Determinants of University Board Structure

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Abstract

There is a large body of empirical research that examines the relationship between corporate board structure and performance. The only consistent result seems to be that larger boards are associated with worse performance. However, recent evidence suggests that even this result fails to hold when one considers the endogenous relationship between firm characteristics, board structure and firm performance. There has been considerably less research on non-profit boards. This paper attempts to help fill that void by examining the relationship between university boards of trustees and university performance. The data consist of information on over 400 university boards with data available in both 1968 and 2005. The paper examines the relationship between university characteristics and board characteristics in order to determine how an institution's operating environment affects board structure and how this relationship changes over time. Preliminary attempts are made to examine the relationship between board structure and performance.

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I. Introduction

There is a large body of empirical research that examines the relationship between corporate board structure and firm performance. The existing literature has focused on board composition or board independence, board size, ownership levels of officers and directors and occupational or reputational measures of individual board members. The evidence suggests that board composition is not related to firm performance in any systematic manner. However, there is evidence that boards with a higher fraction of outside directors tend to make different if not better decisions than those with a higher fraction of inside directors (Hermalin (2004)). The one consistent relationship is that board size seems to be negatively related to various measures of firm performance ((Yermack (1996), Eisenberg, Sundgren and Wells (1998) Brown, Helland and Smith (2007)). Otherwise, there seems to be little in they way of formal statistical relationships between the characteristics of a firm's board and the firm's current or subsequent performance.

The lack of stronger relationship between board structure and performance should not be surprising if one believes that firms adjust board structure to their operating environment. If there were a single optimal board structure, then competitive pressures would force all firms to gravitate toward this ideal. However, it is more likely that each firm's board evolves over time in response to the firm's operating environment. Hermalin and Weisbach (1998) model board structure as endogenously related to performance based on the negotiating power of the CEO. In their model, successful CEOs are able to negotiate toward less oversight and control over their actions. There is also growing body of empirical literature that suggests another avenue for endogeneity between firm's

governance structure and firm's characteristics. Demsetz and Lehn (1995) argue that ownership concentration is an endogenous response to firm characteristics and find systematic variation in ownership in response to size and risk measures. Lehn, Patro and Zhao (2004) examine a set of survivor firms and find that board independence and size varies over time in response to growth opportunities. Gillian, Hartzell and Starks (2003), Mulherin (2005), Boone et al (2007) and Coles, Daniel and Naven (2007) find that board structure and specifically board size varies systematically with firm and industry characteristics. The latter paper finds evidence that both a higher fraction of inside directors and larger board size can improve performance for firms operating in certain environments.

There has been limited research on the relationship between governance and university performance (McCormick and Meiners (1988), Brown (2001) and Masten (2006)) and the relationship between non-profit boards and performance in non-profit organizations. However, there has not been any formal empirical research that examines the determinants of university boards' characteristics or the relationship between board structure and university performance. This is in part due to the lack of data on university boards and the difficulty in measuring the performance of universities. Hermalin (2004) notes the value in determining whether or not the negative relationship between board size and performance exists across universities and other non-profit organizations.

This paper attempts to help fill that void by examining the relationship between university boards of trustees and university performance using a unique data source for information on university boards. We also examine the relationship between university characteristics and board characteristics in order to determine how an institutions operating environment affect board structure.

II. University Governance and University Boards

While traditional European universities were governed by their own faculty, American colleges and universities were from their earliest beginnings controlled by boards of lay people that delegated the management of the university to a president that also had teaching responsibilities.[1] Much like the modern corporation, this system placed the governance of these organizations firmly in the hands of the board of trustees with the president serving as an agent of these trustees (Kirkpatrick (1931)). Not only has this governance system managed to persist in the university, it has also become a dominant feature of American corporate governance.

In terms of board independence, universities differ a great deal from for-profit firms. University boards do not have the traditional independent (outside) director versus non-independent (inside) director classification. Most university boards have no inside directors. When a inside trustee is present it is usually only the university president, chancellor or other named chief executive officer. In a few cases, a second university official, normally a chief financial or academic officer, will also serve on the board of trustees. The university executives normally serve in an ex-officio capacity and often do not have voting rights. The chief executive of the university rarely serves as chairman of the board so that there is a separation of these positions that rarely occurs in public corporation.

While the traditional measure of board independence does not apply, a university board may have different selection methods for directors that are important. Private institutions normally have boards that are self perpetuated, elected by alumni from their

[1] Kirkpatrick (1931) that while Harvard and William and Mary were nominally founded in the English tradition, neither institution ever experienced anything but brief periods where a strong board was not in control.

own ranks or are appointed by specified religious groups for institutions that maintain some religious affiliation. While many university boards have only one selection method for trustees, others have trustees selected in a variety of ways resulting in significant variation across boards.

One pervasive result in the studies of corporate boards is that larger boards are associated with poorer performance even after controlling for other firm characteristics and potential endogeneity problems. All of the problems of team production (Alchian and Demsetz (1972)) and group decision making (Olson (1971)) may make it easier for board members to shirk and make it difficult for larger bodies to work effectively. However, as Hermalin (2004) notes, it is difficult to believe that such a relationship is causal.

While the same informational and organizational problems that plague larger boards in the corporation will also plague large university boards, there may be some reasons that larger boards have larger benefits in the university setting. Bowen (1994) and Freedman (2004), both former presidents of prestigious universities, note that universities often serve a broader range of constituencies that typical for-profit firms and may need to be larger boards to properly represent those varied groups but further indicate that university boards should not become too large to performs effectively. The advisory role of directors may be especially important in the university. University presidents and other high level administrators often come from the ranks of academia. They may often have little experience in business and management while the university must ultimately operate in a business environment. Institutions must balance budgets, manage endowment assets, build and maintain a physical plant and maintain a large staff of both faculty and non-faculty employees. A larger board may be necessary to help deal with these complexities. While university trustees may not play a role in decisions

involving curriculum or faculty personnel issues, their advice on the management of the business aspect of the university may be invaluable to the organization's success.

University boards commonly include individuals that have the ability to attract funding from outside sources. Corporate boards often contain members with political and military backgrounds that help the firm to secure government contracts and navigate regulatory hurdles (Kole and Lehn (1999), Agrawal and Knoeber (2001), and Helland and Sykuta (2004)). Former politicians and individuals with ties to large foundations may serve a similar role on university boards. Most board members make financial contributions to the institution and sometimes these donations are significant. Many of these donors may be included on the board simply in recognition of their donations and may or may not be active board members. While they may serve a monitoring role, these trustees may be less active in providing advice and ratifying university decisions. It is also possible that large university boards may be represented by a smaller informal group of trustees that actually bear the bulk of the decision making responsibilities. Corporate boards normally provide some remuneration for directors while membership on university boards often requires some financial commitment to the institution. That alone may mean that board size has a different relationship with performance across profit and non-profit organizations.

There may also be a reason to believe that university boards are more critical to performance than corporate boards (see Bowen (1994) and Brown (1997)). Jensen (1993) notes that corporate organizations are ultimately constrained by capital markets, legal/political/regulatory system, product and factor markets and internal control systems headed by the board of directors. Universities are afforded a greater degree of insulation from the capital market and other market forces. While universities must ultimately

compete for students and donations, they do not face the pressures of the market for corporate control or the immediate market for residual claims that signals the market's evaluation of university decisions. Without a strong internal control system maintained by the board of trustees, the university may be able to operate more inefficiently for a longer period of time than could a for-profit firm. In addition, the importance of the board in controlling agency problems may vary across institutional type. Masten (2006) finds that both public and Catholic institutions are more likely to have an autocratic form of governance. Boards may be more important in controlling agency problems in this environment where other stake holders have less influence.

While there is likely to be a similar endogeneity between performance and university board structure, the differences in universities and for-profit firms are many. Hermalin and Weisbach (1998) argue that choice of trustees in the corporation is part of a negotiating process between the CEO and existing board. The CEO gains more influence and negotiating power with better performance. It is not clear if a similar process evolves within the university. The university bylaws often place strict limitations on both board size and composition. For one, many of the trustees are chosen by alumni or religious groups and not the board itself. Trustees are often required to donate significant amounts of money to the institution. This lowers the choice set for possible trustees and may limit the president's ability to significantly influence trustee selection. Freedman (2004) discusses his role in trustee selection as a university president at both private and public institutions and suggests it was minimal. While university presidents have some role in the selection process, it is not clear whether there exists a similar endogeneity problem between board structure and performance in the university to the one discussed by Hermalin and Weisbach (1998). However, there may be a more straightforward

endogeneity problem with respect to board size in that better performing institutions may find it easier to attract trustees, especially those willing to make donations. In addition, the second type of endogeneity problems that affect board size and structure related to the characteristics of the firm may also affect university boards. The characteristics of the university may be related to university board size and composition.

Measuring university performance is difficult because universities have a variety of missions and no single well-defined measure of performance. I assume that there is some overall measure of university performance or prestige that the university attempts to maximize. In simple economic terms, operating efficiency is simply ensuring that the same expenditures could not be reallocated in such a way to improve upon that performance outcome. However, without a single measure of performance or prestige we can only proxy for performance with observable measures of performance. In this case, the focus is on SAT scores. If a higher education institution's mission is to educate students from a particular geographic area, students of a particular faith or students with specific interests, then the SAT score may be a poor measure of comparative performance. However, the measures of corporate performance also suffer from similar problems.

III. The Data

The *American Council of Education* has intermittently published *American Universities and Colleges* which is a fact book on institutions of higher education. The type of data published is similar but not the same across editions. The 1968 edition provides information on the size and nature of appointment of the governing board. For example, Yale University is governed by the Yale Corporation which has 10 self

perpetuated members serving life terms, 3 ex-officio members (the president of the university, the Governor and Lieutenant Governor of Connecticut) and 6 members selected by the alumni for 6 year terms.[2] The ACE fact book also contains information on the history of the institution, enrollments, faculty size, library volumes, student life, admission policies and SAT scores, selected financial data, institution type and religious affiliations. Neither later nor earlier editions of the ACE fact book provide the same detailed information on the governing board that is provided in the 1968 edition. In addition, I have obtained current university bylaws and collected board information posted on university websites or through direct solicitation of the institutions president's offices. The data was then matched with university characteristics obtained from the Integrated Postsecondary Education System Data System (IPEDS).

Table 1 provides summary statistics for the average board size and board composition for all institutions with available SAT scores. In the 1968 sample, the average board consisted of 25.52 trustees and in the 2005 sample the average board consisted of 33.01 trustees.[3] The percentage of self-perpetuating directors was 60.0% and 43.3% of the institutions had a completely self-perpetuating board while 29.5% had no members chosen in this manner in 1968. On average, 31.5% of board members were chosen by religious organizations but almost two-thirds of the institutions had no members chosen in this manner. Alumni choose 3.9% of the trustees at the average institution but at almost 80% of the institutions, alumni selected no trustees in 1968. The primary difference across the 1968 and 2005 samples is the reduced reliance on using a religious group or body to select trustees as the fraction of trustees drops to 13.9% in the

[2] The Yale University Board still has had this configuration since 1871 and still has it today. Yale Corporations By-Laws (www.yale.edu/about/bylaws.html).
[3] Mace (1971, page 10) reports an average corporate board size of 15 for the similar time period and Mulherin (2005) reports an average corporate board size of 10 in 2000.

later sample. This is due in part to a smaller fraction of institutions affiliated with a religious body in the later period but also a reduced reliance on this selection method among those institutions still affiliated with a religious group. The trustees seem to have been replaced by self-perpetuating board members.

Of the 625 private institutions in the 1968 sample, 175 have no affiliation with a religious group. These independent private institutions have an average board size of 28.88 members with 88.0% of the directors being chosen by the board itself. Almost none (2.19%) of the independent institutions fail to choose at least one director in this manner. The 2005 sample is very similar with 88.0% of the trustees being chosen by self-selection. Alumni choose 7.5% and 7.1% of the trustees at independent private institutions in 1968 and 2005. For those institutions affiliated with a religious organization, the fraction of directors chosen by religious group is considerably higher, 44.2% and 22.8%, in both periods but there is considerably less reliance on religious selection even for institutions with religious affiliations in the later period. In both periods, institutions affiliated with religious institutions are less likely to have trustees chosen directly by alumni.

Table 2 presents the summary statistics for our performance measure, SAT scores, and the control variables. There is considerable variation across institutions in terms of quality as indicated by SAT scores. In the 1968 sample, the mean SAT score is 1,057 and in 2005 the SAT scores, based on a re-centered exam, the mean score is 1,127. The mean value for enrollment, total revenue, library volumes and institution age are all higher in the later sample as one would expect. There also is an increase in the fraction of the sample composed of independent institutions as opposed to having a religious affiliation.

For the 1968 sample, the ACE fact book provides its own classifications of university types. I define a liberal arts College as an institution that is classified by the ACE fact book as either a liberal arts I or liberal arts II institution. These institutions comprise 67.5% of the sample in 1968. Doctoral institutions are defined as those that offer a doctoral degree and represent 11.84%. For the later sample, we rely on Carnegie classifications of liberal arts and doctoral institutions. In the later period, the liberal arts colleges make up 28.71% of the sample and doctoral institutions make up 29.52% of the sample. The data suggest a large increase in the number of doctoral institutions and a large decline in liberal arts colleges across the two periods. For the doctoral institutions, this is likely to be the case although some of the difference may be due to differences in definitions across the two sources. In the case of liberal arts colleges, I suspect the primary reason for the decline is that each source uses a different definition for liberal arts colleges. This makes it difficult to compare the results for these variables across time periods.

IV. Models and Results

A. Determinants of Board Characteristics

The analysis focuses on board size and board composition. There is little in the way of theory or prior empirical research that suggests an optimal university board size. The corporate board literature indicates that board size varies across industries (Mulherin (2005)), is positively related to firm size (Mulherin (2005), Lehn et al (2004), Boone et al (2007)), negatively related to a firm's growth options (Lehn et al (2004)), positively related to the firm's need for advising, and positively related to firm diversity (Boone et al (2007)) and complexity (Coles et al (2007)). There are also reasons to believe that

university board size will increase with university size and complexity. Larger more complex institutions may have the need for more directors to actively monitor the many activities of the institution. However, larger institutions also have the ability to hire their own expertise in areas such as building and grounds, endowment management and financial services. A small institution may not have such expertise and rely on trustees with expertise in these areas resulting in the need for a larger board.

Table 3 presents OLS estimates of the relationship between board size and institutional characteristics. Board size is increasing, but at generally at a decreasing rate, with the size of the institution whether measured by enrollment or total revenue. This is consistent with the empirical literature on corporate boards. A doctoral institution is hypothesized to be more complex and potentially require a larger board. This relationship is strong in the 1968 sample but the result does not hold in the 2005 sample. This may in part be due to the larger increase in doctoral institutions in the later period resulting in this no longer being a true measure of complexity. Liberal arts colleges generally have larger boards and this relationship is stronger in the later period. As noted above, liberal arts colleges may require large boards because they are more complex or because they need more directors to serve in an advisory capacity. In both periods, Protestant institutions tend to have significantly larger boards than their independent counterparts. Catholic institutions and institutions with other religious affiliations tend to have smaller boards. However, the significance of the results varies with the time period. Catholic institutions, in particular, have experienced an increase in board size over the two periods.

It is also important to understand the differences between university boards and corporate boards. Most university boards have a requirement that at least certain board

members make substantial monetary donations to the institution. In effect, these trustees serve to monitor that their donations are being used for both the intended purpose and in an efficient manner. The non-profit nature of the university results in stakeholders assuming many of the monitoring roles normally played by shareholders and capital markets. Brown (1997) argues that faculty, alumni and students all play an important role in monitoring university administrators. In addition, many American colleges and universities have strong ties and receive funding from religious organizations. As a result, we should expect that the monitoring done by these stakeholders may manifest itself in them either directly or indirectly selecting board members.

The university exists in perpetuity but many of the stakeholders have an incentive to focus on a short term horizon. Students tend to focus on the current period. While tenured faculty and administrators may focus on the longer term effects of decisions, it is generally the board that must ensure that current decisions properly balance short and long run impacts on the university. As noted in Table 1, the majority of board members are appointed by the existing board. Self-perpetuated boards may allow for greater focus on the long-term success of the institution as opposed to trustees that are chosen by religious groups, alumni, faculty or students. The trustees chosen directly by stakeholders may be more focused on the short term issues unique to their particular time period. Freedman (2004) notes that having at least some self-perpetuating board members also allows boards to choose someone that has needed expertise in areas the board may currently lack. However, self perpetuating boards may also have weaknesses. A board that is completely self-perpetuating may become isolated from other stakeholders and not responsive to changes in the broader marketplace for students or faculty. An isolated

board may become more susceptible to domination by the administration of the institution or overly cater to the demands of a single or small group of donors.

In both time periods, approximately 4% of the trustees are chosen directly by the alumni of the institution. In addition, many members of the board chosen in other manners may also be alumni so it is common for alumni to make up a larger fraction of the board than the fraction chosen by the alumni. For example, it is not uncommon for a fully self-perpetuating board to be composed of a majority of alumni members. In many instances, a board may have explicit or implicit rules requiring that a certain number of trustees or fraction of the board be composed of alumni. Those alumni directly appointed by the alumni themselves are assumed to better represent the views and concerns of the alumni and expected to monitor administrators from a different perspective. Alumni trustees are more likely to force an institution to maintain its focus and past traditions. This may prevent administrators from overreaching, overexpanding or otherwise trying to build their own empire at the expense of the institution. Alumni also have a unique incentive to insure an institution maintains or even improves its reputation. However, Alumni trustees may maintain a certain nostalgia for they way things were and a reluctance to change even when such changes are efficient. For example, they may stand in the way of new campus development when facilities and open spaces they remember fondly will be replaced with newer facilities or resist changes to in the scale or scope of the institution.

Religious trustees are appointed in a variety of ways depending on the religion and denomination. In some cases the trustees are appointed by a small board or body that is associated with the religion and in others they are elected by a larger religious convention. In many cases, the appointed members may primarily be priests, ministers or

nuns and in others they may be primarily lay members appointed by the religious body. The institution generally receives financial support from the religious organization that chooses the trustees. The religious trustees both monitor the use of those funds but also ensure that the religious mission of the institution is met. In some cases, the board is effectively self-perpetuating with the religious organization primarily ratifying the nominees selected by the board. In other cases, the religious body plays a more central role in selecting the trustees. The reliance on religious trustees may create instability for the institution if the religious organization itself is unstable or experiences a sudden shift it is direction. The amount of funding from the religious institution may also be small relative to the actual control the religious trustees are able to exert over the institution.

In both the 1968 and 2005 samples, the data indicate that selection by other methods remains rare. Hence, in this analysis we focus on the self-perpetuating, alumni and religious organization methods of selection. Not surprisingly, the data in Table 1 indicate that being affiliated with a religious organization has a substantial impact on the method of trustee selection. Table 4 presents OLS estimates of the relationship between selection method and university characteristics. There seems to be little relationship between characteristics and choice of trustees other than religious affiliation. The one exception is the case of age. As an institution's age increases, the fraction of trustees chosen by a religious body declines and the fraction chosen by alumni increases. This is consistent with the alumni replacing the religious group as a more important stakeholder group as the institution's alumni base expands and the ability of a religious organization to significantly fund a growing institution declines.

Overall, the results suggest that there are some potentially important relationships between university characteristics and the size of the board of trustees including

institutions size and complexity. There is less evidence of a consistent relationship between characteristics, other than religious affiliation and age, with the fraction of trustees chosen in particular ways.

B. Board Characteristics and University Performance

We examine the relationship between university performance and board characteristics while controlling for university characteristics in a manner that is similar to the existing literature on corporate board structure and performance. Table 5 presents the OLS results when we only include the board size and board composition variables and when we include additional controls. The results are fairly consistent across the two samples. The board size variable and the percentage of trustees selected by alumni are positively related to SAT scores. This result is statistically significant in all specifications in the 1968 sample but is not significant when we include all the control variables in the 2005 sample. This is in contrast to existing literature on corporate boards, where larger board size in generally negatively related to performance. However, a similar question remains as to whether the observed positive result is the result of endogeneity much as the observed negative result for corporate board seems to be.

The board composition variables also exhibit some consistent relationships with performance. In both periods, the percentage of trustees selected by the alumni is positively and significantly related to SAT scores. The results suggest that having direct alumni participation in trustee selection leads to improved performance. The percentage of trustees selected by the board itself is positively and significantly related to performance in the later period but not the earlier period.

We include a variety of control variables to control for university characteristics that may be related to performance. We control for university size by including enrollment and enrollment squared. Total revenues per student and total revenues per student square control proxy for both size and resources. We include an institution's age and dummy variables for whether or not the institution grants doctoral degrees or is a liberal arts college as measures of quality. Finally, we include zero-one dummy variables to indicate the institutions religious affiliation if any. All results are interpreted relative to an independent non-doctoral degree granting institution.

The inclusion of the control variables generally reduces the coefficient and significance of the board size variable. The three include measures of board composition have similar effects once university characteristics are included in the model. Age is always positively and significantly related to performance.[4] Being affiliated with a Protestant or other non-catholic religious organization is associated with lower performance but the result is not always significant. A Catholic religious affiliation is related to higher SAT scores in the early period but exhibits a negative relationship with SAT Scores in later periods. In general, the control variables have the expected sings and the results are consistent across time periods. One exception is that being a liberal arts college has a negative and insignificant effect in the early period but a positive and significant effect in the later period. However, as noted above this is likely the result of differing definitions for this variable over the sample periods.

[4] This is consistent with Goldin and Katz's (1999) observation that very few of the nation's most prestigious institutions were founded after the close of the nineteenth century.

IV. Conclusions and Needed Future Work

So what are we to make of these results? The result that larger board size is associated with better performance sheds some further doubts on the early corporate board literature. However, the result itself is subject to much of the same criticisms concerning endogeneity that has been leveled at other research. The fact that having more alumni directors is positively related with performance may be indicative of alumni being more effective monitors or it could be that higher quality institutions have more alumni trustees for other reasons. In addition, the performance measure we use is a measure of institutional quality and not necessarily a true measure of performance.

The results suggest several avenues for improvements and future research. In some cases, the board size and composition is fixed by the bylaws. While the board is free to amend the bylaws, many institutions have had the same board structure for long periods of time. It may be insightful to examine those boards that have remained unchanged over the sample period whether for de-facto or de-jure reasons in order to see if board structure is related to changes in performance for a set of institutions where it does not change over time. It would also be useful to examine how changes in board structure are related to changes in performance instead of only examining the results in levels. For example, if larger board size is really associated with improved performance we should observe universities that increase their board size improving over time. In addition, more analysis by type of institution and the level of monitoring by other stakeholders in addition to the board may also improve our understanding of how governance influences performance. Finally, it may be possible to identify instrumental variables to control directly for the possible endogeneity problems discussed.

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Table 1: Summary Statistics for Board Characteristics 1968 Sample

	Mean	standard deviation	minimum	maximum	Fraction with 0%	Fraction with 100%
All Institutions		(number of observations = 625)				
Board Size	25.52	13.51	3.00	96.00	NA	NA
Percentage chosen by						
Self	60.0%	43.1%	0.0%	100.0%	29.5%	40.3%
Alumni	3.9%	9.6%	0.0%	100.0%	78.7%	0.2%
Religious Group	31.5%	43.3%	0.0%	100.0%	61.8%	23.8%
Governor	0.1%	1.7%	0.0%	32.4%	99.5%	0.0%
Faculty	0.2%	4.1%	0.0%	100.0%	99.5%	16.0%
Other Method	1.1%	9.6%	0.0%	100.0%	98.4%	0.8%
Ex-Officio	3.2%	11.2%	0.0%	100.0%	83.4%	0.3%
Private and Independent		(number of observations = 183)				
Board Size	28.88	12.00	5.00	96.00	NA	NA
Percentage chosen by						
Self	88.0%	20.1%	0.0%	100.0%	2.19%	55.19%
Alumni	7.5%	12.9%	0.0%	100.0%	63.93%	0.55%
Religious Group	0.8%	6.6%	0.0%	70.6%	97.27%	0.00%
Governor	0.4%	3.1%	0.0%	32.4%	98.36%	0.00%
Faculty	0.1%	1.4%	0.0%	18.4%	98.91%	0.00%
Other Method	1.7%	12.7%	0.0%	100.0%	97.81%	1.64%
Ex-Officio	1.4%	4.1%	0.0%	27.8%	81.42%	0.00%
Private with Religious Affiliation		(number of observations = 442)				
Board Size	24.13	13.86	3.00	85.00	NA	NA
Percentage chosen by						
Self	48.4%	44.7%	0.0%	100.0%	39.4%	34.2%
Alumni	2.4%	7.2%	0.0%	87.9%	84.8%	0.0%
Religious Group	44.2%	45.6%	0.0%	100.0%	47.1%	33.7%
Governor	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Faculty	0.2%	4.8%	0.0%	100.0%	99.7%	0.3%
Other Method	0.8%	8.0%	0.0%	100.0%	98.6%	0.5%
Ex-Officio	3.9%	13.0%	0.0%	100.0%	84.2%	0.5%

Table 1: Summary Statistics for Board Characteristics 2005 Sample

	mean	standard deviation	minimum	maximum	Fraction with 0%	Fraction with 100%
All Institutions		(number of observations = 498)				
Board Size	33.01	8.95	7.00	91.00	NA	NA
Percentage chosen by						
Self	76.2%	31.3%	0.0%	100.0%	10.8%	20.9%
Alumni	4.4%	9.2%	0.0%	81.1%	71.1%	0.0%
Religious Group	13.9%	30.0%	0.0%	100.0%	74.7%	5.6%
Governor	0.2%	1.8%	0.0%	32.4%	98.8%	0.0%
Faculty	0.2%	0.9%	0.0%	6.9%	96.0%	0.0%
Other Method	0.5%	3.7%	0.0%	60.9%	94.6%	0.0%
Ex-Officio	4.7%	7.3%	0.0%	68.8%	37.0%	0.0%
Private and Independent		(number of observations = 198)				
Board Size	33.66	10.89	7.00	91.00	NA	NA
Percentage chosen by						
Self	88.0%	12.8%	32.4%	100.0%	0.00%	21.72%
Alumni	7.1%	10.2%	0.0%	41.2%	55.56%	0.00%
Religious Group	0.3%	2.4%	0.0%	21.4%	97.47%	0.00%
Governor	0.4%	2.9%	0.0%	32.4%	96.97%	0.00%
Faculty	0.2%	1.1%	0.0%	6.9%	94.95%	0.00%
Other Method	0.5%	2.9%	0.0%	31.5%	93.43%	0.00%
Ex-Officio	3.4%	3.6%	0.0%	15.8%	36.36%	0.00%
Private with Religious Affiliation		(number of observations = 300)				
Board Size	32.59	7.38	10.00	65.00	NA	NA
Percentage chosen by						
Self	68.4%	37.0%	0.0%	100.0%	18.0%	20.3%
Alumni	2.6%	8.1%	0.0%	81.1%	81.3%	0.0%
Religious Group	22.8%	35.9%	0.0%	100.0%	59.7%	9.3%
Governor	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Faculty	0.1%	0.8%	0.0%	6.7%	96.7%	0.0%
Other Method	0.5%	4.1%	0.0%	60.9%	95.3%	0.0%
Ex-Officio	5.5%	8.8%	0.0%	68.8%	37.3%	0.0%

Table 2: Summary Statistics for Institutional Characteristics

	obs.	mean	standard deviation	minimum	maximum
			1968 Sample		
SAT Score	625	1,056.8	143.4	515.6	1,429.0
Enrollment	625	2,334	3,478	78	32,077
Age	625	95.4	42.2	9.0	333.0
Protestant	625	43.84%	49.66%	0.00%	100.00%
Catholic	625	25.76%	43.77%	0.00%	100.00%
Other Religion	625	1.12%	10.53%	0.00%	100.00%
Independent	625	29.28%	45.54%	0.00%	100.00%
Total Revenue	619	7,080,773	18,900,000	132,300	211,000,000
Doctoral Institution	625	11.84%	32.33%	0.00%	100.00%
Liberal Arts Institution	625	67.52%	46.87%	0.00%	100.00%
Library Volumes	623	182,043	481,611	6,000	7,600,357
			2005 Sample		
SAT Score	498	1,127.1	141.7	765.0	1,510.0
Enrollment	497	3,373	4,221	80	33,938
Age	498	127.4	45.1	34.0	367.0
Protestant	498	39.96%	49.03%	0.00%	100.00%
Catholic	498	18.07%	38.52%	0.00%	100.00%
Other Religion	498	2.21%	14.71%	0.00%	100.00%
Independent	498	39.76%	48.99%	0.00%	100.00%
Total Revenue	496	147,000,000	393,000,000	3,429,311	3,720,000,000
Doctoral Institution	498	29.52%	45.66%	0.00%	100.00%
Liberal Arts Institution	498	28.71%	45.29%	0.00%	100.00%
Library Volumes	496	1,167,540	2,618,090	0	28,300,000

Table 3: Relationship Between Board Size and University Characteristics						
	1968 Board Size			2005 Board Size		
Enrollment	0.700**		0.676***	1.504*		1.151*
	(0.341)		(0.410)	(0.289)		(0.325)
Enrollment^2	-0.013		-0.01308	-0.037*		-0.034*
	(0.014)		(0.014)	(0.010)		(0.010)
Institution Age	-0.002	-0.007	-0.004	0.001	-0.002	-0.004
	(0.011)	(0.011)	(0.011)	(0.009)	(0.009)	(0.009)
Protestant	4.427*	4.473*	4.490*	1.403	1.479	1.715***
	(1.074)	(1.097)	(1.096)	(0.890)	(0.905)	(0.899)
Catholic	-15.500*	-15.316*	-15.481*	-0.938	-0.182	-0.509
	(1.193)	(1.214)	(1.216)	(1.133)	(1.158)	(1.151)
Other Affiliation	-6.812***	-6.702	-6.712	-7.038*	-7.424*	-6.456**
	(4.084)	(4.108)	(4.103)	(2.674)	(2.666)	(2.675)
Liberal Art	0.525	-0.229	0.407	2.029**	1.422	2.096**
	(1.118)	(1.075)	(1.138)	(0.972)	(0.959)	(0.971)
Doctoral	4.681*	4.585**	4.488**	-0.582	1.104	-0.747
	(1.744)	(1.924)	(1.925)	(1.146)	(1.030)	(1.148)
Total Revenue ($1000s)		0.00013	0.00000		0.00001*	0.00001**
		(0.000)	(0.000)		(0.000)	(0.000)
Total Revenue^2 ($1000s)		0.00000	0.00000		-0.00000*	0.00000
		(0.000)	(0.000)		(0.000)	(0.000)
Constant	25.54*	27.20*	25.84*	28.29*	30.68*	28.88*
	(1.661)	(1.526)	(1.718)	(1.423)	(1.365)	(1.443)
Observations	625	619	619	497	496	495
R-squared	0.397	0.396	0.399	0.122	0.112	0.135

Standard errors in parentheses
*** significant at 10%; ** significant at 5%; * significant at 1%

Table 4: Relationship Between Board Composition and University Characteristics						
	1968			2005		
	% Self	% Alumni	% Religious	% Self	% Alumni	% Religious
Enrollment	0.036**	-0.005	-0.025***	0.006	-0.004	-0.002
	(0.015)	(0.003)	(0.015)	(0.011)	(0.003)	(0.011)
Enrollment^2	-0.001***	0.000	0.001	0.000	0.000	0.000
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Institution Age	0.0006	0.0005*	-0.0009**	-0.0002	0.0005*	-0.0005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Protestant	-0.442*	-0.036*	0.491*	-0.222*	-0.034*	0.255*
	(0.040)	(0.009)	(0.039)	(0.031)	(0.009)	(0.029)
Catholic	-0.302*	-0.056*	0.299*	-0.112*	-0.036*	0.112*
	(0.045)	(0.010)	(0.043)	(0.040)	(0.012)	(0.038)
Other Affiliation	-0.342**	-0.072**	0.224	-0.514*	-0.043	0.381*
	(0.151)	(0.034)	(0.146)	(0.093)	(0.027)	(0.087)
Liberal Art	0.028	0.019**	-0.032	0.014	0.013	-0.019
	(0.042)	(0.009)	(0.041)	(0.034)	(0.010)	(0.032)
Doctoral	0.010	0.032**	-0.077	-0.028	0.004	0.000
	(0.071)	(0.016)	(0.069)	(0.040)	(0.012)	(0.037)
Total Revenue ($1000s)	0.0000	0.0000*	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total Revenue^2 ($1000s)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.760*	0.006	0.166*	0.890*	0.001	0.086***
	(0.063)	(0.014)	(0.061)	(0.050)	(0.015)	(0.047)
Observations	619	619	619	495	495	495
R-squared	0.201	0.186	0.253	0.143	0.17	0.179

Standard errors in parentheses
*** significant at 10%; ** significant at 5%; * significant at 1%

Table 5: Relationship Between SAT Scores and Board Characteristics						
	1968 SAT Scores			2005 SAT Scores		
Board Size	0.939**	1.954*	1.302*	3.403*	3.334*	0.741
	(0.372)	(0.511)	(0.429)	(0.747)	(0.705)	(0.526)
% Self	3.206	8.663	15.801	103.35***	67.849	73.662***
	(31.7)	(30.7)	(35.7)	(52.8)	(67.7)	(41.3)
% Alumni	261.9**	250.4**	65.18	555.9*	429.6*	233.1*
	(121.5)	(121.6)	(98.5)	(137.1)	(136.5)	(74.1)
% Religious	-54.41***	-9.63	15.68	36.51	43.34	64.06
	(31.9)	(31.4)	(35.8)	(54.5)	(68.1)	(41.9)
Protestant		-86.64*	-45.38*		-78.76*	-27.55**
		(16.7)	(15.5)		(14.7)	(11.6)
Catholic		-10.77	40.78*		-89.21*	-27.31**
		(17.9)	(15.4)		(17.9)	(12.5)
Other Affiliation		-62.70	-50.32		-42.45	-11.39
		(51.9)	(38.7)		(52.8)	(32.8)
Enrollment			9.076*			18.650*
			(3.00)			(3.33)
Enrollment^2			-0.304*			-0.434*
			(0.12)			(0.10)
Institution Age			0.427*			0.222**
			(0.11)			(0.11)
Revenue/Student ($1000s)			53.70*			0.0017*
			(6.22)			(0.00)
Revenue/Student^2 ($1000s)			-1.616*			-0.00000*
			(0.22)			0.00
Doctoral			18.00			13.02
			(17.64)			(12.91)
Liberal Art			-2.636			126.1*
			(12.46)			(11.58)
Constant	1,037*	1,036*	843*	907*	989*	876*
	(30.3)	(35.8)	(41.3)	(57.0)	(75.0)	(45.0)
Observations	625	625	619	498	498	495
R-squared	0.083	0.139	0.355	0.178	0.244	0.583

Robust standard errors in parentheses

*** significant at 10%; ** significant at 5%; * significant at 1%