that an increase in debt increases the risk of bankruptcy. Bankruptcy, in turn, is costly to managers; the value of their human capital, which is not diversified, is reduced if the company fails. For any given level of

debt, bankruptcy is less likely for good managers than bad managers, so when managers increase the amount of debt in their company's capital structure, they credibly signal their own quality: the signal would be too costly to bad managers for it to be in their interest to fake.[28]

*3. The noisiness of the signal and relative reliability of other information.* Although a change in a firm's corporate governance structure can serve as a signal of managerial quality, it too is a noisy information. In part, this is because many other factors also play a role in determining a particular firm's governance structure. Moreover, as the index study critics argue, some attributes scored in the indices may in fact have no impact on firm performance. If so, the fact that one firm, because of its scores with respect to these attributes, has a better rating than another firm would not mean that the first firm is any better at value creation, whereas if the first firm had a better rating due to differences in the attributes that do have impact, the rating would properly suggest a better capacity at value creation.

These sources of noise, however, do not entirely eliminate the information content of governance structures with different ratings. To combat these problems, scholars use large samples, where other effects tend to cancel each other out, and control variables. As discussed in Part I, repeated tests show there is a relation between a firm's index rating and measures of its value creation, a relationship confirmed by our own findings.[29] Hence differently rated structures still have value as signals, even if the signal to noise ratio is low. Our hypothesis is not that the differently scored governance structures result in a separating equilibrium and so making fully observable the differences in quality between competing management teams, only

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[28] *See* Bengt Holmstrom & Jean Tirole, *The Theory of the Firm*, *in* 1 HANDBOOK OF INDUSTRIAL ORGANIZATION 61, 78-86 (Richard L. Schmalansee & Robert Willig eds.1987).
[29] *See* Part III.E *infra.*

that they provide the market credible but otherwise unavailable information. For a non-directly-observable feature such as managerial quality, the less reliable the other information concerning the feature other than the signal is, the greater the value of the information contained in the signal. So we posit that the increased information asymmetry concerning management quality associated with the Millennial accounting scandals made the signal associated with a firm's governance structure more valuable. This leads us to expect that during the period of the scandals, which as we will see lowered the market's confidence in companies' financial statements, the quality signal sent though changes in governance structure would have more of an effect on a firm's share price and hence its Tobin's Q than during periods when accounting information is not viewed skeptically. Despite the noise in the governance signal during normal times, when the noise associated with other signals increases, the credibility of the governance signal goes up. This is confirmed by our findings reported in Part III. Similarly, we would expect that the quality signal would be of more value with types of firms where the information asymmetry concerning the quality of management is greater as a general matter, for example firms with high R & D spending. We find evidence of this as well, both supporting the role of governance structure as a credible signal when information asymmetry is high and the firm's activities create high asymmetry.

As is by now apparent, the power of a signal is not simply the signal's credibility in the abstract – its own signal to noise ratio. In our sample, the most common action that changed a company's index score during the scandal period was the adoption of a "clear day" poison pill – one that is not a response to an immediate threat of a hostile tender offer or other control change. This negative signal of management quality – negative because why else would managers chose

to adopt a pill in the absence of a threat of a hostile offer or an activist investor initiating a proxy fight – is not in fact very noisy. High managers would have no incentive to "jam" the signal because a high quality manager would not take governance action that suggests that they are less talented than can otherwise be observed.

Our claim that the credibility and therefore the impact of a governance signal depends centrally on context finds support in recent efforts to assess the value of a potential signal relating to another aspect of corporate performance. Amiraslani, Lins, Servaes and Tamayo sought to test the link between a company's trustworthiness – a form of management quality – and its access to the bond market, where the company's trustworthiness was measured by a signal: its environmental, social and governance (ESG") expenditures ("corporate social responsibility" activities) and bond market access was measured by secondary market bond spreads.[30] Over their full sample period of 2005 through 2013, the authors find no statistically significant relation between corporate bond spreads and CSR. This is hardly surprising; the literature is clear that the various ESG measures in use are, put kindly, noisy.[31]

The results are strikingly different, however, for the August 2008 through March 2009 sub-period within the full sample period, the months constituting the height of the financial crisis. The authors report that their "results are unambiguous: during the [financial] crisis of trust, secondary market spreads of high CSR firms did not rise as much as the spreads of low-CSR

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[30] Hani Amiraslani, Karl V. Lins, Henri Servaes & Ane Tamayo, *The Bond Market Benefits of Corporate Social Capital*, ECGI Finance Working Paper N. 535/2017, available at https://ssrn.com/abstract=2978794.

[31] For example, Casey O'Connor & Sarah Labowitz, *Putting the "S" in ESG: Measuring Human Rights Performance for Investors* (working paper, Stern School of Business, New York University) (2017), demonstrate the difficulty in constructing a reliable rating system, focusing on the social component of ESG, assessing 12 existing measurement techniques. Given the range of factors necessary to construct a rating structure, and the fact that different investors will weight ESG different factors differently, it is not surprising that that there are many ratings systems. A recent Department of Labor Study addressed to pension funds reviews the literature. Department of Labor, *Environmental, Social and Governance (ESG) Investment Tools: A Review of the Current Field* (Dec. 2017).

firms." They "conclude that corporate social capital [as measured by CSR] affects bond contracting when it matters the most: when there is a crisis of trust and bondholders seek reassurance that they will not be expropriated." In other words, there was a great increase in interest concerning companies' trustworthiness because the crisis created an opportunity for untrustworthy firms to disadvantage their lenders. Under these circumstances, information concerning the trustworthiness of firms became sufficiently more valuable that ESG scores, *despite their noisiness*, became reflected in the market in a statistically significant way.

This pattern matches our results with respect to the Millennium accounting crisis: corporate governance changes operate as a powerful signal of management quality in just those circumstances when uncertainty over management quality is highest and so the value relevance of additional information conveyed by governance changes outweighs its noise, but has significantly less impact in the periods before and after the crisis. This does not mean that the signal becomes less noisy; rather, we posit that the value of the signal goes up because the increased information asymmetry the market confronts concerning highly value-relevant information goes up enough to offset the noise.

*4. The signal value of a change in governance structure.* Recognizing how the value of the governance signal, though noisy, went up during the period of increased information asymmetry accompanying the Millenium accounting scandals helps elucidate one other factor in our story: we would expect that a *change* in governance structure resulting in a particular rating represents a more valuable signal concerning managerial quality than is a continuation from prior periods of a structure with that same rating. In contrast to the other two theories linking index scores with Tobin's Q – filtering and incentives/informedness – the signaling theory does not concern how

the governance structure affects the value creation capacity of the firm. Rather, in this third theory, the value creation capacity of the firm is taken as given. The problem is that this value creation capacity is not fully understood by the market. One not-fully-understood factor affecting the firm's value creation is the quality of the firm's management. The firm's governance structure provides information concerning this factor.

The quality of a firm's management can change from time to time, sometimes substantially. Turnover in the personnel constituting management is one potential source of such quality change. But a change in quality can happen as well without such turnover. For example, the perspectives of the incumbent personal can become outmoded, and this can sometimes happen quite rapidly in a dynamic economy in which the management skills necessary to success can be subject to sudden dramatic shifts. Most notably, Clayton Christensen's influential explanation for sharp disruptions in the success of industry leaders highlights just this point.[32] In its current popular sense, the term disruption reflects the capacity of a new idea, most familiarly deployed by a new company, to fundamentally change the structure of a product market to the advantage of the newcomer over the existing leaders in that market. Managers whose skills fit the prior competitive environment do not fit the new one; effective management quality drops without either a change in management or a change in the current management's skills. Indeed, where a new competency is required, existing management's tried and true experience actually may be a

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[32] CLAYTON CHRISTENSEN, THE INNOVATOR'S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL (1997).

disadvantage; they must first unlearn the old ways of thinking and doing things before they can learn the new way.[33]

Because managerial quality is not directly observable, there will, at any point in time, be a high level of information asymmetry as to whether such a quality change has occurred recently and if so the extent of the change. Over time, this asymmetry is reduced as performance results accumulate and become more reliable indicators of whether, at that earlier point, there in fact was a change in quality.

Against this background, it is apparent why a governance structure change resulting in an altered index rating represents a more valuable signal concerning the current quality of management than is the continuation of a governance structure that receives this same rating. Suppose that in a hypothetical Period 1 there is an index altering change in a firm's governance structure. The high level of information asymmetry concerning whether there has been a recent change in the firm's management quality gives value to the signal coming from the governance structure change. Still, this is a noisy signal. In other words, on average it suggests something about a change in managerial quality, but, in any individual case, there well may not have been such a change in quality. Over time, more information arrives as to whether this receding-into-the-past signal had correctly indicated a change in managerial quality during, or recently prior to, Period 1. Thus, in Period 2, the information asymmetry diminishes concerning whether a managerial quality change occurred during, or recently prior to, Period 1. In Period 3 it

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[33] Rebecca M. Henderson, *The Innovator's Dilemma as a Problem of Organizational Competence*, 23 J. PROD. INNOV. MNGMNT. 5 (2006), provides a useful survey of alternative mechanisms that may give rise to a reduction in the quality of management quality without a change in management or of management's existing skills. For a description of the difficulty that the main line electronics firms had in recognizing the potential of semiconductors, which became the heart of the whole information technology revolution, see MERRITT B. FOX, FINANCE AND INDUSTRIAL PERFORMANCE IN A DYNAMIC ECONOMY: THEORY, PRACTICE AND POLICY (1987).

diminishes further and so on. Generalizing, a firm that is continuing its same governance structure during the current period is one that adopted this structure in some prior period, quite possibly many periods back. This means that the fact that a firm adopted a particular governance structure at some point in the past (i.e., a firm that is continuing its same governance structure during the current period) has less value in revealing to the market the quality of the firm's management today than a current-period change to this structure.

# III. Testing the Signaling Hypothesis

The three theories explaining the observed relationship between firms with more highly rated governance structures and Tobin's Q are not by their terms mutually exclusive. The existing studies that show this relationship, however, does not allow us to distinguish whether one, two or all three of the theories in fact are at work. Here we begin to sort out the question of which relationships are operative by showing that the third explanation: the hypothesis that good managers adopt governance changes that improve their index ratings as a positive signaling device and that poor managers adopt governance changes that lead to a worse rating because they are willing to bear the cost of a signal of poor quality. We show that, at least under the right circumstances, this hypothesis is consistent with powerful empirical results.

Our starting point is a time period when the market was unusually uncertain about the quality of the managements of individual U.S. firms and so new information concerning management quality was especially value relevant. According to our hypotheses, if firms that changed their governance index ratings during such a period experienced larger changes in Tobin's Q than did firms that made similar changes in other years, signaling was likely to have

been at work.  The idea is straightforward: if an action has a bigger effect on stock prices and hence Tobin's Q in periods when the market is less informed, the action must be something that provides information to the market.  As documented below, the three-year period 2000-2002 was such a period. During this period, the United States was rocked by a series of corporate accounting scandals affecting large respected firms.  These scandals called into question the reliability of the earnings reports of all the nation's public companies and hence of the market's assessments of management quality of these firms.  The market reasonably wondered whether there were more shoes still to drop, revealing as low quality managers previously thought to be capable.

We report two key findings with respect to this period. First, the impact on Tobin's Q of firms that *changed* their structures in 2000-2002 was *substantially greater* than for firms that changed their structures in the twelve years surrounding this period.  Second, the overall relation between firm index ratings and Tobin's Q, measured across all firms (which includes the vast majority that did not change their governance structures), is *not* significantly different during 2000-2002 than in the other twelve years.  This second finding suggests that the market did not think that a governance structure with a higher rating was any more effective at *creating* extra value during the scandal period than in normal times, or at least not sufficiently more effective to generate a statistically significant difference.  In other words, the second finding shows there is no significant evidence that either of the first two theories explaining the positive relation between good governance ratings and Tobin's Q -- filtering out bad managers or better incentivizing and informing managers generally – was working differently in the 2000-2002 period than in other years.

This leaves the third explanation, signaling, to explain why governance changes in the 2000-2002 period had a greater impact on Tobin's Q than in the surrounding 12 years. If signaling does in part explain the relationship between governance ratings and firm value, one would expect to see a bigger effect when there is more doubt about the subject of the signal— managerial quality. This is exactly what we see.[34]

## A. *The Millennial Accounting Fraud Scandals*

The 2000-2002 period was special in U.S. corporate history because of the unprecedented cascade of accounting frauds that were revealed. In the years immediately preceding these revelations, there appears to have been a buildup, unknown to the market, of undisclosed frauds. One possible reason for this buildup was a proliferation of short-time-horizon share price-based executive compensation packages, which created greater incentives for manipulating the numbers as well as for genuinely better performance. Another was an apparent decline over the preceding years in the effectiveness of the various gatekeepers such as accountants, rating agencies, investment banks and lawyers, who are supposed to help protect society against

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[34] This story can be subject to refinement, but the basic message remains unchanged. During the 2000-2002 period, the economy experienced three other significant events beyond the wave of accounting scandals: the Dot Com bust as reflected in the March 2001 NASDAQ market crash; the beginning of a recession in March 2001; and the September 11, 2001 World Trade Center terrorist attacks. These kinds of event driven pressure on a firm's business environment raise questions about existing strategies and generally disrupt business as usual. By increasing the choices confronting a company, such event should make the quality of management more important. *See* Edward G. Fox, Merritt B. Fox & Ronald J. Gilson, *Economic Crisis and the Integration of Law and Finance: The Impact of Volatility Spikes*, 116 COLUM. L. REV. 325, 344 (2016). If, as we would expect, management quality became more important to the market in 2001-2002, we would expect an accentuation of the effects of good ratings on Tobin's Q that are at the heart of the first two theories. Our second finding – that an absence of significant evidence that the overall relation between firm index ratings and Tobin's Q, measured across all firms is *not* significantly different during 2000-2002 than in the other twelve years – means that we do not have empirical support for that expectation. This could mean that our tests lack the power to detect the accentuation that we would expect, rather than that it did not occur. The important point is that tests with similar power are behind our first finding of a large increase in the impact on Tobin's Q from firms that *changed* structure when comparing 2000-2002 to the other twelve years. So, these other events in the economy and their effects on the workings of the first two theories cannot explain much of our first finding, which leaves the third theory – signaling – as the likely explanation.

fraud.[35] Warren Buffet is famously quoted as saying "[Y]ou only find out who is swimming naked when the tide goes out,"[36] and the recession that hit the country shortly after the beginning of the new millennia seems to have made observable a buildup of accounting fraud. Some of the most prominent and, at the time, respected corporations in the country, including Enron, WorldCom, Health South and Adelphia, were severely damaged or destroyed by senior management fraudulent behavior relating to material misstatements or omissions about firm performance in the company's financial statements. Each of these scandals warrants a brief history to show why they spread doubt across the rest of corporate America.[37]

*1. Enron.* Enron was the poster child for the phenomenon. In August 2000, Enron's stock Enron's stock peaked at nearly ninety dollars per share and the company had been listed as America's most innovative firm for five consecutive years.[38] The company had been repeatedly touted as having impressive management and among the best boards of directors.[39] In a year's time, following the revelation of massive fraud, Enron would enter Chapter 11 bankruptcy as the largest bankruptcy filing in American history.[40]

Perhaps most famously, Enron sponsored hundreds of special purpose entities ("SPEs") that it claimed insured it against the downside risks associated with many of the assets it acquired. In

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[35]*See* JOHN C. COFFEE, JR., GATEKEEPERS: THE PROFESSIONS AND CORPORATE GOVERNANCE (2006); Merritt B. Fox, *Gatekeeper Failures: Why Important, What to Do,* 106 MICH. L. REV. 1089 (2010).

[36] Letter to the Shareholders of Berkshire Hathaway Inc. 10 (Feb. 28, 2002), http://www.berkshirehathaway.com/letters/2001pdf.pdf [http://perma.cc/QUJ7-X8PG].

[37] For an extensive list of companies faced with accounting scandals from 2001-2002, including Xerox, Merck, Tyco, and Bristol-Myers Squibb, *see* Penelope Patsuris, *The Corporate Scandal Sheet*, FORBES, http://www.forbes.com/2002/07/25/accountingtracker.html (last updated Aug. 26, 2002, 5:30 PM).

[38] William W. Bratton, *Enron and the Dark Side of Shareholder Value*, 76 TULANE L. REV. 1275, 1276 (2002).

[39] *See* Jeffrey A. Sonnenfeld, *What Makes Great Boards Great*, HARV. BUS. REV. (Sept. 2002), available at https://hbr.org/2002/09/what-makes-great-boards-great ("[N]o corporation could have had more appropriate financial competencies and experience on its board [than Enron].").  Less than a year before the company declared bankruptcy, Fortune Magazine ranked Enron second in 'quality of management' among all U.S. corporations. *See* Coffee, *supra* note 57, at 18.

[40] Bratton, *supra* note 60, at 1342.

the typical transaction, Enron would inappropriately capitalize the SPE with its own stock.[41] The

SPE would provide Enron with a put, whereby Enron had the right to sell the asset to the SPE for

a specified price.[42] This arrangement had an inherent problem: if the value of the asset and the

value of Enron stock both fell, the SPE would have insufficient assets to make the purchase, at

the exact moment when the protection of the put against downside risk would be most

important.[43] Moreover, even if the SPE did manage to perform, Enron had created an

arrangement that in effect violated a fundamental accounting principle: the proceeds from the

issuance of new equity should not be counted as earnings. Investors in Enron were unaware of

the endogenous nature of these SPE arrangements.[44]

Enron "stretched the limits of accounting"[45] in other ways as well. Enron valued certain of

its varied assets on a "mark-to-market" basis in a way that allowed the company to recognize as

current income what was really just forecasted future income on a long-term contract.[46] In July

2000, for example, Enron entered into a twenty-year partnership with Blockbuster Inc. to

develop a company that would provide films to customers through Enron's fiber-optic cables.[47]

Enron assigned a $124.8 million value to the partnership based on its projection of future

revenues, and, based on these long-run expected profits, reported an additional $53 million in

current earnings in the last quarter of 2000 and $58 million in the first quarter of 2001. In

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[41] Steven L. Schwarcz, *Enron and the Use and Abuse of Special Purpose Entities in Corporate Structures*, 70 U. CIN. L. REV. 1309, 1310 (2002).
[42] *Id.*
[43] *Id.* at 1315-16.
[44] Paul M. Healy & Krishna G. Palepu, *The Fall of Enron*, J. ECON. PERSPS. 3, 11.
[45] *Id.* at 9.
[46] *Id.* at 10.
[47] George J. Benston & Al L. Hartgraves, *Enron: What Happened and What We Can Learn From It*, 21 J. ACCT. & PUB. POLICY 105, 116 (2002).

contrast, Blockbuster recorded no profits from the deal for those quarters.[48] The partnership was ultimately dissolved in October 2001, and Enron had to reverse the earlier reported earnings.[49]

Beginning in 2001, Enron's stock began to decline for reasons unrelated to the accounting fraud, which had yet to be detected.[50] The declining share price, among other things, left the SPEs with negative equity and in October 2001 Enron was forced to announce that it had violated a variety of accounting standards.[51] As a result of these accounting revisions, the company restated its financial statements for years 1997 to 2000, reducing total earnings by $613 million, increasing liabilities by $628 million, and removing $1.2 billion of shareholder equity.[52] Only two months later, Enron filed for bankruptcy with assets of $63.4 billion, marking the largest restructuring in U.S. history.[53]

Enron's failure, and the inability of its information gatekeepers — namely the auditors, rating agencies, and investment banks — to detect the financial malfeasance[54] would effectively "call[] the American market's integrity into question."[55] Similarly, commentary at the time by prominent academics saw Enron as illustrative of more general problems. Healy and Palepu noted that "the problems of governance and incentives that emerged at Enron can also surface at many other firms and may potentially affect the entire capital market."[56] Jeffrey Gordon

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[48] *Id.*
[49] *Id.*
[50] Bratton, *supra* note 60, at 1322.
[51] Healy & Palepu, *supra* note 66, at 11.
[52] *Id.*
[53] Benston & Hartgraves, *supra* note 69, at 106.
[54] See Coffee, *supra* note 57.
[55] Bill Mann, *Outraged Over Enron*, THE MOTLEY FOOL (Jan. 17, 2002), http://www.fool.com/news/foth/foth020117.htm.
[56] Healy & Palepu, *supra* note 66, at 4.

questioned whether "[t]he real concern is that the gross overreaching at Enron is symptomatic of troubling if not egregious behavior elsewhere."[57]

*2. WorldCom.* WorldCom's accounting fraud was less sophisticated than Enron's but had similar consequences. WorldCom's CEO and CFO (Bernard Ebbers and Scott Sullivan, respectively) were widely regarded as one of the best executive pairings in American business.[58] Between 1985 and 2001, WorldCom acquired more than seventy companies for over $100 billion, including its 1998 merger with MCI Communications in a transaction valued at $37 billion, at the time the largest merger in history.[59] By 2001 it was the nation's second largest long-distance telephone company and its largest provider of internet services.[60]

WorldCom maintained its capacity to provide long distance phone service in part by entering into long-term leases to use the lines of other telecom firms.[61] These leases would often require WorldCom to make fixed monthly payments regardless of utilization. By 2000, these line costs were WorldCom's largest expense item and represented nearly half of its operating costs.[62] Analysts and commentators of the telecommunications industry focused heavily on the line cost expenditure-to-revenue (E/R) as an important performance indicator.[63] Over this period WorldCom consistently recorded an E/R ratio of 42%, significantly lower than its competitors, a

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[57] Jeffrey N. Gordon, *What Enron Means for the Management and Control of the Modern Business Corporation: Some Initial Reflections*, 69 U. CHI. L. REV. 1249 (2002).

[58] Arthur E. Wilmarth, Jr., *Conflicts of Interest and Corporate Governance Failures at Universal Banks During the Stock Market Boom of the 1990s: The Cases of Enron and WorldCom*, *in* CORPORATE GOVERNANCE IN BANKING: A GLOBAL PERSPECTIVE 113 (Gup ed. 2007), at 113.

[59] J. Randel Kuhn, Jr. & Steve G. Sutton, *Learning from WorldCom: Implications for Fraud Detection Through Continuous Assurance*, 3 J. EMERGING TECH. IN ACCT. 61, 63 (2006).

[60] *Id.*

[61] Wilmarth, *supra* note 58, at 114.

[62] *Id.*

[63] *Id.* at 63.

ratio that it struggled to maintain as market conditions tightened, and ultimately did so through fraud.[64]

WorldCom's accounting fraud took two principal forms—an understatement of its line costs and an exaggeration of its revenues—with the objectives of anchoring the E/R ratio at 42% and reporting double-digit revenue growth.[65] WorldCom manipulated its line costs by improperly releasing accruals set aside on its financial statements to pay anticipated bills in the future. These accounting accruals were intended to reflect an estimate of the costs associated with using the lines and facilities of outside vendors but for which WorldCom had not yet paid.[66] Releasing an accrual signals, in this case without a sound basis, that less is needed to pay these bills than had been previously anticipated, thereby reducing reported expenses and increasing pre-tax income.[67] By the end of 2000 WorldCom had exhausted the previously accumulated accruals needed to continue this manipulation of line costs.[68]

Once these accruals were depleted, WorldCom shifted to other forms of accounting fraud. It capitalized, rather than expensed, $3.8 billion of the company's cash outlays for line costs during 2001 and the first quarter of 2002.[69] Under GAAP, operating expenses must be deducted from gross revenues to calculate earnings, whereas cash outlays characterized as capital are not so deducted. The theory behind this difference in treatment is that unlike operating expenses, the outlays properly characterized as capital acquire longer lasting assets that will be available to

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[64] Kuhn & Sutton, *supra* note 59, at 63.

[65] Dennis R. Beresford, Nicholas deB. Katzenbach & C.B. Rogers, Jr., *Report of Investigation by the Special Investigative Committee of the Board of Directors of WorldCom, Inc.* 9 (March 31, 2003), *available at* https://www.sec.gov/Archives/edgar/data/723527/000093176303001862/dex991.htm.

[66] *Id.* at 10.

[67] *Id.*

[68] *Id.* at 11.

[69] Wilmarth, *supra* note 58, at 115.

generate revenues in future periods; they will instead be deducted from revenues over time as depreciation or amortization of the capital outlay.[70] Since these line cost outlays were in fact expenses needed to provide the services that generated current revenues and acquired nothing useful for generating future revenues, WorldCom was again able to inflate net income.[71] Had WorldCom not inappropriately capitalized its line costs, it would have reported a pre-tax loss in three of the five years in which the scheme went on, and would have had E/R ratios consistently exceeding 50%.[72]

WorldCom met a fate similar to Enron. The company filed bankruptcy in July 2002,[73] ultimately issuing a final restatement that, in its correction of the accounting frauds, reduced its previous reported pre-tax earnings by $10.6 billion.[74] WorldCom's CEO was sentenced to 25 years in prison.[75] Its CFO also received a prison sentence and it director of general accounting and several of his employees pled guilty to conspiracy and securities fraud charges.[76] As with Enron, the press response to the WorldCom scandal saw it as indicative of systemic failure in the quality of the financial disclosure provided by U.S. public corporations. In the words of the

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[70] The outlays for capital assets are ultimately counted against revenue, but this is done in future periods in the form of deductions for depreciation that are spread over the useful life of the asset. Kuhn & Sutton, *supra* note 59, at 63-64

[71] Bob Lyke & Mark Jickling*, WebCom:The Accounting Scandal (Congressional Research Service) 2 (2010).

[72] Beresford et al., *supra* note 65, at 11-12.

[73] Wilmarth, *supra* note 58, at 115.

[74] *Id.*

[75] Jennifer Bayot & Roben Farzad, *Ex-WorldCom Officer Sentenced to Five Years in Accounting Fraud*, N.Y. TIMES (Aug. 12, 2005), http://www.nytimes.com/2005/08/12/business/exWorldCom-officer-sentenced-to-5-years-in-accounting-fraud.html.

[76] Kathleen Brickley, *From Enron to WorldCom and Beyond: Life and Crime After Sarbannes-Oxley*, 81 WASH. U.L.Q. 357, 372 (2003).

*Economist* at the time, "WorldCom may also mark the point when investors, particularly foreigners, finally lose all confidence in American accounting."[77]

*3. Health South.* Health South involved even cruder tactics to exaggerate earnings than did WorldCom. In order to maintain the appearance of growth, Health South's CEO and a group of executives would, near the end of each reporting quarter, pick a desired earnings-per-share figure in light of existing analyst expectations. This desired figure was then forwarded to the assistant controller.[78] The controller would in turn work with a handful of finance and accounting executives, known internally as "the family," to plug the gap between desired and actual earnings.[79] These executives did so by falsifying accounting entries for cash, inventory, and assets.[80] After the fraud was revealed, bankruptcy ensued, and all five HealthSouth CFO's during the period of the fraud pled guilty to criminal indictments.[81] As with the Enron and WorldCom scandals, Health South was said to put at issue not only the fabricated value of HealthSouth's stock, but represented as well "a fundamental attack on the core of the public market: accurate and transparent pricing information."[82]

*4. Adelphia.* The scandal at Adelphia included the added twist that part of the accounting fraud covered up significant self-dealing between Adelphia and the family that controlled it. Adelphia Communications, a publicly traded but family controlled cable company, had by 2002 become the sixth largest U.S. cable company, with annual revenues of $2.9 billion and over five

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[77] *WorldCom and Financial Markets: Another Scandal, Another Scare*, THE ECONOMIST (June 27, 2002), http://www.economist.com/node/1205302.
[78] *Id.*
[79] *Id.*
[80] *Id.*
[81] Carrick Mollenkamp, *An Accountant Tried in Vain to Expose HealthSouth Fraud*, WALL ST. J., http://www.wsj.com/articles/SB105338447947754000 (last updated May 20, 2003, 12:01 AM).
[82] *Id.* at 131.

and a half million subscribers across 32 states.[83]  As it turned out, however, Adelphia had been

manipulating its financial reports since the company went public in 1986 according to the

testimony of a former vice president of finance, James R. Brown, who pled guilty to securities

fraud and bank fraud.[84] Brown stated that he and other Adelphia officers regularly fabricated

statistics on the number of subscribers, cash flow, cable-system upgrades, and other closely

followed metrics.[85]

Among Adelphia's techniques were, as with WorldCom, fictitious conversions of cash

outlays for operating expenses into outlays that could be capitalized.  For example, Adelphia

allegedly agreed with two suppliers of digital set-top boxes to overpay by $7 million for the

boxes.  In return, the suppliers agreed to provide Adelphia with an equal amount in "marketing

support." The additional outlay for the boxes was capitalized and thus did not count against

earnings.  The sleight of hand saved Adelphia $7 million in marketing expenses, boosting its

reported earnings by that amount.[86]  The record suggested an overall lack of oversight of the

accounting process.  For example, the company's audit committee met only once in 1999[87] and,

from the last half of 2000 until April of 2002, consisted of only two members, one outside

director and a member of the controlling Rigas family.[88]  Finally, Adelphia's accounting fraud

was accompanied by extensive self-dealing by the Rigas family, which, of course, was not

disclosed in the company's financial statements.

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[83] *Id.*

[84] Barlaup et al., *Restructuring Trust in Auditing,: Ethical Discernment and the Adelphi Scandal*, 24 MANAGERIAL AUDITING 183, 192 (2009).

[85] *Id.* at 195.

[86] *Id.*

[87] *Id.* at 194.

[88] *Id.*

In April 2002, Adelphia delayed the filing of its annual 10-K report with the SEC, in part due to disagreements with its auditor Deloitte & Touche.[89] The SEC simultaneously opened an informal inquiry to investigate the company's accounting methods,[90] and the company was forced into bankruptcy by June 2002.[91] John Rigas was convicted of fraud and conspiracy for stealing more than $100 million in company funds and hiding more than $2 billion in debt incurred by the family through entities involving Adelphia.[92] The *Wall Street Journal*, writing at the time, noted that the charges brought by the federal government in the immediate aftermath of the fraud represented the latest effort "to crack down on corporate malfeasance as public confidence and the financial markets have been battered by seemingly relentless disclosures of financial shenanigans."[93]

*5. Overview: The Situation of Investors.* Consider the situation of market participants as this cascade of scandals rained down. They would have a heightened fear that some other firms, as yet untarred by scandal, would also be revealed to have engaged in fraudulent accounting practices. This fear would call into question the accuracy of public information concerning the performance of still untarred companies, resulting in a serious problem. Market participants would have recognized there was a distribution of managerial quality among firms, a very important firm characteristic to investors. But fear about the reliability of the information about each firm would have raised questions about whether their previous assessments of management

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[89] *Id.*

[90] *Id.*

[91] *Id.* at 192.

[92] Peter Grant & Christine Nuzum, *Adelphia Found and One Son Are Found Guilty*, WALL ST. J., http://www.wsj.com/articles/SB108862065449551734 (last updated July 9, 2004, 12:01 AM).

[93] Jerry Markon & Robert Frank, *Adelphia Officials are Arrested, Charged with 'Massive' Fraud*, WALL ST. J., http://www.wsj.com/articles/SB1027516262583067680 (last updated July 25, 2002, 12:01 AM).

quality were correct, particularly because the scandals described above took place at some of the country's most respected companies.  Press accounts from this period reported that investors were coming to harbor suspicion that financial statements more generally were subject to fraud risk but were uncertain as to who were the bad actors.  A statement by Brett Truman, an accounting professor from the University of California-Berkeley's Haas School of Business, captures the concern: "This is why the market keeps going down every day - investors don't know who to trust.  As these things come out, it just continues to build up."[94]

In this circumstance, high quality firm managers would have had an unusually strong incentive to send a signal that that credibly conveyed to the market the accuracy of their financial disclosures and hence the managers' quality— that their reported performance was the product of skill , not fraud.[95]  In a period when the market was surprised by a pattern of fraud in respected exchange-listed companies, equity holders could be uncertain of their ability to distinguish between companies with honest managements and those that would resort to fraud.  Accordingly, the market would discount every company for the chance that it was a "hidden" bad company—in signaling terms, a pooling equilibrium.  This discounting would create a strong incentive for honest, capable managers to find ways to signal their high quality.  Managers who succeeded in freeing themselves from suspicion by the use of such a signal would separate themselves from the lemons-like market pooling and so see their companies' share prices rise.

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[94] *See* David Hancock, *World-Class Scandal at WorldCom*, CBS NEWS, http://www.cbsnews.com/news/world-class-scandal-at-worldcom/ (last updated June 26, 2002, 9:23 AM).

[95] *See* Stewart C. Myers &  Nicholas S. Majluf, *Corporate Financing and Investment Decisions When Firms have Information that Investors Do Not*, 13 J. FIN. ECON. (1984) and Lakshmi Shayam-Sunder & Stewart C. Myers, *Testing Static Tradeoff Against Pecking Order Models of Capital Structure*, 51 J. FIN. ECON. 219 (1999).

This would both reduce the cost of equity finance and provide the variety of other benefits that managers enjoy from higher share prices.

*B. Overview of the Empirical Study and Its Results*

The findings that we report below strongly suggest that during the 2000-2002 period, changes in firm governance structures did act as a signal of the quality of their managers. Our study employs the two broadly-used governance indices discussed above, the G index and the E index. Treating G index and E index ratings, respectively, as the independent variable, we use a linear regression analysis to see what on average happens to a firm's Tobin's Q, the dependent variable, when there is a difference in the rating. For a large sample of firms for the years 1992-2006, we run two kinds of econometric tests described below: an ordinary least squares ("OLS") test and a fixed effects test. We then subdivide this large sample into two subsamples, one covering the accounting scandal years 2000-2002 and the other covering the surrounding twelve years (1992-1999 and 2003-2006) – and run the two kinds of tests on each of the subsamples. We compare the results for each of the tests in the three years of the governance scandal (2000-2002), with the results for each of the tests for all the other years in our longer period.

*1. The nature of OLS and fixed effects tests.* It is useful at the outset to briefly describe the nature of these two econometric tests because the signaling analysis is driven in significant part by the differences between them. In the OLS test, the sample being tested consists of the pairing of the index rating and the Tobin's Q for each firm in the sample for each year that it is in the sample. The assumption is that across this sample, the other not-tested factors that affect the

firm's Tobin's Q beyond the firm's governance rating are randomly distributed.[96] This means that, for any given firm in any given year, these other factors are assumed to be as likely to boost Q above, as to diminish Q below, what the impact of the rating on Q would have been if the rating were the sole factor at work. With this large sample, the two will largely cancel each other out, thereby revealing just the impact of the governance rating.

In a fixed effects test, the sample being tested consists of the pairing of the index rating and the Tobin's Q for each firm in the sample for each year that it is in the sample when the firm *changed* its governance structure in a way that altered its rating. This approach is typically used to guard against an omitted variable problem that can arise with an OLS test. That is, the fixed effects regression seeks to control for the possibility that the other non-tested factors that affect Q beyond the firm's governance rating are not randomly distributed and that one or more of these untested factors correlate with the firm's governance rating.

If there is such a correlation, an OLS result that appears to show a relation between a good governance rating and Tobin's Q could be partially, or possibly entirely, due instead to the untested factor or factors. However, as long as the untested factor or factors are time invariant in their influence on Tobin's Q—i.e., have a fixed effect—a regression that, out of all the observations of all the firms in all the sample years, is only run on the firms that in any given year changed its governance structure in a rating altering way avoids this omitted variable problem. This is because the other factor or factors will have the same impact on Tobin's Q

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[96] To act as a control, the regressions include as other independent variable several other factors that might affect Tobin's Q. The factors being referred to in the text, however, are not ones included this way in the regression. The reason may be that, for example, they are not easily observable or simply that they are incorrectly regarded by the author of the study as irrelevant.

before and after the governance change and so the test isolates the effect on Tobin's Q of just the governance change.[97]

*2. Summary of our findings.* Consistent with the earlier studies, our cross-sectional OLS test for the entire fifteen-year period finds a highly significant positive relationship, both statistically and economically, between firms with good governance ratings and their Tobin's Qs. Also consistent with previous studies, our fixed effects test for the entire fifteen-year period similarly shows a highly significant positive relationship, both statistically and economically, between a score-improving governance change and Tobin's Q.

Comparing the 2000-2002 period with the other years in the sample, however, yields a very different result: the fixed effects test results diverge sharply from the OLS test results. The fixed effects tests reveal that a changed governance score in the scandal years is associated with a much larger change in Tobin's Q than a comparably sized change occurring in other years. This difference between 2000-2002 and the other years is highly significant both statistically and economically. In contrast, the OLS tests show no significant difference between the 2000-2002 period and the other years in terms of the relationship between a firm's governance score and its Tobin's Q.

In addition to investigating the role of differences in information asymmetry across time periods, we investigate them as well across different types of firms, consistent with our hypothesis that the effect of governance depends on context: when in time we are concerned with

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[97] Professors Bartlett and Partnoy recommend using a "first differences" approach to solving this hidden variable problem rather than our fixed effects approach. Partnoy & Bartlett, *supra* note 21. We do not believe that this is necessary. Each approach eliminates the impact of a time invariant hidden variable. The only difference is that our approach takes mean-differences rather than first-differences. The results should be very much the same and the fixed effects approach maintains comparability with the index studies that attempt to control for hidden variables.

and the nature of the particular firm. Firms that engage in significant R&D typically have greater information asymmetry associated with them than other firms.[98] We divide our full fifteen-year sample between R&D and non-R&D firms. Relative to the normal period, the increase in a governance change's impact on Tobin's during the scandal period was greater by a statistically significant amount for R&D firms than it was for non- R&D firms.

*3. Implications of our findings.* This difference between the fixed effects comparison (scandal period versus normal period) and the OLS comparison strongly suggests that signaling was at work during the scandal period. To see why, we first need to consider what the world would look like if signaling were not possible and what in that world we would expect our OLS and fixed effects results to look like in both the normal and scandal periods. Then we will allow for the possibility of signaling and consider what our OLS and fixed effects results for the normal and the scandal periods can tell us about whether signaling was in fact at work at least during the scandal period.

*a. A hypothetical world without signaling.* Imagine a world where the market understands the quality of a firm's management just as well as the managers themselves do. In other words, there would be no information asymmetry and hence no room for any signaling. In this world, we would have only the theories relating to the first two links – filtering and incentives/informedness – to explain the relationship between firm governance structures and their Tobin's Qs. Under these first two theories, firms with better governance structures will on average have better, and more incentivized and informed, managers. These managers will make decisions that generate more cash flow in the future. Stock prices are based on expected future

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[98] *See* note 15 *supra.*

cash flows discounted to present value. A firm's corporate governance structure is publicly known whether it is the product of a recent change or has been in place for some time. Either way, the impact of a governance structure with a given index rating on a firm's future expected cash flows will, in an efficient market, be reflected in the firm's share price and hence in its Tobin's Q. So, at any point in time, the average impact of a given governance structure on Tobin's Qs will be the same whether the structure has been in place for a long time or was adopted only recently: in each case the question relates to how the structure will affect *future* cash flows. Put another way, the difference in the average impact on Tobin's Q of two differently rated governance structures will be the same whether we are talking about two different firms, one which has had the poorer rated structure for some time and the other which has had the better rated one for some time, or about a single firm that has just switched from the same more poorly rated structure to the better rated one.

Now consider, for this hypothetical world without signaling, what comparisons between the scandal-period and the normal-period OLS and fixed effects results would look like and what they would imply. During the scandal period, if there is an increase in the market's perception of (i) the value of high quality management, (ii) the effectiveness of a better rated governance structure with a filtering process leading to higher quality management, and/or (iii) the effectiveness of a better rated structure in providing the incentives and information to promote better management decisions, the impact of firm governance structure on Tobin's Q through the first two links would be strengthened.

This possible scandal-period strengthening either does not or does occur during the scandal period. If it does *not* occur, there should be no difference between the scandal period and the

normal period in terms of either the OLS or fixed effects results. If this scandal period strengthening *does* occur, we would expect to see a difference between the scandal period and the normal period for *both* the OLS and fixed effects results. To see the reason why, first consider the OLS results. These are primarily driven by a comparison of the Tobin's Qs of different firms with differently rated governance structures that they have had for some time, what we might call "continuing" firms. With a strengthening of impact through the first two links, if we compare two sets of continuing firms, one with governance structures having a given poor index rating and one with governance structures having a more favorable index rating, the difference between the two groups' average Tobin's Qs should widen and this should be reflected in the OLS results.

Now consider the fixed effects results, which are driven by a comparison of the Tobin's Qs of firms that change their governance structures, what we might call "change" firms. Take a set of firms that, during a year in the normal period, change from having governance structures with a poor index rating to governance structures having a better index rating, and compare that to a set of firms that make the same change during a year in the scandal period. If there is a strengthening through the first two links during the scandal period, the Tobin's Qs of the firms that changed during the scandal period should on average increase by more than did the Tobin's Q's of the firms that changed in the normal period and this difference should be reflected in the fixed effects results.[99]

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[99] This assertion needs a small qualification, but not one that undermines our interpretation of our results. To the extent that the share price reaction to a change in governance structure reflects the anticipation of a change in filtering – the basis of our first theory concerning the link between governance and Tobin's Q – this may take time to have its effect on future cash flows. Thus it may matter whether a firm has a particular governance structure that was just put in place or one that has had it for longer. Consider a structure that includes an attribute that tends to

*b. Allowing for the possibility of signaling.* Now adopt the more realistic assumption that the market does not understand the quality of a firm's management as well as the managers themselves do. In other words, there is an information asymmetry and so there is at least the possibility that signaling could be at work when a firm changes its governance structure. Now consider what our OLS and fixed effects results tell us.

Our OLS results show that, relative to the normal period, during the scandal period, there was no statistically significant widening of the difference in average Tobin's Q scores between firms with a poorly rated governance structure and firms with more favorably rated one, at least no widening great enough to be statistically significant. The OLS results relate predominantly to firms that did not change their governance structure during the scandal years and hence were not sending a signal of the kind we are discussing here.[100] Thus, the only ways these firms' governance structures could impact their Tobin's Qs is through the first and second links. The absence of a widening suggests that the impact through these two governance links was not strengthened during the scandal period.

Our fixed effects results show that, relative to the normal period, there was, in the scandal period, on average a greater change in Tobin's Q for firms that changed from a structure with one rating to a structure with a different rating. Viewed in isolation, these fixed effects findings could be caused by (i) a scandal-period strengthening of the impact of firm governance structure

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enhance filtering and hence contributes to a firm possessing the attribute getting a more favorable index rating. For a firm that has had this attribute longer, its discounted future cash flows do not include the periods when the filtering is still doing its work, i.e., filtering's improvement in future cash flows will have been fully realized. Thus, the impact of this attribute on Tobin's Q for a firm that has had it for some time will be larger than for a firm that just adopted it. The same would be true in the opposite direction with respect to firms with an attribute that would tend to decrease filtering.

[100] The OLS finding includes all firms for all years in the sample under study, both the large majority that did not change their structures in a given year and the small minority that did.

on their Tobin's Q through the first and second links, and/or (ii) a scandal-period increase in the value of the governance structure's signal concerning the quality of management. When we take into account the OLS findings, however, we can rule out the first cause. If, as indicated by the OLS result, a given governance structure's impact on Tobin's Q through the first and second links is not strengthened for firms that continue with that structure, there is no reason to think that it would be strengthened for firms that have just changed to this structure.

In sum, the greater fixed effect result, but not OLS result, for the scandal period relative to the normal period suggests: (i) a governance change can act as a signal of managerial quality and did so during the 2000-2002, and (ii) whatever was the impact of such a change on stock price and Tobin's Q in the normal period (and there is probably some such impact, because information asymmetry, though less, existed then too), its impact was larger by a highly statistically significant amount during 2000-2002 period. The market in this period was unusually uncertain about the quality of management of publicly traded firms generally because of the unexpected incidence of frauds in respected companies. As a result, receipt of a clarifying signal had an unusually large effect.[101]

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[101] In Part II.B.4 *supra,* we discussed how a continuation of a structure that was adopted at some point in the past and received a given index rating might itself provide some kind of message concerning today's managerial quality. The discussion makes clear, however, that a change in the current period to a governance structure with this same rating constitutes a more valuable signal concerning managerial quality. In other words the signaling significance of adopting a particular structure erodes over time. Firm governance ratings are relatively stable over time and so for most of the firms in the OLS sample, they have not changed their governance structures in many years. Thus, the value of the signals coming from their continued structures has been eroded considerably.

It is true that, relative to normal times, even this considerably eroded residual signal would presumably have become more valuable in the scandal period, given the increased information asymmetry concerning managerial quality. But the scandal-years magnification of this eroded residual signal should have much less absolute impact on Tobin's Q than the similar magnification of the signal sent by a change in governance structure. This conclusion tends to be confirmed by fact that our OLS results, which relate primarily to firms that simply continued their governance structures, show no statistically significant increase in the impact of differences in index scores on Tobin's Q during the scandal period versus the normal period. Whatever the value of the signal coming from the continuation of a given governance structure, it was sufficiently small that, even when magnified during the

*C. Data Sources and Variables Used*

As previously described, our study employs the two well-known governance indices discussed above: the Gompers, Ishii and Metrick's G index[102] and the Bebchuk, Cohen and Ferrell's E index.[103] For each of these indices, we run a firm-level fixed effects regression on the relationship between the change in a firm's index rating and the change in the firm's Tobin's Q for the years 1992-2006. We also run, for each index, an ordinary least squares (OLS) regression on the cross-sectional relationship between a firm's index score and *Tobin's Q* for the same years. We then subdivide the sample into two parts – the "scandal" period of 2000-2002 and the "normal" period consisting of our sample's surrounding years, 1992-1999 and 2003-2006. We compare, for both the fixed effect and OLS tests, the results in the scandal years with the results in the surrounding normal years.

We focus on all publicly traded companies which have a G index score. For ease of reference, we give our variable names in italics. As noted earlier, the G index quantifies governance attributes with regard to a variety of matters, including a number of factors relating to the capacity of incumbent management to resist hostile takeovers.[104] A firm's score can vary from a minimum of zero to a maximum of 24. A lower score is interpreted as reflecting a better

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scandal period, it did not add to the total impact of differences in firm index ratings on their Tobin's Qs by a statistically significant amount.

It should also be noted that if there was any signaling effect from the continuation of a given governance structure, this would not undermine our larger conclusion that the increase, if any, in the impact on Tobin's Q through the filtering and incentives/informedness links during the scandal period was not large enough to be statistically significant. This conclusion is based on simple arithmetic. Our OLS results show that for firms that did not change structure, the increase, if any, in the total impact on Tobin's Q through all three links was not large enough to be statistically significant. If there were some signaling effect from simply continuing a governance structure, this effect would actually have been magnified in the scandal period. So any increase in the impact from the filtering and incentives/informedness links could not by itself be large enough to be statistically significant.

[102] Gompers et al, *supra* note 9.

[103] Bebchuk et al., *supra* note 9.

[104] *See* Part I *supra*.

corporate governance structure. The E index consists of six of the G Index items, which are interpreted as most related to the capacity of management to isolate the company from capital market disciple: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, supermajority requirements for mergers and limits to charter amendments.[105]

For the above set of firms we obtain financial data from Standard and Poor's Annual Compustat database. Consistent with the previous literature, firm value creation is proxied by Tobin's Q. Following that literature, we calculate Tobin's Q as the market value of a firm's equity minus book value of equity plus the market value of a firm's debt divided by the book value of its assets.[106] We winsorize the values of Tobin's Q at the one-percent level and 99-percent level, so that outliers do not significantly affect our results.

We control for four firm-specific variables that prior literature suggests might independently affect measures of firm value creation independent of the effect of the governance indices. The first variable is the firm's ratio of debt to total assets (*Debt*), which is calculated as the ratio of short-term debt plus long-term debt to total assets. The second is the firm's ratio of research and development expenses to total assets (*R&D*).[107] The final two variables are related to the firm's size. Specifically, we include the natural logarithm of total sales (*Lsales*), and for any nonmonotonic effect we also include its square (*Lsales2*).

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[105] We obtained data for the *Gindex* and *Eindex* from Martijn Cremers.

[106] *See* Smith & Watts, *supra* note **Error! Bookmark not defined.**; Hyun-Han Shin and Rene M. Stulz, *Are Internal Capital Markets Efficient?*, 113 Q. J. ECON. 531 (1998); Darius Palia, *The Endogeneity of Managerial Compensation in Firm Valuation*, 14 REV. FIN. STUD. 735 (2001).

[107] In many cases the firm has missing data for research and development expenses. Rather than discard these observations, we set a dummy variable *RDdum* to unity for missing data, and equal to zero when not missing. Additionally, *R&D* is set to zero in such cases. This implies that missing research and development expenses does not significantly affect the slope or sensitivity of *R&D* to Tobin's Q.

We present the summary descriptive statistics of these variables in Table I. We have 26,098 observations, consisting of 3,516 unique firms for the years 1992-2006. We find the average Tobin's Q to be 1.004, which is higher than the median value of 0.675. There is substantial variation, which, assuming Tobin's Q to have a normal distribution, can vary between -0.122 and 6.17.[108]   The average *Gindex* is 9.06 with a similar median value. The *Eindex* has an average value of 2.3 and a median value of 2, which is not surprising given that the maximum value is 6. Our sample firms have average book leverage to asset (*Debt*) ratio of 25.5%, with median ratios of 23.5%.  The average firm has a research and development expense to asset (*R&D*) ratio of 2.6%, with the median firm having no significant research and development expenses. On average, our sample firms have a natural logarithm of sales (*Lsales*) of 7.14, although there are many firms which are extremely large. The average size of our firms is $4.3B, with a median value $1.14B.

Table I: Summary Statistics

| Variable | Mean | Median | Standard deviation |
|----------|------|--------|--------------------|
| *Tobin's Q* | 1.004 | 0.675 | 1.063 |
| *Gindex* | 9.064 | 9 | 2.752 |
| *Eindex* | 2.297 | 2 | 1.358 |
| *Debt* | 0.255 | 0.235 | 0.265 |
| *R&D* | 0.026 | 0 | 0.079 |

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[108] In the lower tail of the distribution we find negative values, as the market value of equity is less than the difference between the book values of equity and debt.

| | | | |
|---|---|---|---|
| *RDdum* | 0.509 | 1 | 0.500 |
| *Lsales* | 7.143 | 7.048 | 1.526 |
| *Lsales2* | 53.35 | 49.67 | 22.09 |

*E. Tests and Results – Full Sample (1992-2006)*

*1. Fixed effects results.* We first estimate a firm-level fixed effects regression of Tobin's Q on the two governance indices for the full sample period. It is the nature of fixed effect tests that they measure the effect on the dependent variable (in our case Tobin's Q) of a *change* in the independent variable (in our case the governance index). Hence this is the kind of test one would want to use to explore whether a change in an independent variable is a signal of some kind. The fixed effects technique also serves as a check on the conclusion from our cross-sectional OLS tests reported below (and those of Gompers et al.)[109] that there is a relationship between better firm governance scores and higher Tobin's Qs. As discussed, using the fixed effects technique tests whether this OLS conclusion is a false positive arising from a hidden variable that correlates with both Tobin's Q and the governance scores, but that is invariant over time. Our finding of a fixed effects relationship between Tobin's Q and the governance indices allows us to reject this alternative explanation of the OLS results.

Table II presents our fixed effects results for both the *Gindex* and the *Eindex*. All standard errors are adjusted for clustering at the firm level, and the fixed-effects are jointly statistically significant but not presented. The robust t-statistics are presented in parentheses.

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[109] Gompers et al., *supra* note 9.

The impact of a change in the *Gindex* on Tobin's Q is given in column 2. We find a coefficient of -0.0259, which is statistically significant at the one-percent level. In other words, this result is highly statistically significant, meaning that we can reject with at least 99% confidence that this finding was simply the result of chance. The impact of a change in the *Eindex* is given in column 3. We find a coefficient of -0.0384 on the *Eindex*, which is similarly statistically significant at the one-percent level. This coefficient is very similar to the Bebchuk et. al (2008) coefficient of -0.028 in their fixed effects regressions, although the respective sample periods differ slightly (ours is 1992-2006, and theirs is 1990-2003). Table III's results are consistent with those of the previous literature. This suggests that there is nothing unique about our sample that is generating our subsequent results.[110]

Table II: Fixed-Effects Regressions of Tobin's Q on
Corporate Governance Indices

| Variable | *G index* | *E index* |
|---|---|---|
| *Governance indices* | -0.0259*** (-3.05) | -0.0384*** (-2.65) |
| *Debt* | 0.322*** (4.92) | 0.318*** (4.93) |
| *R&D* | 0.596** (2.15) | 0.597** (2.15) |
| *RDdum* | 0.051 (0.99) | 0.050 (0.98) |
| *Lsales* | 0.108* (1.87) | 0.103* (1.80) |
| *Lsales2* | -0.010** (-2.23) | -0.009** (-2.19) |

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[110] In examining the relationship between the control variables and firm performance, Table II also shows that firms with higher debt levels and research and development expenses are associated with higher firm value. The relationship between firm size and performance is non-monotonic, with a positive relationship that turns negative at the highest levels of firm size.

| | | |
|---|---|---|
| *Constant* | 0.821*** (3.40) | 0.691*** (2.97) |
| $R^2$ | 0.024 | 0.026 |

*** statistically significant at the 1% level, ** statistically significant at the 5% level, and * statistically significant at the 10% level, respectively.

*2. Cross-sectional OLS results.* In this section, we provide cross-sectional OLS results with 10 Fama-French industry controls and year dummies (not reported) and with standard errors clustered at the firm-level.[111] For each variable, we calculate the average across the years by firm. By doing so, we abstract away from any time variation and focus on the cross-sectional variation only.[112] These results, consistent with the OLS results of Gompers et al.,[113] show that both *Gindex* and *Eindex* are negatively correlated to firm Tobin's Q, i.e., corporate governance structures that garner good governance scores are associated with greater firm value creation.

Table III presents these OLS results for both the *Gindex* and the *Eindex*. The robust t-statistics are presented in parentheses.

Table III: OLS Regressions of Tobin's Q on Corporate Governance Indices

| Variable | *G index* | *E index* |
|---|---|---|
| *Governance indices* | -0.028*** (-5.13) | -0.079*** (-6.72) |
| *Debt* | 0.202*** (2.65) | 0.212*** (2.83) |
| *R&D* | 2.485** (2.20) | 2.452** (2.18) |
| *RDdum* | -0.340*** | -0.341*** |

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[111] Note that a firm level fixed-effects model subsumes any impact of industry and therefore no industry controls need to be included.

[112] *See* WILLIAM GREENE, ECONOMETRIC ANALYSIS (7th ed. 2005).

[113] Gompers et al., *supra* note 9.

|  | (-5.70) | (-5.74) |
|---|---|---|
| *Lsales* | 0.038 (0.52) | 0.051 (0.69) |
| *Lsales2* | -0.002 (-0.49) | -0.004 (-0.80) |
| *Constant* | 1.274*** (3.76) | 1.197*** (3.58) |
| $R^2$ | 0.109 | 0.113 |

*** statistically significant at the 1% level, ** statistically significant at the
    5% level, and * statistically significant at the 10% level, respectively.

The impact of a difference between firms in their respective *Gindex* scores on their Tobin's Qs is given in column 2 of Table III. We find a coefficient of –0.028 which yet again is statistically significant at the one-percent level.  The impact of a change in the *Eindex* is given in column 3. We find a coefficient of –0.079 on the *Eindex* which is also statistically significant at the one-percent level.  Our *Gindex* results are similar to the Gompers et. al[114] coefficient of – 0.043 in their OLS regressions. Again, while our sample periods differ slightly, the similarity in results suggests that there is nothing unusual about our sample that is generating our subsequent results.

*3. Summary of the full sample results.* Our full sample OLS results suggest that governance structures associated with good ratings, by filtering out bad managers and/or providing more effective managerial incentives, are consistent with better corporate decision making and hence, over time, higher cash flows available for shareholders.  Our full sample fixed effects results share that consistency.  They indicate that the OLS results do not represent a

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[114] Gompers et al., *supra* note 9.

false positive caused by some hidden, time invariant variable that correlates with both a firm Tobin's Q scores and firm governance scores.

These full sample results, taken by themselves, do not, however, tell us whether a firm's decision to *change* its structure in a score-altering way constitutes a signal to the market concerning the quality of management. Assuming, as our OLS results suggest, that governance structures with better scores do in fact lead to higher cash flows to shareholders, we would see the fixed effects results that we have obtained even if the market were already fully informed about the quality of a firm's management prior to the change, i.e., a situation where there would be no need to signal management quality. This is because when a firm changes its structure in a rating-improving way, the anticipation of the resultant better decision-making and increased future cash flows would, in an efficient market, lead to an immediate increase in share price. Thus, even without any signaling, our data suggests that the change in a firm's structure would still lead to a change in its Tobin's Q.

*F. Tests and Results – Comparing Time Periods: The 2000-2002 Scandal Years Versus Other Years*

In reality, of course, the market is never fully informed about the quality of a firm's management. Suppose that in particular years the market believes it is more poorly informed about firm management quality than in normal years. Further suppose, however, that the market's perception of the long run effect of a good governance structure on future cash flows (through better filtering out of bad managers and/or better incentives for all managers) does not change much from one year to the next. Under these assumptions, we would expect that if a score-altering change in governance structure serves as a signal concerning the quality of

management, the signal would take on more value in years when the market perceives itself to be otherwise less informed about managerial quality.

As outlined before, our hypothesis is, therefore, that if changes in governance structure constitute a signal concerning the quality of management, a fixed effects test will reveal that they have a bigger effect on Tobin's Q in years when the market perceives itself to be less informed concerning management quality relative to the governance effects on Tobin's Q in normal years. OLS tests that do not show a larger effect of governance on Tobin's Q in the less informed years than in normal years would suggest that such fixed effects results for the less informed years are not the result of the market believing in such years that a change in governance structure will have a bigger long run effect on future cash flows.

For the reasons discussed earlier, we believe that 2000-2002 accounting scandal years was a period when the market perceived itself to be less informed concerning the quality of firm management than in normal times. Thus, to test our hypothesis concerning the signaling effect of changes in governance structure, we compare the fixed effects and OLS results for 2000-2002 with their respective results for the other years in our sample.

*1. Fixed effects results comparison.* The first step in the comparison test is to split our full sample into two periods: the 2000-2002 accounting scandal years and the twelve years surrounding the accounting  (1992-1999 and 2003-2006). We then analyze each of these periods, using the same firm-level fixed effects regression specifications used for the full sample. Finally we consider the differences between these fixed effect findings regarding each of the two periods.   These results are given in Table IV.

The impact of the *Gindex* on firm performance in the accounting scandal period is shown in column 2. We find a coefficient of -0.1061, which is more than four times as large as the normal times coefficient of -0.0249 given in column 3. Both coefficients are statistically significant at the one-percent level. When we compare the differential impact between scandal and normal years in column 4, we find a negative effect of -0.081, which is also statistically significant at the one-percent level. Thus, we can say with a very high degree of statistical confidence that mere chance was not responsible for this observed difference between 2000-2002 and the surrounding twelve years in the impact on Tobin's Q of from a firm changing its governance structure.

We then examine a similar relationship for the *Eindex*. Column 5 addresses the accounting scandal period. We find a coefficient of -0.1645, which is about three times the normal year's coefficient of -0.0559 given in column 6. Both coefficients are again statistically significant at the one-percent level. When we compare the differential impact between accounting scandal and normal years in column 4, we find a negative effect of -0.1085, again statistically significant at the one-percent level

To put these numbers in perspective in terms of their economic significance, Gompers et al.'s characterize firms with a *Gindex* greater than or equal to 14 as forming a "dictatorship portfolio" and ones with a *Gindex* of less than or equal to 5 as forming a "democracy portfolio."[115] In governance terms, the *Gindex* difference between the worst democracy firm and the best dictatorship firm is 9. Now we calculate the difference in the impact on Tobin's Q of a nine point drop (i.e., a governance improvement) in the normal period and compare it to an

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[115] Gompers et al., *supra* note 9.

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identical drop in the scandal period. The Tobin's Q of the median firm is 0.675. Thus we can approximate the percentage positive impact of the nine point index drop in normal period on the Tobin's Q of such a firm to be $(0.0249*9)/0.675 = 33.2\%$. In contrast, the approximate percentage positive impact on Tobin's Q of the nine point index drop in the scandal period is almost 5 times larger: $(.1062*9)/0.675 = 141.60\%$.

If instead of assuming a favorable nine-point drop in the *Gindex* rating, we examine the impact of an unfavorable increase in the *Gindex* rating, this time from the first quartile value of 7 to the third quartile value of 11, the percentage negative impact on Tobin's Q in the scandal period is still much larger, $(.1062*4)/0.675 = 62.93\%$, when compared to the normal period's negative impact on Tobin's Q of $(.0249*4)/0.675 = 14.76\%$.

Next we examine the economic significance of the *Eindex* by analyzing the impact on Tobin's Q of a favorable movement from the third quartile of the *Eindex* (equal to three) to the first quartile (equal to one), an increase of two. We calculate the difference in the impact on Tobin's Q of this two-point decrease in normal times and compare it to making the drop in accounting scandal times. We can approximate the percentage positive impact on Tobin's Q of the two point drop in normal times as $(.0559*2)/0.675 = 16.56\%\%$. Once again, the approximate percentage positive impact on Tobin's Q of the two point drop in accounting scandal times is much larger: $(.1645*2)/0.675 = 48.75\%$.

Table IV: Fixed-Effects Regressions of Tobin's Q on Corporate Governance Provisions For the Accounting Scandal Period v. Normal Times

| Variable | Gindex | | | Eindex | | |
|---|---|---|---|---|---|---|
| | 2000-2002 Accounting scandal | Normal times | Accounting scandal – Normal times | 2000-2002 Accounting scandal | Normal times | Accounting scandal – normal times |
| *Gindex/ Eindex* | -0.1061*** (-4.92) | -0.0249*** (-2.64) | -0.081*** (-3.45) | -0.1645*** (-4.95) | -0.0559*** (-3.33) | -0.1085** (-2.91) |
| *Debt* | 0.573* (1.86) | 0.293*** (5.55) | | 0.583* (1.88) | 0.291*** (5.58) | |
| *R&D* | 1.013 (0.56) | 0.849*** (2.77) | | 1.065 (0.59) | 0.849** (2.78) | |
| *RDdum* | -0.115 (-0.99) | 0.079 (1.37) | | 0.134 (1.16) | 0.079 (1.35) | |
| *Lsales* | 0.223** (2.04) | 0.131 (1.56) | | 0.225** (2.05) | 0.129 (1.55) | |
| *Lsales2* | -0.026** (-2.47) | -0.009 (-1.59) | | -0.026** (-2.52) | -0.009 (-1.59) | |
| *Cons* | 1.515*** (2.97) | 0.639** (1.97) | | 0.939* (1.94) | 0.551* (1.72) | |
| $R^2$ | 0.003 | 0.011 | | 0.005 | 0.013 | |

*** statistically significant at the 1% level, ** statistically significant at the 5% level, and * statistically significant at the 10% level, respectively.

*2. OLS results.* In this section, we provide cross-sectional OLS results comparing the 2000-2002 accounting scandal period with the years in our sample that surround it. Again, we calculate for each variable the average across the years by firm, thereby abstracting away from any time variation, and focus on the cross-sectional variation only. The results in Table V show that both *Gindex* and *Eindex* rating are negatively correlated with firm performance in both the 2000-2002 accounting scandal years and in the normal years in our sample (i.e., better rated

governance structures are associated with higher Tobin's Q's), but there is no statistically significant difference between the relationship in each of the two periods.

Table V: Cross-Sectional OLS Regressions of Tobin's Q on Corporate Governance Provisions for the Accounting Scandal Period v. Normal Times

| Variable | Gindex | | | Eindex | | |
|---|---|---|---|---|---|---|
| | Scandal | Normal | Scandal-Other | Scandal | Normal | Scandal-Normal |
| Gindex or Eindex | -0.0309*** (-3.64) | -0.0302*** (-5.53) | -0.001 (-0.72) | -0.0862*** (-5.15) | -0.0730*** (-6.28) | -0.013 (-0.65) |
| Debt | 0.367** (2.55) | 0.180** (2.51) | | 0.383*** (2.68) | 0.186*** (2.63) | |
| R&D | 4.188*** (6.64) | 2.338** (1.98) | | 4.121*** (6.53) | 2.316** (1.97) | |
| RDdum | -0.312*** (-6.23) | -0.359*** (-5.80) | | -0.313*** (-6.28) | -0.360*** (-5.84) | |
| Lsales | -0.220** (-2.40) | 0.019 (0.26) | | -0.231** (-2.55) | 0.026 (0.36) | |
| Lsales | -0.010 (-1.63) | -0.001 (-0.24) | | -0.011* (-1.89) | -0.002 (-0.47) | |
| Cons | 0.166 (0.48) | 1.281*** (3.83) | | 0.086 (0.25) | 0.178*** (3.57) | |
| $R^2$ | 0.096 | 0.090 | | 0.101 | 0.093 | |

\*\*\* statistically significant at the 1% level, \*\* statistically significant at the 5% level, and \* statistically significant at the 10% level, respectively.

*3. Summary of results in accounting scandal years versus other years.* The results reported above provide strong support for our hypothesis that the impact of cororate governance on performance is highly sensitive to context: that changes in governance structure in particular contexts can constitute a credible signal concerning the quality of management. As our

hypothesis would predict, our fixed effects tests reveal that score-improving changes in corporate governance have a highly statistically significant larger effect on Tobin's Q in the accounting scandal period 2000-2002, years when the market appeared to perceive itself as less informed concerning management quality than during the normal twelve year surrounding period. Our OLS tests reveal no statistically different effect of governance structure differences across firms on Tobin's Q in 2000-2002 than in other years. These latter results suggest that our fixed effects results do not arise because, in the accounting scandal years, the market believes the long run effect of governance changes on future cash flows will be greater because of their filtering or incentive/informedness effects.

*4. Robustness of the fixed-effects results to alternative definitions of normal times.* In the above sections we included a large time period of twelve years as our proxy for normal times. Accordingly, as a robustness test, we examine the three years prior to (i.e., 1997 to 1999), the accounting scandal period, and the three years after (i.e., 2003 to 2005) the accounting scandal period, respectively. The results of the fixed effects regressions are given in Table VII. Once again, we find that the impact of the governance variables in the accounting scandal period is statistically significantly larger than impact of the governance variables in the three years periods prior to, or after, the scandal period.

Table VI: Fixed-Effects Regressions of Tobin's Q on Corporate Governance Provisions for Firms in the Accounting Scandal Period v. Different Definitions of Normal Times

| Variable | Normal Times: 1997-1999 | | | Normal Times: 2003-2005 | | |
|---|---|---|---|---|---|---|
| | Scandal | Normal | Scandal-Normal | Scandal | Other | Scandal-Normal |
| *Gindex* | -0.1062** (-4.92) | -0.008 (-0.32) | -0.100*** (-3.52) | -0.1062** (-4.92) | -0.007 (-0.30) | -0.099*** (-3.07) |
| *Eindex* | -0.1645*** (-4.95) | -0.029 (-1.07) | -0.135** (-3.14) | -0.1645*** (-4.95) | -0.033 (-0.89) | -0.131*** (-2.63) |

\*\*\* statistically significant at the 1% level, \*\* statistically significant at the 5% level, and \* statistically significant at the 10% level, respectively. Control variables are included in each regression specification but are not presented in the table.

*5. Robustness tests: focusing on staggered boards and poison pills.* Most commentators believe that the most important governance-structure determinants of a poorly managed firm susceptibility to takeover are the presence or absence of a poison pill and a staggered board, two of the 24 elements going into the G index and two of the six elements going into the E index.[116] We examine the change in Tobin's Q associated with changes in these two elements during the accounting scandal years of 2000-2002 versus the effect of a change during the other years in our sample. The results in Table VII show that, in each case, the effect was greater in the 2000-2002 period by an amount that was statistically significant at the 1% level. In other words, we once again find a larger impact from changes in governance structures in a period of greater uncertainty as to management quality. These findings reinforce our conclusion that certain governance structure changes can serve as a signal of management quality.

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[116] [insert cite].

Table VII: Changes in *Tobin's Q* when Firm Initiated a Poison Pill or Staggered Board for the Scandal Period v. Normal Times

|  |  | Scandal | Normal | Scandal-normal |
|---|---|---|---|---|
| Initiated poison pill | Mean (t-statistic) number | -0.240*** (-3.32) 210 | -0.200*** (-4.38) 247 | -0.039*** -(5.37) |
| Initiated staggered board | Mean (t-statistic) number | -0.117 (-1.22) 49 | -0.053 (-0.88) 71 | -0.063*** (-4.95) |

*** statistically significant at the 1% level, ** statistically significant at the 5% level, and * statistically significant at the 10% level, respectively.


### G. Tests and Results – Comparing Different Types of Firms

The results above relate to comparing *time periods* that differ in terms of the reliability of other information concerning managerial quality. They show that changes in a firm's governance structures in the accounting scandal years had a larger effect on their Tobin's Qs than changes made in normal years. These results support the proposition that in identifiable contexts, changes in governance structure can have a signaling effect concerning managerial quality: if governance changes are signals of managerial quality, we would expect a bigger impact on firm value in situations where the market is less informed concerning such quality.

Additional support for this proposition comes from our results relating to a comparison of types of *firms* that that differ in terms the reliability of other information concerning managerial quality. Our comparison involves firms engaging in substantial R&D, which other studies suggest is harder for the market to evaluate,[117] versus those that do not. Firms that spend money

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[117] See note 15 *supra.*

on research and development (R&D) are more opaque on average than those that do not because in general it is much harder to assess how worthwhile these expenditures are than are expenditures for tangible physical assets. Thus, there is on average a greater asymmetry of information between managers and the market in the case of R&D firms.

We test this hypothesis multiple ways. First, we split our sample for the full fifteen years into firms with R&D expenditures and those with no such expenditures. We report our fixed effects regression results in Table VIII.[118] The impact of the *Gindex* on firm value creation for firms with R&D is shown is shown in column 2. We find a coefficient of –0.036, which is more twice as large as the non-R&D firms' coefficient of –0.014 given in column 3. Both coefficients are statistically significant at the 95% level. When we compare the differential impact between R&D and non-R&D firms in column 4, we find a negative effect of –0.023. This difference is not statistically significant in conventional terms, since we can only rule out with about 80% confidence that the difference is not due to chance. Still, it is at least modest additional evidence in support of our signaling hypothesis.[119] We get parallel results with regard to the impact of the *Eindex* on value creation, also reported in Table VIII.

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[118] We repeat our fixed effects regressions of Table V with the same control variables, just substituting a comparison of R&D versus non-R&D firms for a comparison of scandal versus normal years. For ease of exposition present in Table VIII only the results on the governance indices.

[119] It should be noted in this connection that even if there was a difference between the R&D and non-R&D firms in terms of the actual impact of a governance change on their Tobin's Qs, it would be difficulty to meet the conventional 95% standard given the power of our test. The standard error for our measurement of the difference between R&D and non-R&D firms is 0.017. The observed difference in a governance change's impact on the Tobin's Qs of the two kinds of firms to meet the 95% confidence standard would thus need to be at least .033. Thus, for there to be even a 50-50 likelihood that a test in this situation would yield an observed change in Tobin's Q this great, the actual difference would need to be .033. If the actual impact for non-R&D firms was in fact .014, the actual impact for the R&D firms would need .047, three and one-half times as great.

Table VIII: Fixed-Effects Regressions of *Tobin's Q* on Corporate Governance Provisions for Firms with and without R&D

| Variable | Fixed Effects | | | | | |
|----------|---------------|--------|-----------|--|--|--|
|          | with R&D      | No R&D | with-no R&D | | | |
| *Gindex* | -0.036** (-2.30) | -0.014** (-2.03) | -0.023 (-1.31) | | | |
| *Eindex* | -0.066** (-2.38) | -0.029** (-2.17) | -0.037 (-1.21) | | | |

*** statistically significant at the 1% level, ** statistically significant at the 5% level, and * statistically significant at the 10% level, respectively. Control variables are included in each regression specification but are not presented in the table.

Additional, and stronger, evidence supporting our hypothesis comes from our tests splitting our sample into firms with R&D expenditures and those with no such expenditures, and then, for each group, comparing the impact on Tobin's Q of a score altering governance change in the scandal years versus normal years. If our signaling hypothesis is correct, then we would expect that when R&D firms, which are less well understood by the market, change their governance structures, the impact of the change on their Tobin's Q in the accounting scandal years would be even greater than for other firms that changed their governance structures in those years. We report our fixed effects regression results in Table IX.[120] As our earlier results would suggest, both kinds of firms that change their governance structures have a greater change in Tobin's Q in the scandal years versus normal years, but the R&D firms – those for whom there is a greater information asymmetry between managers and the market – have the larger of the increases and do so by a statistically significant amount, as shown in the last column of Table IX.. Consistent with our earlier results, although through the full sample period differences in

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[120] We repeat our fixed effects regressions of Table V with the same control variables, just substituting a comparison of R&D versus non-R&D firms for a comparison of scandal versus normal years. For ease of exposition present in Table X only the results on the governance indices.

governance scores for R&D firms have a greater impact on their Tobin's Qs than for non-R&D firms, our OLS results reported in Table X show that for firms that do not engage in a governance change, neither type of firm – R&D or non-R&D -- shows a statistically significant difference in terms of the impact of governance scores on Tobin's Q between the scandal years and the normal years. In sum, in the circumstances involving the greatest information asymmetry between the market and insiders – R&D firms that change in the scandal period – we see the largest impact on the relationship between a firm's governance score and its Tobin's Q, just as our hypothesis would predict.

Table IX. Fixed-Effects Regressions of *Tobin's Q* on Corporate Governance Provisions for Firms with and without R&D in the Scandal v. Normal Times

| Variable | With R&D | | | Without R&D | | | Difference with and without R&D |
|---|---|---|---|---|---|---|---|
| | Scandal | Normal | Scandal-Other | Scandal | Normal | Scandal-Other | |
| *Gindex* | -0.151*** (-3.57) | -0.031* (-1.78) | -0.119*** (-2.61) | -0.064*** (-4.07) | -0.010 (-1.35) | -0.055*** (-3.13) | -0.064** (-2.31) |
| *Eindex* | -0.226*** (-3.78) | -0.074** (-2.36) | -0.151** (-2.24) | -0.103*** (-3.24) | -0.027* (-1.81) | -0.076*** (-2.16) | -0.075** (-1.99) |

*** statistically significant at the 1% level, ** statistically significant at the 5% level, and * statistically significant at the 10% level, respectively. Control variables are included in each regression specification but are not presented in the table.

Table X. OLS Regressions of *Tobin's Q* on Corporate Governance Provisions for Firms with and without R&D in the Scandal v. Normal Times

| Variable | With R&D | | | Without R&D | | | Difference with and without R&D |
|---|---|---|---|---|---|---|---|
| | Scandal | Normal | Scandal-Normal | Scandal | Normal | Scandal-Normal | |
| *Gindex* | -0.041*** (-2.83) | -0.035*** (-3.91) | -0.006 (-0.34) | -0.024*** (-2.50) | -0.024*** (-3.51) | -0.000 (-0.05) | -0.005 (-0.25) |
| *Eindex* | -0.123*** (-4.14) | -0.091*** (-4.98) | -0.033 (-0.93) | -0.064*** (-3.24) | -0.052*** (-3.66) | -0.012 (-0.53) | -0.020 (-0.48) |

\*\*\* statistically significant at the 1% level, \*\* statistically significant at the 5% level, and \* statistically significant at the 10% level, respectively. Control variables are included in each regression specification but are not presented in the table.

# IV. Larger Lessons

In this Part, we discuss the larger lessons of our findings and how they illuminate current debates in corporate governance.

### A. The Under Theorization of Empirical Corporate Governance Studies

A rich literature has developed in recent years concerning the connection between corporate governance and corporate performance. The G and E index studies play an important role in this literature, helping to give it an empirical foundation. But also important is the developing scholarship criticizing these index studies. [121] These critics argue that a correct understanding of the institutional context is inconsistent with any plausible causal connection between many of the governance attributes scored by the indices and corporate value creation. Accordingly, they assert that many of these attributes cannot possibly have an impact on

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[121] *See*, e.g., Emiliano Catan & Marcel Kahan, *supra* note 10; Klausner, *supra* note 10.

corporate performance.  Their prime example is the poison pill.  The pill can be adopted very

quickly and easily without a shareholder vote when management is faced with an immediate

takeover threat. So, the critics argue, while a firm's index rating will be affected by whether or

not it has a pill, the presence or absence of a pill at any point prior to an immediate takeover

threat cannot be of consequence; because a pill can be quickly adopted, in effect all firms have a

pill regadless of whether one has been formally adopted.  Despite the seeming logic of this

argument, a recent empirical study, using ever more sophisticated econometrics, reports that

certain defensive tactics such as having a pill in place do in fact result in fewer future takeovers.

The authors of this study, though, stress that their results are "atheoretic" : no hypotheses are

offered to explain the link between these governance provisions and shareholders receiving

fewer premium offers.[122]

In essence, these various empirical corporate governance results have gotten out ahead of

the capacity of existing theory to explain them.  In our view, the reason for this theoretical

shortfall is because the impact of corporate governance on performance is more contextual than

is generally understood. The G and E index studies, for example, only measure the average

impact of a set of attributes on firm value across a large number of corporations over a

considerable period of time.  Because these studies do not distinguish between different times

and circumstances, they observe only an average, and most firms are not average.   As noted in

the introduction, careful observers of the corporate world would find it highly likely that, rather

than a single link between the specified corporate governance provisions and performance, a

range of linkages are possible whose direction and intensity depend centrally on the particular

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[122] *See*  Karpoff et al, *supra* note 12.

context in which a firm is operating. From this perspective, the impact of governance on firm performance is second order except when circumstances make it important. Thus the extent of impact all depends on the particular characteristics of both the time and the firm involved. Our empirical study of the signaling hypothesis exemplifies this story: the strength of the signaling link between governance and performance mattered much more in the scandal period than in the normal period and more for R&D firms than for non-R&D firms.

*B. Plausibly Explaining the First Two Links Through Which Governance Affects Tobin's Q*

We agree with many aspects of the argument put forth by the critics of the G and E index studies. Michael Klausner, for example, makes a very important point: with a better understanding of the institutional realities, the indices could have been constructed with considerably more subtlety so as to frame a better hypothesis between governance characteristics and firm performance.[123] Still, in our view, a plausible story exists as to why, through the filtering and incentives/informedness links, firms with differently rated governance indices will on average differ in terms of value creation as measured by Tobin's Q.

*1. Staggered boards, supermajority provisions, shareholder written actions, and special shareholder meetings.* The presence of a staggered board is scored unfavorably by both indices. As Klausner relates, there are good reasons, both theoretically and empirically, to believe that a staggered board will lead to lower-value-creation managerial behavior because it provides managers protection from capital market discipline. Also, while it is true that certain other governance attributes scored unfavorably by one or both of the indices become largely irrelevant in the presence of a staggered board – supermajority provisions, limitations on shareholder action

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[123] Klausner, supra note 9.

by written consent, and prohibitions on special shareholder meetings – they may well still be of consequence for the approximately 40% of firms that do not have a staggered board. Moreover, as for the firms that do have staggered boards and thus are unfavorably scored for that attribute, many do not have these other negatively scored attributes: 80% do not have supermajority provisions, a majority do not limit shareholder action by written consent, and a majority do not prohibit special meetings, perhaps in each case for the very reason that they are irrelevant. In sum, we believe that there are reasons to believe that, on average across all firms and time periods, firms that score more favorably with respect to these various governance attributes would create more value. At the same time, we share with Klausner the belief that a recognition of interactions among the various attributes might well allow a much more precise prediction of the value creation capacity of individual firms and a more theoretically compelling explanation of why.

*2. Poison pills.* As noted above, another key criticism of the index studies concerns the poison pill. Recall the argument that because a pill can be put in place quickly and easily when and if there is ever an actual takeover attempt, the firm without a pill is no less protected from capital market discipline than one with the pill and so should not be scored more favorably by the indices. Reality may not be so simple. For example, the absence of a poison pill may be value relevant for a firm that had had a pill in the past that management subsequently removed, perhaps to improve its governance image to institutional investors. To thereafter reinstate the pill at the time of a hostile takeover or proxy fight would tarnish management and hurt its chances in the fight against the potential hostile acquirer. There is empirical evidence consistent with this conjecture. Vicente Cuñat, Mireia Giné and Maria Guadalupe report that approval of a

precatory shareholder proposal to remove an antitakeover proposal listed in the G index results in an increase of 12 to 14% in the cumulative probability that the firm will be the target of a successful takeover within 5 years after the vote.[124]

*3. Other scored governance attributes.* There are a number of items in the G index that concern governance attributes unrelated to entrenching incumbent management. These attributes can, at least in theory, affect performance by means other, however. For example, there is a tradeoff between attracting the best officers and directors, which may aided by governance attributes such as indemnification and protection from exposure to money damage suits for fiduciary duty violations, and the deterrent effect of facing such damage actions without such indemnification or liability exposure protection. Such indemnification and liability protection are each scored as indicating poor governance by the G index.

Whether or not a firm provides its managers with a golden parachute involves a similar involves a similar tradeoff. On the one hand, because a parachute provides incumbent managers with a handsome payment if there is a takeover, it lessens their resistance to one. This increases the likelihood that if the firm is being poorly run, its assets will be transferred to more capable hands. On the other hand, the parachute lessens the sting of a takeover if one takes place and so weakens the incentive to do a good job in order to avoid a takeover. Both the G and E indices score the absence of a golden parachute favorably.

It is unclear whether these G and E index scorings identify the right spot in terms of each of these tradeoffs. In other words, it is unclear with respect to each of these three attributes whether

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[124] Vicente Cuñat, Mireia Giné and Maria Guadalupe, *Price and Probability: Decomposing the Takeover Effects of Anti-Takeover Proposals* (working paper, January 27, 2015). The sample was composed of all shareholder-sponsored proposals to remove an antitakeover provision voted on in annual meetings of S&P 1500 firms between 1994 and 2013 (2809 proposals in 929 different firms).

the index authors made the correct choice in terms of whether it is better to have the relevant provision at issue or not, i.e., the choice that, on average across all firms and time periods, results in firms with the more favorable rating creating more value. They may be making the right choice, however, in which case their scoring of these attributes helps explain the G and E index study results. In any event, consistent with our larger thesis, the correct point is that the relation between governance and performance is contextual: the tradeoff for any given firm at any given point in time self-evidently might vary considerably from what on average is best. The absence of studies that take a more nuanced approach to the circumstances when these governance attributes matter and in which direction leave these questions unresolved.

### C. The Significance of the Plausible Story's Lack of Proof

We have just presented a story as to why, using the G or E index, firms with differently rated governance structures will on average differ in terms of value creation as measured by Tobin's Q. This story is plausible, but in significant parts it is unproven, and in some parts even quite speculative. What is the significance of this lack of proof?

The first point to make is that the index study critics are putting forth a theory as to why the index studies should not get their empirical results, but no theory as to why they nevertheless do. Our plausible story *is* a theory as to why they do. So we would say to the critics, it takes a theory to beat a theory. More importantly, though, our story recognizes the more contingent and contextual nature of the relationship between governance and value creation and in so doing provides the first sketch of a guide for future empirical research.

The second point goes to our signaling hypothesis. Whatever the validity of our story here about how governance structure ratings affect Tobin's Q through the first two links – filtering

70

and incentives/informedness – we have empirically demonstrated the existence of a third link, the one involving signaling. The index critics might respond that if we are unable to show why the filtering and incentives/informedness links work, our empirical results relating to signaling lack a theory as well. Proof of our story, they might suggest, is necessary to show that it would be more costly for low quality managers to adopt a score improving governance change than for high quality managers to do so. Without this higher cost for low quality managers, such a governance change would not be a credible signal of managerial quality. Proving our story is difficult because the effectiveness of particular defensive techniques is also contextual: the circumstances of a particular company may cause a technique that may not be generally effective to be protective in particular circumstances.

In a situation where context matters, however, it is sufficient to note what our empirical results demonstrate: score changing governance have larger impacts on Tobin's Q in situations where information asymmetry concerning managerial quality is greater. Given this finding, if it were not costly to the managers of at least some firms to improve their governance score, every firm would have an incentive to do so, with the result that all companies – those with good managers and those with bad managers – would change their governance in the same direction during the sample period. We observe that this is not the case. Hence the inference can be drawn that whatever are the reasons, there is some benefit to a more highly rated governance structure but that obtaining this benefit is more costly for low quality managers than for high quality ones. The alternative inference is that managers make changes in governance structure randomly. We are aware of nothing in the literature that makes this claim or offers evidence consistent with it.

# V. Conclusion

Prior scholarship reports a relationship between firms with good corporate governance index ratings and those best at creating shareholder value, results that our study confirms. However, little work explores why we observe this relationship. We hypothesize that, in the right context, a change of corporate governance structure that results in a changed rating can be a signal concerning the quality of a firm's management. This is because a change in governance structure that makes a firm's management more vulnerable to a hostile takeover, or that gives independent directors or activist shareholders more voice, imposes greater costs on poor quality managers than on good quality ones. A positive signal concerning the quality of management would lead to a positive reevaluation by the market of a firm's future cash flows and hence an increase in the firm's Tobin's Q, with a negative signal having the opposite effect.

We test this hypothesis by focusing on 2000-2002. This is the period of unprecedented corporate accounting scandals, such as Enron and WorldCom, involving the fall from grace of some of America's largest and most respected companies. Commentators at the time reported concern about where the "next shoe would drop" and, more generally, expressed reduced confidence in the accounting behind firms' reports of past performances. The market thus perceived there to be a greater asymmetry of information between it and corporate insiders concerning the quality of firm management. The signal of management quality arising from a change in governance structure, even though always noisy, would take on added value in this environment.

We compare results testing the relationship between firms' governance indices score and Tobin's Q in this 2001-2002 period with results from the same tests in the years surrounding the

accounting scandal period (1992-2000 and 2003-2006). The comparison involves both the results from fixed effects tests of the impact of an index score-improving governance structure change on Tobin's Q in any given year, and the results of cross sectional OLS tests on the relationship in any given year between firm governance ratings and firm Tobin's Qs. The comparison of the fixed effects tests reveals that a changed governance index score in the accounting scandal years is associated with a much larger change in Tobin's Q than a comparably sized rating change occurring in the surrounding years. This difference is highly significant both statistically and economically.

In contrast, the comparison of the OLS results, which are dominated by firms that did *not* change, shows no significant difference in terms of the relationship between a firm's governance index rating and its Tobin's Q during the accounting scandal period (2001-2002) relative to the surrounding years. The difference between the fixed effects comparison and the OLS comparison strongly suggests that signaling was at work. This conclusion follows from the fact that the OLS finding for 2001-2002 is not significantly different from the OLS finding for these other years. This suggests that there was no significant difference between the scandal period and normal period in terms of the filtering and incentive/informedness effects of a good corporate governance structure. So the fact that that there was a significantly greater impact on Tobin's Q during the scandal period relative to the normal period for firms that *did* change suggests that it must have been the third link between governance structure and performance – signaling – that became stronger in the scandal period with its heightened information asymmetry.

We strongly suspect that the signaling feature of a change in governance structure is not confined to 2001-2002. The market also did not know everything about management in 1996-2000 and 2003-2006. Likely, what we are seeing in 2001-2002 is simply a larger than usual signaling effect because, in this period, the market was abnormally uncertain about the quality of management based on the other information available and so the value-relevance of the signal outweighed its noisiness. This conclusion, relating to differences in information asymmetry across time periods, is bolstered by our study relating to differences in information asymmetry across different types of firms. Thus, in response to the question we posed at the outset – *why* the observed relationship between governance ratings and Tobin's Q and under what circumstances would governance structure particularly matter– we believe that signaling can play a substantial role in certain contexts.

The idea that governance structure choices can serve a signaling function is an important conclusion in and of itself. Reducing asymmetry of information between the market and corporate insiders significantly enhances the efficiency of the economy. It allows improved monitoring of managers so that they are under more pressure to better utilize a firm's existing productive assets and to make better decisions concerning investments in new projects. The more accurate share prices that result from reduced asymmetries also help the efficiency with which capital is allocated by external capital markets and make trading markets more liquid. A variety of regulations are designed, at least in part, to reduce these asymmetries, including our mandatory issuer disclosure regime and the antifraud rules concerning trading on private information. In designing public policy, it is important to appreciate as well the role that the actions of private actors can play in reducing these asymmetries. Our results give new insight in

this regard.  They also suggest how sharply asymmetries about management quality can grow if regulatory and gatekeeper failures allow a substantial number of accounting frauds to develop.

Even more important is the larger lesson of our results and their contribution to the law and finance literature concerning corporate governance.  These results are strong evidence that the impact of governance is in important respects contextual, depending on the particular circumstances of the time involved and the particular characteristics of the firms involved.  This point, largely missed to date, helps illuminate the current debate concerning the corporate governance index studies.  It suggests that that there is theory that can explain the index studies' strong empirical results linking governance structure with firm value creation, but that, rather than a single link between the specified corporate governance provisions and performance, a range of linkages are possible whose direction and intensity depend centrally on the particular context in which a firm is operating.