

## **Board Independence and Firm Performance: Case of Small-Cap Firms**

Sharon K. Lee

### **Abstract**

Many changes in the size and composition of corporate boards of directors have occurred since the enactment of the 2002 Sarbanes-Oxley Act (SOX). With the new regulations, we have seen an increase in the number of independent board members and a decrease in the average size of boards. A recent study of S & P 500 firms [Lee, Carlson, 2007] shows that firms with the most independent boards perform significantly better than firms with less independent boards. Studies before the enactment of SOX found a significant inverse relationship between board size and firm performance. However, this relationship is not found in this study. In smaller firms, the goals of management and shareholders may be more aligned than that in larger firms such as the S & P 500. It is possible that the objective monitoring from a more independent board is not a significant factor in the performance of smaller firms. This study includes small-cap firms and examines the relationship between board independence and firm performance in small-cap firms.

### **I. Introduction**

The Sarbanes-Oxley Act of 2002, the SEC, NYSE, NASDAQ, and AMEX have created more rules and guidelines in an attempt to restore investor confidence in that monitoring body, the corporate board of directors. Several regulations are still pending but corporations have scrambled to comply with relatively new rules and guidelines. In order to rebuild investor confidence, one focus of study is board independence. The directors on the board are responsible for ensuring that management acts in the best interests of the shareholders. Many corporations have made board changes to increase the independence of their board composition. Sixty-four percent of Standard & Poor's Super 1,500 companies currently "have boards that are at least 2/3 independent, as compared with only 57% of that group just last year" [IRRC, 2003, p.14].

Independent directors may be more likely to monitor management more effectively by challenging management if it appears that firm valuation is not being maximized. The presence of outside or independent directors may decrease agency costs experienced by most firms, and should increase the overall performance and value of the firm. Objective decisions made by monitoring directors not connected to the firm may prevent the entrenchment of management. Management that believe they are secure in their jobs, no matter their performance, may be more likely to make decisions that do not maximize the value of the firm. Individuals affiliated with the corporation may make decisions that promote their own best interests rather than shareholder wealth. The Sarbanes-Oxley Act of 2002 has specifically addressed the independence of audit committees, and under the pending governance changes at the NYSE, NASDAQ, and AMEX, boards are to have at least a majority of independent directors. In addition, these regulations may require total independence of audit, compensation and nominating committees.

Several studies have addressed the question of outside directors and their effect on firm performance, but the findings are mixed [Hermalin and Weisbach (1991), (2002)]. Dahya and

McConnell (2002) study firms that recently increased their board's independence and find that those boards are significantly more likely to replace the CEO after a record of poor firm performance.

The level of independence has increased, with the IRRC reporting the independence level of directors at about 67 % in 1999 rising to 72% in 2003 for S & P 500 firms. In an examination of S & P 500 firms, Lee and Carlson (2007) find that firms with the most independent boards perform better than those firms with less independent boards. Specifically, S & P 500 firms that had a minimum of 75% independence on the board of directors performed significantly better than those firms with less independence in the same time period. This provides support for the benefits to shareholders of having more independent directors on the board. The monitoring of board members, unattached financially and/or emotionally to the firm may be more effective. In smaller firms there are lower agency costs since the goals of management may be more closely aligned with those of the shareholders. In many cases, the management of small-cap firms have significant shareholdings in the firm and therefore have a vested interest in the performance and value of the firm. Given that, the positive relationship found between the level of board independence and firm performance may not be found in smaller firms where more effective monitoring may not be needed. This study will help answer the question whether or not strict regulations about board independence are needed in the case of smaller firms.

The size of boards and its possible effect on firm performance is examined in this study. It appears that the recent changes in composition of boards of large firms have brought about a decrease in the average size of the boards in large companies as those included in the S & P 500. In order to be in compliance with the new regulations pertaining to independence levels, many directors that would be considered an affiliated, or nonindependent member have stepped down. In addition, the perceived risk and responsibilities of serving on a corporate board (post-Enron) may have contributed to the decrease. The average size of S & P 500 firms as of the end of 2003 was eleven members, down from twelve members just two years earlier. *However, the boards of small-cap firms have maintained an average of eight members* [IRRC, 2004]. Does this imply that a "weeding out" of certain directors on the board of smaller firms is not needed?

Several studies have examined the relationship between the size of the board of directors, and firm value and performance [Bhagat and Black (1996); Yermack (1996); Eisenberg et al. (1998)]. Is board size an important determinant of the board's quality of monitoring and decision-making? If so, what is the effect of these inefficiencies on the profitability and value of the firm? Yermack (1996) and Eisenberg et al.(1998) both conclude that there exists an inverse relationship between board size and firm value. In a discussion on corporate governance, Lipton and Lorsch (1992) state that larger groups or boards are less efficient, where individuals are apt to be less open in corporate policy discussions. People tend to be more reserved and polite in larger groups. This type of behavior by board members reduces the effectiveness of their monitoring role of management. Jensen (1993) agrees with this point, "when boards get beyond seven or eight people they are less likely to function effectively and are easier for the CEO to control." As pointed out by Monks and Minow (1995), in many corporate restructurings (after successful tender offers), the boards of directors were reduced in number.

This study examines small-cap firms included in Standard & Poor's Super 1,500 in an attempt to answer the following two questions: 1) Do smaller firms benefit from more

independent boards by performing better than firms with less independent boards? and, 2) Do small firms with larger boards possess inefficiencies and less effective monitoring skills resulting in worse firm performance than corporation with smaller size boards?

## II. Data

Board characteristics and firm performance of small-cap firms included in the S & P Super 1,500 companies as of the end of their respective fiscal 2003 year are examined. This study includes 495 small-cap firms and for each firm, data on board size, independence percentages of the board, total assets, total revenue, return on assets (ROA) measures, industry average return on assets measures, and insider stock ownership percentages for each firm are collected. Incomplete data reduced the sample of small-cap firms to 486 firms.

Firm ROA, industry ROA, total assets, and total revenue measures are collected from the *Compustat* tapes. Board sizes and insider holdings percentages are identified from the *IRRC Board Practices 2004 Edition*, and later confirmed in the firm's 10K report on the SEC Edgar Database. An industry-adjusted return on assets (ROA), as used by Eisenberg, Sundgren, and Wells 1999, is used as a firm performance measure for the fiscal period ending in 2003. Specifically, [Firm ROA – Industry Average ROA] is used as a relative firm performance measure, and will be referred to as an industry-adjusted ROA in this study.

In Table I the sample of small-cap firms is listed by industry, including the mean level of board independence and the mean number of directors on the board. The top four industries listed, comprising over 30% of the small-cap sample, have companies in the business services, commercial bank, broadcasting, and industrial measurement instruments industry. The mean level of independence on the board for the smaller firms is about 66%. This is significantly lower than the 72% mean level of independence for S & P 500 firms, as reported in an earlier study (Lee and Carlson, 2007). In addition, the mean number of board members is only eight (8) members for the smaller firms, as compared to eleven (11) for S & P 500 firms (Lee and Carlson, 2007).

## III. Methodology

Tables II shows descriptive data on the small-cap firms, reporting mean values for the collected variables per deciles of independence. For example, in the sample, there are ten (10) firms with board independence of 90% or more; 103 firms with board independence of greater or equal to 80% but less than 90%. The mean variables listed include total assets, ROA, an "industry-adjusted" ROA, board size, and insider holdings percentages

The data is analyzed using several approaches to determine any relationships between board independence, board size, and firm performance. To test for significant differences in variable means between the most and least independence levels on boards, analysis of variance (ANOVA) tests are performed. As shown in Table II, the firms are divided into deciles by level of independence of the board of directors. The industry-adjusted ROA is tested to determine if it is significantly greater for the firms with the higher levels of board independence sample, using a one-tailed t-test. The hypotheses are as follows:

*Null Hypothesis*

H<sub>0</sub>: Adjusted ROA between different levels (specifically, between deciles)

of board independence = 0

*Alternative Hypothesis*

H<sub>1</sub>: Adjusted ROA of firms with higher levels of board independence > Adjusted ROA of firms with lower levels of board independence

In addition, each sample is divided into firms with boards that are 75% and up in board independence vs. those with less than 75% independence (Lee and Carlson, 2007). Least-squares regressions are estimated using the industry-adjusted ROA as the dependent variable, and the explanatory variables include log of board size, insider holdings percentage, log of total assets (for firm size), and percentage of independence on the firm's board. If more independent boards and smaller board sizes are most effective, then a significant positive relationship between the industry-adjusted ROA and board independence, and a significant negative relationship between the industry-adjusted ROA and board size would be expected.

#### **IV. Results**

The results are interesting and appear to be consistent with theories that surround a small firm environment. As shown in Table II, the mean insider holdings percentage is about 7.5% for the small-cap firms, as compared to 2.60% for S & P 500 firms (Lee and Carlson, 2007). This is consistent with the small firm environment where management may have significant shareholdings in the firm. In many cases, the firm began as a family business and later became a public company, with family members serving as top management and maintaining a significant share of ownership in the company. As noted in a previous study (Eisenberg et al, 1998), small and midsized firms are frequently closely held, so the influence of agency problems between managers and shareholders on decisions affecting board size and structure are probably less prevalent in this class of firms. There is less separation of ownership and control in smaller firms, resulting in less conflict between management and the board. The industry-adjusted ROA is -1.75%, significantly lower than the -0.12% industry-adjusted ROA of larger firms in the S & P 500 firms. As reported in earlier studies (Eisenberg et al, 1998), smaller firms tend to have lower liquidity levels which may effect their ability to support high-growth strategies. Therefore, the lower industry-adjusted ROA's of smaller firms as compared to larger firms is not a surprise.

In the previous study of larger firms (Lee and Carlson, 2007), it was found that firms with more independent boards perform significantly better than those with less independent boards, and have significantly lower levels of insider ownership, as noted earlier. In this analysis of small-cap firms, as shown in Table III, there is no significant relationship between firm performance (as measured by the industry-adjusted ROA) and the level of board independence. However, similar to large firms, the more independent the board, there was significantly less insider ownership of the firm. The agency relationships are different in smaller firms in that, perhaps less monitoring by outside, independent members is needed for the firm to operate well. Smaller firms tend to have less agency costs since, many times, management is vested financially, and perhaps emotionally in the firm. Higher insider ownership is noted in previous studies of small to midsized firms (Eisenberg et al, 1998). Many firms in the sample have very high insider ownership by management, some over 25% of share holdings. With less separation of management control and ownership, there would be less conflicts (i.e., less agency costs) arising between management and shareholders.

A significant positive relationship between the firm performance measure and the level of board independence among larger firms such as the S & P 500 (Lee and Carlson, 2007) would be expected. However, with the smaller firms in this study, the need for independence on the board of directors may not be present. Surprisingly, from the results of the regression analysis with the industry-adjusted ROA as the dependent variable, it appears that there is a *negative*, not positive relationship between independence levels on the board and firm performance in this sample of small-cap firms. The percentage of independence on the board variable resulted in a t-value of -2.071 with less than 5% significance level. There was no significant relationship found between board size and firm performance for small-cap firms. It appears that board independence levels do matter in the case of small-cap firms, but not in the manner we would predict. Having insiders that have expertise, firm knowledge, and ties to the firm may help the performance of the company. Whereas, in a previous study with a sample of large S & P 500 firms, firm performance was improved with more independence and objectivity on the board.

## V. Conclusions

The literature addresses the possible benefits of having very independent, objective boards resulting in more effective monitoring of management. In addition, it examines the possible benefits of having a smaller board and its effect on firm performance. Lee and Carlson (2007) find a significant positive relationship between the level of independence on the board of directors and firm performance among S & P 500 firms, large firms. This study extends the evidence on the relationship between board size/composition and firm performance. The agency relationships of small firms are different than those of larger firms, such as in the S & P 500. In this examination of small-cap firms there is evidence that board independence does not benefit firm performance, and may even hinder its performance. Perhaps in a small firm setting, firm performance is enhanced by having more insiders on the board that know the business rather than having the possible benefits of objectivity brought by outsiders. Also, it appears that board size may not be an important factor for smaller firms.

**TABLE I**  
**Small - Cap Companies by Industry**  
**With Level of Board Independence**  
**And Board Size**

<u>Industry(2-digit SIC)</u>	<u>N</u>	<u>Board Indep %</u>	<u>Board Size</u>
Business Services (73)	48	66%	7
Commercial Banks (60)	36	71%	11
Radio, TV, Broadcast Equip (36)	33	63%	7
Industrial Measurement Instruments (38)	32	64%	7
Construction Machinery (35)	32	72%	8
Pharmaceuticals (28)	24	67%	8
Electrical Services (49)	21	77%	9
Crude Petroleum & Natural Gas (13)	20	62%	8
Electronics (50)	17	68%	8
Accident and Health Insurance (63)	13	61%	9
Restaurants (58)	13	63%	8
Textile: Apparel (56)	13	57%	7
Steel Works and Blast Furnaces (33)	12	65%	8
Metal Fabrications (34)	11	64%	8
Medical Laboratories (80)	10	58%	7
Real Estate Investment Trusts (67)	10	65%	8
Motor Vehicles (37)	9	70%	8
Apparel Stores (23)	8	54%	9
Bottled & Can Soft Drinks (20)	8	61%	9
Waste Management (87)	7	64%	9
Drug & Proprietary Stores (59)	7	57%	7
Food (Wholesale) (51)	7	66%	8
Trucking (42)	7	72%	7
Diversified Machinery (39)	7	62%	8
Other Industries (With N < 7)	81	73%	8
<b>Total</b>	<b>486</b>	<b>Mean 66%</b>	<b>Mean 8</b>

*Board size is as of end of 2003. "Other Industries" contains 6 or fewer firms in its respective industry.*

**TABLE II**  
**Descriptive Statistics of Small - Cap Companies:**  
**Divided by Level of Board Independence**

<b>Level of Board Independence</b>	<b>Total Assets (\$ mill)</b>	<b>ROA (2003)</b>	<b>Industry-Adj ROA (2003)</b>	<b>Board Size</b>	<b>Insider Holdings %</b>	
<b>≥ 90%</b>	<b>Mean</b>	<b>\$ 2,061</b>	<b>2.00%</b>	<b>-2.8236 %</b>	<b>10.91</b>	<b>1.73%</b>
	<b>N</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>9</b>
	<b>Std. Deviation</b>	<b>2,099</b>	<b>5.36</b>	<b>4.47</b>	<b>145</b>	<b>0.91</b>
<b>80% ≤ x &lt; 90%</b>	<b>Mean</b>	<b>\$ 1,935</b>	<b>2.41%</b>	<b>-1.4150%</b>	<b>8.10</b>	<b>3.27%</b>
	<b>N</b>	<b>103</b>	<b>104</b>	<b>103</b>	<b>107</b>	<b>95</b>
	<b>Std. Deviation</b>	<b>4,593</b>	<b>8.43</b>	<b>7.10</b>	<b>2.54</b>	<b>3.70</b>
<b>70% ≤ x &lt; 80%</b>	<b>Mean</b>	<b>\$ 1,204</b>	<b>3.40%</b>	<b>-0.6919%</b>	<b>8.50</b>	<b>5.19%</b>
	<b>N</b>	<b>111</b>	<b>115</b>	<b>113</b>	<b>117</b>	<b>98</b>
	<b>Std. Deviation</b>	<b>1,591</b>	<b>10.05</b>	<b>10.17</b>	<b>1.83</b>	<b>6.57</b>
<b>60% ≤ x &lt; 70%</b>	<b>Mean</b>	<b>\$ 1,711</b>	<b>2.23%</b>	<b>-3.0303%</b>	<b>7.97</b>	<b>7.46%</b>
	<b>N</b>	<b>97</b>	<b>96</b>	<b>93</b>	<b>100</b>	<b>86</b>
	<b>Std. Deviation</b>	<b>3,336</b>	<b>9.37</b>	<b>9.72</b>	<b>2.32</b>	<b>8.35</b>
<b>50% ≤ x &lt; 60%</b>	<b>Mean</b>	<b>\$ 1,105</b>	<b>3.06%</b>	<b>-1.7857%</b>	<b>8.28</b>	<b>11.22%</b>
	<b>N</b>	<b>97</b>	<b>98</b>	<b>97</b>	<b>100</b>	<b>87</b>
	<b>Std. Deviation</b>	<b>1,543</b>	<b>8.55</b>	<b>8.79</b>	<b>2.09</b>	<b>11.59</b>
<b>40% ≤ x &lt; 50%</b>	<b>Mean</b>	<b>\$ 1,159</b>	<b>2.04%</b>	<b>-3.8314%</b>	<b>8.38</b>	<b>16.55%</b>
	<b>N</b>	<b>29</b>	<b>29</b>	<b>28</b>	<b>29</b>	<b>26</b>
	<b>Std. Deviation</b>	<b>1,788</b>	<b>15.29</b>	<b>16.10</b>	<b>1.86</b>	<b>17.92</b>
<b>30% ≤ x &lt; 40%</b>	<b>Mean</b>	<b>\$ 1,428</b>	<b>5.72%</b>	<b>-0.8635%</b>	<b>8.46</b>	<b>11.35%</b>
	<b>N</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>20</b>
	<b>Std. Deviation</b>	<b>216,897</b>	<b>8.32</b>	<b>5.19</b>	<b>2.19</b>	<b>12.45</b>
<b>0% ≤ x &lt; 30%</b>	<b>Mean</b>	<b>\$ 435</b>	<b>6.03%</b>	<b>-1.3866%</b>	<b>6.84</b>	<b>17.18%</b>
	<b>N</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>Std. Deviation</b>	<b>552</b>	<b>4.09</b>	<b>4.43</b>	<b>2.07</b>	<b>17.67</b>
<b>TOTAL (Mean)</b>	<b>Mean</b>	<b>\$ 1,462</b>	<b>2.94%</b>	<b>-1.75%</b>	<b>8.29</b>	<b>7.48%</b>
	<b>N</b>	<b>476</b>	<b>483</b>	<b>475</b>	<b>495</b>	<b>428</b>
	<b>Std. Deviation</b>	<b>2,926</b>	<b>9.58</b>	<b>9.33</b>	<b>2.20</b>	<b>9.92</b>

Table II contains descriptive characteristics of boards of directors of companies in the sample, consisting of 2,357 observations for 495 companies. Companies were included in the sample if they were identified as being in the S & P Small-Cap at the end of fiscal year 2003. The table represents the mean, number of observations, and standard deviation for each variable.

**TABLE III**  
**S & P Small – Cap Companies**  
**Tests of Difference in Means of Variables**  
**Between Board Independence Levels**

Sample Divided into Percentage of Board Independence Deciles (e.g., boards with 90% and higher independence, boards with independence between 80% and less than 90%, ...): This tests if the mean of the variable is significantly different between firms with different levels of board independence.

<u>Variable</u>	<u>F Statistic</u>	<u>Level of Significance</u>
Industry-adjusted ROA	0.943	0.632
Firm Size (Total Assets)	0.873	0.539
Board Size	2.742	0.006 **
Insider Ownership	9.554	0.0001 **

*Means of variables per deciles are shown in Table II.*

Sample Divided into Two Samples of Board Independence: Firms with board independence of 75% and higher, and firms with board independence lower than 75%. This tests if the mean of the variable is significantly different between the two samples.

<u>Variable</u>	<u>Means</u> <u>75% and Up</u>	<u>Means</u> <u>Below 75%</u>	<u>F Stat</u>
Industry-adjusted ROA	-1.1676%	-2.0623	0.987
Firm Size (Total Assets) In millions	\$ 1,721	\$ 1,329	1.914
Board Size	8.45	8.21	1.337
Insider Ownership	4.05%	9.27%	28.372 **

\*\* Significant at the 1% level

## References

- Bhagat, S., and Black, B. (1999). "The Uncertain Relationship Between Board Composition and Firm Performance" *Business Lawyer*, 54, 921-963.
- Dahya, Jay and John J. McConnell (2002). "Outside Directors and Corporate Board Decisions" *Purdue University Working Paper*.
- Eisenberg, T., Sundgren, S., and Wells, M. (1998). "Larger Board Size and Decreasing Firm Value in Small Firms," *Journal of Financial Economics* 48, 35-54.
- Hermalin, B., and Weisback, M. (1991). "The Effect of Board Composition and Direct Incentives on Firm Performance," *Financial Management* 20, 101 –112.
- Hermalin, B., and Weisback, M. (2002). "Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature," *Economic Policy Review*, 9, 7 – 26.
- Investor Responsibility Research Center, "Board Practices/Board Pay" 2004 Edition, Washington, D.C.
- Jensen, M. (1993). "The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems," *Journal of Finance* 48, 831-880.
- Kini, O., Kracaw, W., and Mian, S. (1995). "Corporate Takeovers, Firm Performance, And Board Composition," *Journal of Corporate Finance* 1, 383-412.
- Lee, S., and L. Carlson, (2007). "The Changing Board of Directors: Board Independence in S & P 500 Firms," *Journal of Organizational Culture, Communications and Conflict* 11, No. 1, 31-41.
- Lipton, M., and Lorsch, J. (1992). "A Modest Proposal for Improved Corporate Governance," *Business Lawyer* 48, 59-77.
- Monks, R., and Minow, N. (1995) Corporate Governance, Basil Blackwell, Cambridge.
- Yermack, D. (1996). "Higher Market Valuation of Companies with a Small Board of Directors," *Journal of Financial Economics* 40, 185-211.