

"BOARD OF DIRECTOR COMPOSITION AND FINANCIAL PERFORMANCE IN A SARBANES-OXLEY WORLD"

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ABSTRACT

The purpose of this study is to contribute to the literature by examining the influence of corporate boards on firm financial performance in the new era of Sarbanes-Oxley (SOX). Integrating the key characteristics of the SOX regulations, we compare board compositions to firm performance by expanding the traditional one or two measures to five. We found that duality, occupational expertise, board size, and board tenure were significant influences on firm financial performance. Suggestions for further study were made.

Keywords: Corporate Governance, Boards of Directors, SOX, Financial Performance

Background

Research Issue: This study provides additional insight to the influence of corporate board composition on firm financial performance. The analysis occurs in a Sarbanes-Oxley (SOX) environment and expands the areas of performance measurement from the traditional one or two variables to five.

Research Findings/Insights: Results indicate that board size and heterogeneity of director expertise are positively related to revenue growth, whereas the ratio of directors with education expertise and the ratio of directors of finance expertise have a negative effect on this performance measure. The results show that both CEO/COB duality and average tenure of board of directors have a positive effect on return on asset growth. We found that board size is negatively related to the debt to asset ratio but negatively related to free cash flow-to-net income while heterogeneity of tenure of board members is positively related to this same performance measure. We found no significant impact of outside directors, gender, or average board age on financial performance.

Theoretical/Academic Implications: Composition of boards has different financial performance results.

Practitioner/Policy Implications: Sarbanes-Oxley has increased top management transparency and personal accountability. Yet, depending on the desired financial results, companies need to carefully consider their board's makeup.

"Board of Director Composition and Financial Performance in a Sarbanes-Oxley World"

INTRODUCTION

Corporate boards of directors have been the focus of a steady stream of management research for more than a century, providing a rich base to the governance literature. Perhaps the steadfast interest in board research is sustained by such issues as the important governance oversight role that boards are expected to play, the presumed frequency with which they are negligent in this role, and their association with high-profile corporate failures. Additionally, large bloc investors such as public pensions may also serve as a magnet for researchers since their objection to board independence often captures mass media attention (Brickley, Coles, & Jarrell, 1997). Nevertheless, despite the unwavering interest and voluminous research into the relationship between corporate boards and firm performance, empirical results display a remarkable lack of consensus (Zajac & Westphal, 1996).

Studies finding boards have little or no influence on firm performance confirm the historical perception of board failure. For example, over seventy-five years ago Berle and Means (1932) postulated that corporate boards had neither the incentive nor the ability to objectively represent the interests of shareholders. They believed that rather than provide independent oversight for top management decision making, corporate boards would simply affirm executive decisions. Decades later, Boulton (1978) concluded that boards had failed to evolve much beyond a passive, rubber-stamping committee for management, in essence being indolent. Barnhart, Marr, and Rosenstein (1994) found little evidence to suggest that board composition is important to the quality of overall firm performance. A meta-analysis conducted by Dalton, Daily, Ellstrand, and Johnson (1998) found little correlation between board composition and corporate financial performance among 54 empirical studies and no correlation between leadership structure (e.g. duality) and financial performance among 31 empirical studies.

Some researchers, who initially believed that they had identified a link between corporate boards and firm performance, discounted that notion after considering additional factors. For example, Kesner and Johnson (1990) found that boards with a greater proportion of inside directors tended to be involved in more fiduciary-failure lawsuits, presumably demonstrating lax oversight. However, the difference could be accounted for by factoring the outcome of those lawsuits. The lawsuits may have been motivated by the appearance of board impropriety rather than any real evidence that a board dominated by insiders adversely affects performance. Despite the voluminous studies confirming torpid boards, the literature also contains a prominent set of studies concluding that independent boards have influenced management behavior and affected corporate performance in significant ways. There is also evidence suggesting that proactive boards are associated with strong financial performance (c.f., Pearce & Zahra, 1991; Stearns & Mizruchi, 1993).

The literature offers a range of plausible explanations for the disparate findings between studies, including the following: (1) corporate financial performance is simultaneously affected by multiple factors thus any association with boards is spurious (Hermalin & Weisbach, 2003); (2) when boards meet infrequently they are unlikely to sustain any meaningful influence over

corporate performance (Mace, 1986; Useem, 2006); (3) the vast number of board meetings generally result in little or no meaningful action when they are fundamentally cosmetic (Baldwin, Bagley, & Quinn, 2003; Lorsch & MacIver, 1989); and (4) boards perform indolently when they lack incentives to operate otherwise (Hayward & Hambrick, 1997).

The literature also suggests two key plausible avenues for future investigations. The first relates to possibly missed results when studies rely on too few areas for performance measurement or use a one-dimensional analysis (Fligstein & Brantley, 1992; Ittner, Larcker, & Rajan, 1997; Van Ness & Seifert, 2007). The second relates to timing, insofar that current studies may yield different results because of the enactment and maturation of the Sarbanes-Oxley Act (SOX) of 2002. Our study capitalizes on both of these considerations as we expand performance measurement from the traditional one or two variables to five. Further, we focus our investigation on the 2005-2007 timeframe to ensure a longer exposure of corporate boards to SOX.

Sarbanes-Oxley: New Rules for Corporate Board Governance

The Sarbanes-Oxley Act of 2002 (SOX) may be one of the most important securities legislation affecting publicly-traded companies since the formation of the Securities and Exchange Commission in 1934. The United States law was enacted on July 30, 2002 in response to multiple corporate scandals. It was designed, in part, to alter the behavior of corporate directors (Buccino & Shannon, 2003; Klein, 2003). Among other things, SOX affects the duties and responsibilities of officers and directors. The law has multiple sections, but two are particularly noteworthy: 404 which relates to the assessment of internal control and 802 which addresses criminal penalties for violations.¹ Some scholars believe the adoption of SOX was a knee-jerk reaction to the collapse of corporations such as Enron and WorldCom (Brown, 2006), while others acknowledge the act is clearly affecting corporate boards but question the cost/benefit aspects of its enactment (Linck, Netter, & Yang, 2008).

Boards are legally bound to be fully informed about critical corporation conditions and financial reporting. Audit committees must be comprised of independent directors to ensure that the company has an adequate system of internal controls, duly monitors potential problems, and preserves the integrity of financial reports. They are to oversee the financial reporting process and confirm the appointment of the independent auditing firm. Additionally, they are responsible for discharging independent auditors when appropriate.

There are substantial penalties associated with boards that fail to exercise due diligence. SOX makes it easier to prosecute securities fraud, particularly financial fraud. SOX also attempts to reassert board independence from corporate management (Klein, 2003). The Act places greater responsibility on senior management and directors, particularly independent directors. The independent directors on the audit committee are to be substantially more diligent in overseeing and monitoring the financial reporting process, establishing internal controls, and assuring performance transparency. SOX provides teeth for civil and criminal enforcement over the conduct of corporate boards. These new pressures on boards will continue to alter the role of directors (Buccino & Shannon, 2003). The majority of prior studies were conducted either before or shortly after the enactment of the SOX Act, therefore a current investigation offers the potential for an entirely new set of results. We believe the timing and the use of a broader set of

financial performance measures yield findings that are a valuable contribution to the literature on corporate governance.

The Variables, Hypotheses, and Data

Our areas of assessment were targeted at five dimensions of performance that cover a broad spectrum of accounting and marketing measures: corporate growth, profitability and asset utilization, leverage, market confidence, and liquidity. We examine several aspects (and attributes) of board composition to observe how they influence these various performance measures. The independent variables are: duality, proportion of outside directors, gender/diversity, board members average age, average board tenure, board size, and occupational expertise. Table 1 summarizes these independent variables along with contradictory performance expectations. We elaborate these independent variables followed by the dependent variables.

TABLE 1
Board Characteristics and Contrary Financial Performance Determinants

<i>CEO/COB Duality</i>	<u>AGENCY THEORY</u> : Combining the positions of CEO with the position of COB constrains the board members, threatens independence, and underperform those which are separate	<u>STEWARDSHIP THEORY</u> : Insiders are competent and reliable advocates for shareholders' interests, leading to stronger performance
<i>Proportion of Outside Directors</i>	<u>INSIDE DIRECTORS</u> : Appearance of impropriety, less able to resist the will of the COB, benefits from increasing risk by pursuing more speculative opportunities for growth	<u>INDEPENDENT OUTSIDE DIRECTORS</u> : More effective monitors of management and financial reporting, better corporate credit ratings, and antitakeover amendments lead to stronger corporate performance and larger shareholder returns
<i>Gender</i>	<u>WOMEN ON CORPORATE BOARDS</u> : New perspective and inspire workforce diversity lead to stronger financial performance	<u>WOMEN ON CORPORATE BOARDS</u> : Tends to decrease as the number of board insiders increases, perhaps seen as tokenism or window-dressing
<i>Age</i>	<u>YOUNGER BOARD MEMBERS</u> : Superior technical knowledge, more amenable to change, greater receptivity to risk-taking, more innovative, and more efficient in governance oversight	<u>OLDER BOARDS MEMBERS</u> : Experience, greater independence, and long-term connections lead to stronger corporate performance
<i>Tenure</i>	<u>RECENT MEMBERS</u> : Tend to make tentative decisions and incomplete analysis, and are susceptible to social pressures	<u>LONGER-TENURE MEMBERS</u> : Insulated against social isolation and develop a sense of camaraderie, hence better able to evaluate top management proposals

<i>Size</i>	<u>SMALL BOARDS</u> : More cohesive and easier to reach consensus as well as CEO/COB can dominate, especially if the firm's environment is not complex	<u>LARGE BOARDS</u> : Offer a broader array of perspectives and can distribute the work load across various committees, but are less involved in strategic decision-making and make it difficult to make strategic changes
<i>Occupational Expertise</i>	<u>FINANCIAL BACKGROUND</u> : Bankers and accountants influences a firm's debt ratio, short-term borrowing, stock returns, and incidence of restating earnings, all of which determine financial performance	<u>DIVERSE BACKGROUND</u> : Diverse boards (including non-business directors, such as educators) have a broader range of perspectives to better understand complicated business transactions

Independent Variables

CEO/COB Duality.

Duality refers to situations in which the Chief Executive Officer (CEO) position is combined with the Board Chair (COB) position. This is typical of CEOs with long tenure (Coles, McWilliams & Sen, 2001) and is common in the United States. An agency theoretic perspective (Fama & Jensen, 1983) argues that this practice permits conflicts of interest since the leader of the board which is charged with overseeing management decision-making is also the firm's top manager. According to this view, the managers are agents of the stockholders but are often tempted to pursue their own interests. The practice of duality, the process of assigning influential board committees, and the ratio of insiders to total board members are areas of expressed concern by agency theorists (Gibbs, 1993).

To agency theorists, the practice of duality is objectionable because it represents a very real threat to board independence (Dalton & Kesner, 1987), making it less likely that aggressive monitoring of corporate decision-making will occur (Shivdasani & Yermack, 1999). There is evidence suggesting that a firm's market value declines under duality (Carter, Simkins, & Simpson, 2003) although this problem may be minimized when the board is dominated by outside directors (Chowdhury & Wang, 2009). In fact, in the early 1980s institutional investors began to call for corporate governance changes that included separating the CEO and COB positions (Westphal & Khanna, 2003). The call has remained largely unheeded, perhaps because companies find it difficult to break out of a cycle that institutionalizes powerful and autocratic CEOs (Sheppard, 1994). Powerful CEOs tend to constrain boards' input to strategic decision-making (Ruigrok, Peck, & Keller, 2006). Even the stock market has demonstrated its discomfort with duality as it reacts differently when firms that adopt a poison pill have an independent board chair (Coles & Hesterly, 2000).

But duality can be beneficial according to the stewardship perspective. In this view, business – by acting as a public trustee – considers the interests of all stakeholders who are affected by business decisions and policies. Managers have the knowledge and experience to not only effectively manage the financial challenges of the corporation but also address a wider range of social issues. In fact, a study by Brickley, *et al.* (1997) concluded that the cost of

separating the roles of CEO from COB is greater than the benefits from doing so. Donaldson and Davis (1991) found that firms with duality actually enhanced shareholder wealth and increased ROE when compared to firms with independent COBs. They found no evidence to suggest that a unitary leadership structure is associated with substandard accounting or market performance measures. Boyd (1995) concluded that duality is actually advantageous in situations of resource scarcity or high complexity. In fact, in these situations, a large number of boards tie executive compensation packages to market performance (Canyon & Peck, 1998). Acknowledging the incongruent findings in the literature, we form our hypothesis based on agency theory:

H1: Firms practicing duality will be associated with a stronger positive performance in revenue change, return on assets change, and price-to-book change.

We used a dummy variable to indicate CEO/COB duality, coded as 1 when a firm's CEO also served as a chairman of the board and it 0 otherwise (Zajac & Westphal, 1994).

Proportion of Outside Directors

Many scholars, financial analysts, and investors consider outside directors to be better representatives of shareholder interests than inside directors (Carter, *et al.*, 2003) and studies have found their relationship to be stronger with overall corporate performance (Pearce & Zahra, 1992; Perry & Shivdasani, 2005) and larger shareholder returns (Shivdasani & Yermack, 1999). Not surprisingly, the number of outside board members tends to increase immediately after a firm performs poorly (Hermalin & Weisbach, 1988) and they are associated with improved performance during periods of corporate restructuring (Perry & Shivdasani, 2005). Conversely, market reaction to a firm's defensive action against a hostile takeover bid was negatively affected when the board was dominated by insiders (McWilliams & Sen, 1997). Board independence was clearly addressed in SOX, which specifies that members of a board's audit committee must be outside, independent directors (Klein, 2003).

Outside directors have been shown to strongly resist certain actions that may have benefited corporate executives at the expense of shareholders. For example, Beasley (1996) investigated 150 firms, half having fraudulent issues pertaining to their financial statements and half without such incidence of financial fraud. He found that the no-fraud firms had a higher percentage of outside directors to inside directors. A study by Beekes, Pope, and Young (2004) found that outside directors were more likely to publicly acknowledge bad news relating to corporate earnings than were inside directors.

Some researchers believe that outside directors are better monitors of financial reporting (Klein, 2003) which can be associated with a range of other benefits. For example, firms with a greater proportion of outside directors tend to have better corporate credit ratings (Ashbaugh-Skaife, Collins, & LaFond, 2006). Outside directors who were experienced executives are more likely to resist greenmail (Kosnik, 1987; Kosnik, 1990), which is the private repurchase of company stock at a premium price paid to an apparent corporate raider to terminate what management considers a hostile takeover attempt. Additionally, outside directors are more likely to tie executive compensation to market performance (Canyon & Peck, 1998) rather than to increases in firm size through corporate acquisitions (Wright, Kroll, & Elenkov, 2002). Outside directors have also been shown to more carefully monitor acquisitions, particularly when they

involve diversifying away from core competencies that are not in the best long-term interest of firms (Zajac & Westphal, 1996).

Board insiders may, for personal pecuniary reasons, engage in risks that are absent of genuine growth opportunities (Wright, Ferris, Sarin, & Awasthi, 1996). Providing favored subordinates with implicit status rewards might also be a strategic maneuver of the CEO/COB to expand power over the board (Baysinger & Butler, 1985). In general, outside directors have the capacity to be more effective monitors of management behavior (Bhagat & Black, 2002; Kaplan & Minton, 1994) as suggested by our hypothesis:

H2: Firms with a higher percentage of outside directors will be associated with stronger positive performance in each of the five areas of performance measurement.

The proportion of outside directors was measured as the percentage of outside directors on the board. To identify outside directors, we compared the board directors with executives of each firm.

Gender/Diversity

Resource-dependence theory views organizations in terms of their ability to attract, utilize, and maintain a stream of resources from their external environment (Pfeffer & Salancik, 1978). Corporate boards are part of the resource stream since they bring bundles of knowledge, experience, ideas, and professional contacts (Carpenter, Geletkanycz, & Sanders, 2004). Boards that include women and individuals of varying races, ethnicities, and other minority characteristics broaden a firm's resources and augment the range of perspectives for the problem-solving and strategic planning process (Ruigrok, Peck, & Tacheva, 2007). We rely on gender as a measure of diversity.

Historically, women and minorities have not been strongly represented in corporate governance. However, the situation began to change slightly in the 1990s when an appreciable increase in the number of women serving on corporate boards began to occur (Farrell & Hersch, 2005). Female board members have since brought a new perspective to boards' deliberation process as well as inspiring workforce diversity (Carter, *et al.*, 2003). Even prior to the 1990s it was noted that once on corporate boards, women were proactive and willing to sit on important action committees (Kesner, 1988). A high level of board diversity (both women and minorities) has been found to be positively related to profit levels (Van der Walt, Ingley, Shergill, & Townsend, 2006), greater returns on equity (ROE), larger total returns to shareholders (Burke, 2000; Farrell & Hersch, 2005), and greater returns on assets (ROA) (Carter, *et al.*, 2003).

In addition to financial benefits, women have been associated with stronger satisfaction of organizational commitments (Siciliano, 1996) and a social balance in governance oversight (Erhardt, Werbel, & Shrader, 2003). The positive influences of women board members have not been lost on nominating committees. Although the size of corporate boards has decreased, the number of women serving on those boards has increased (Farrell & Hersch, 2005). This leads to our next hypothesis:

H3: Firms with a greater proportion of female to total directors will be associated with stronger financial performance in a cross-section of industries in each of the five measurement categories.

Gender was identified by several sources such as annual reports, director biographies, and company Websites. The number of female directors was then divided by total number of directors.

Average Age of Board Members

In 1999, the typical new outside director of a *Fortune* 500 firm was in his or her mid-50s (Shivdasani & Yermack, 1999). While one might suppose that older corporate boards with the additional years of cumulative experience might be associated with stronger, steadier corporate performance, a study by Rose (2005) found that younger boards generally outperformed older boards, suggesting the possibility that younger boards may be more innovative and perhaps more willing to participate in the monitoring process. Another explanation for younger board superior financial performance is that the average age of a firm's board may influence the type of risks and decisions they pursue. A study by Zajac and Westphal (1996) suggested that an individual's age might be related to his or her openness to new ideas. Younger decision-makers appear less bound by the status quo and more amenable to change (Hambrick & Mason, 1984). They also have a greater receptivity to risk-taking as a condition for more innovative growth strategies (Grimm & Smith, 1991).

In Denmark, concerns about corporate behavior and board oversight led to a publicly funded study of governance and boards of directors. The commission recommended a series of guidelines for corporate boards, including the proposal that "directors retire from the board in the year they turn 70 at the latest" (*The Nørby Committee's Report on Corporate Governance in Denmark*, 2008). This proposal was subsequently softened to: "The Committee recommends that the company agree on a retirement age. ..." Nevertheless, it sounds an alarm about older directors. Although younger directors do not have the breadth or depth of experience that is acquired over time, their advantages include having a superior technical knowledge because of their more recent education (Bantel & Jackson, 1989). These lead to the following hypothesis:

H4: Firms with younger boards will be associated with better financial performance in each of the five measurement categories.

We counted the age of each director as of the end of the fiscal year 2007, and then calculated the mean value of the ages of all company directors.

Average Board Tenure

Every new task or responsibility has a learning curve. In the early stages of learning, decisions are generally tentative and often involve an incomplete analysis. Board scholars have suggested that the time required for a new director to acquire a sufficient understanding of the firm will range between three and five years (Kesner, 1988). Board tenure has been shown to have a material effect on the decision-making process. For example, there is a correlation between board tenure and resistance to greenmail (Kosnik, 1987). Longer tenure also appears to increase director independence as it offers some insulation against social isolation for objecting to a course of action preferred by management and other directors (Westphal & Khanna, 2003). In theory, social pressures may keep directors in line with management objectives but directors

with longer tenure appear less constrained. Interestingly, not only has longer tenure been shown to improve financial performance but also board members who share similar tenure tend to develop a sense of camaraderie and collectively they are better able to evaluate top management proposals (Kosnik, 1990). However, longer average tenure does not necessarily suggest that tenure homogeneity is most desirable. Heterogeneity of board tenure may ensure a greater influx of new ideas for dealing with previously unforeseen threats or new opportunities. Hence, our next hypotheses:

H5a: Firms whose boards have longer average tenure will be associated with a stronger positive performance in each of the five areas of measurement.

H5b: Boards with heterogeneous tenure will be associated with positive performance in each of the five areas of measurement.

Board director tenure refers to the number of years an individual has been a member on the board of directors. To measure the tenure of each director, we found how long each director had served on the board and averaged their tenure. Tenure heterogeneity was measured as coefficients of variation (their respective standard deviations divided by their means). Allison (1978) reviewed inequality measures and found that coefficient of variation is preferred to standard deviation or variance for interval-level variables because these are sensitive to relative rather than absolute differences (Allison, 1978).

Board Size

The size of the board has been shown to influence its ability to oversee corporate governance. Larger boards often display dysfunctional characteristics (Jensen, 1993; Khanchel, 2007) while smaller boards are more effective in carrying out their governance oversight responsibilities (Lipton & Lorsch, 1992). Hermalin and Weisbach (2003) concluded that although the empirical literature does not infer a relationship between board composition and firm performance, board size is negatively related to corporate performance. For instance, Yermack (1996) found that profitability and financial efficiency ratios decrease as a board's size increases, while Eisenberg, Sundgren, and Wells (1998) similarly discovered that an increase in board size can be associated with a decrease in firm value.

There are various explanations as to why the size of the board might impact a firm's financial performance. Board size may reflect the complexity of a firm's environment (Sanders & Carpenter, 1998) which is inherently challenging. Board size also influences its cohesiveness (Barnhart, *et al.*, 1994). Although large boards may increase the quality of decision-making since they offer a broader array of perspectives, their size may hinder the ability to reach a consensus (Forbes & Milliken, 1999). Similarly, large boards are less involved in strategic decision-making (Judge & Zeithaml, 1992) and make it difficult to make strategic changes (Golden & Zajac, 2001). These lead to the following hypothesis:

H6: Firms with smaller boards will be associated with positive performance in each of the five measurement categories.

Total number of directors was used to measure the size of the board.

Occupational Expertise

Differences among corporate directors are most properly viewed in terms of their experience and expertise (Baysinger & Butler, 1985). Rather than considering the board exclusively in terms of being a uniform group and focusing specifically on structural and demographic characteristics, researchers should also integrate measures of board diversity by investigating occupational and functional backgrounds (Goodstein, Gautam, & Boeker, 1994). Excluding occupational expertise from the investigation can be problematic since the background and experience of board members can influence their understanding of complicated business transactions and bias their decisions (Kesner, 1988). For instance, educators (frequently college presidents) are added to boards but their lack of business experience could impair their understanding of business intricacies and negatively sway their board contribution. Average board tenure may also influence the decision-making process. Kosnik (1990) found that as average board tenure increases, the occupational expertise of board members becomes more homogeneous perhaps suggesting a reduction in the range of decision-making perspectives.

Studies that have investigated the influence of occupational expertise have frequently focused on individuals with banking and/or other financial expertise. While there is wide agreement that banking/financial board members influence debt ratios, there is some disagreement about the actual direction of that influence. Byrd and Mizruchi (2005) linked them to negative effects on debt ratios (i.e., higher levels of debt) and Mizruchi, Sterns, and Marquis (2006) linked them to a firm's continued borrowing. Stearns and Mizruchi (1993) found the presence of money market bankers or investment bankers on corporate boards to be positively associated with a firm's short-term borrowing. A study by Kroszner and Strahan (2001) agreed that these individuals influence debt ratios but they disagree on the direction, finding that banking/financial expertise are associated with a low reliance on short-term financing.

Boards with banking/financial expertise have been linked to market advantages and to consistent financial reporting. For example, Kroszner and Strahan, (2001b) found that bankers and others with financial experience on corporate boards are associated with stable stock returns and Agrawal and Chadha (2005) found them to be associated with a lower incidence of restated earnings. These lead to our final hypotheses:

H7a: Firms with a greater number of educators on their board will be associated with lower levels of performance in each of the five measurement categories.

H7b: Firms with a greater number of bankers, financial, and financial professionals on their board will be associated with lower levels of leverage.

H7c: Boards that have greater heterogeneous occupational expertise will be associated with a positive performance in each of the five measurement areas.

We divided occupational expertise into education, finance, and others. We classified each executive's occupational expertise into one of these categories based on each director's biography which is available through diverse public sources. To calculate the percentage of directors with education expertise, the number of directors who have worked for a college or university was divided by the total number of directors. To calculate the percentage of directors with finance expertise, the number of directors who have worked for a financial institution, bank, or accounting firm was divided by the total number of directors. Occupational expertise heterogeneity was calculated using the Herfindahl-Hirschman heterogeneity index which has often been used for categorical variables (Blau, 1977). This index is calculated as $1 - \sum_{i=1}^n p_i^2$, where p_i is the proportion of directors in the i^{th} category. The index can have values from 0 to 1, with values close to 1 indicating heterogeneity in occupational expertise among directors. On the other hand, values close to 0 indicate homogeneity in occupational diversity.

Dependent Variables

As mentioned previously, this study separately examines five performance measures as the dependent variables to expand our understanding of effects that board characteristics have on diverse performance measures. For each dependent variable, we calculated the change from 2006 to 2007.

Revenue

Revenue is a measure of a firm's size. Change in revenue is a key measure of a firm's performance (Chowdhury & Wang, 2009) as well as generally considered to be a primary driver of corporate profitability. We calculate firm revenue growth in 2006 and 2007 and then calculate the change of revenue growth from 2006 to 2007.

Return on Assets (ROA)

Return on assets is both a measure of profitability and asset utilization and has been used in a number of recent studies (c.f., Byrd & Mizruchi, 2005; Erhardt, *et al.*, 2003; McDonald, Khanna, & Westphal, 2008; Rose, 2005; Sanders & Hambrick, 2007). The profit earned for each dollar of assets invested in the business can be compared on a year-over-year basis and to an industry-wide average to assess how effectively the corporate assets were used to generate profits. We calculated changes in the ROA by comparing each firm's ROA in 2006 and 2007.

Financial Leverage

Financial leverage is a measure of the extent to which a firm relies on creditors for funding. Firms use financial leverage as a means of increasing investment returns but excessive leverage can be problematic. We selected the debt-to-asset ratio to assess financial leverage. Financial institutions use debt ratios as one measure of a firm's credit worthiness and they prefer borrowing companies to have a lower ratio (Stearns, 1986). We compute each firm's debt-to-assets ratio in 2006 and 2007 to obtain relative changes.

Market Price to Book Ratio

The price-to-book value is a market-based measure (McDonald, Khanna, & Westphal, 2008) that is an important component of the corporate performance assessment process (Beekes, *et al.*, 2004). It adds a market confidence dimension to accounting measures and has been documented to be an indicator of long-term performance (Fama & French, 1992). It is also

preferable to the commonly-used Tobin's "q" measure since it is directly observable and easily measured (Barnhart, *et al.*, 1994; McGahan, 1999). Tobin's "q" has subjective elements that have stimulated a fair number of critics. For example, Barnhart, *et al.* (1994) concluded that the "q" may have consistency problems since it is not directly observable and its operational definitions are not agreed upon. We calculate the price-to-book ratio by dividing fiscal year closing stock price by the per share equity in 2006 and 2007. Then we calculate the growth.

Free Cash Flow to Net Income

Operating cash flow, or the ability of a corporation to produce funds from its routine operations, is important to its sustained viability (Ittner, *et al.*, 1997; Ullmann, 1985). Free cash flow is derived from operating cash flows. Free cash flow cannot be observed directly (Gibbs, 1993), but it is commonly computed by deducting the cost of acquiring necessary capital assets and cash dividends from operating cash flow. Firms with substantial free cash flow are able to gamble on promising but currently unprofitable projects. However, exuberance over free cash flow may lead management to engage in over-diversification and other unproductive activities (Jensen, 1986). In fact, there is sufficient evidence to suggest that firms with very high free cash flow actually benefit less from revenue increases than those with smaller amounts of free cash flow (Brush, Bromiley, & Hendrickx, 2000). In other words, profitability suffers. Perhaps the strategic gambling associated with high cash flow unduly increases cost and expense loads. Although previous studies (c.f., Baliga, Moyer, & Rao, 1996) have compared cash flows to revenue (sales), we relied on the Jensen (1986) hypothesis and the findings of Gibbs (1993) and Brush, *et al.* (2000) in computing the ratio of free cash flow to net income. We subtract capital expenditure and cash dividends from operating activity net cash flow to calculate free cash flow. This value was divided by net income. We then calculate the growth rate.

Control Variables

We included several control variables that may influence financial performance. First, we controlled for firm size effect because economies of scale and market power may affect the change of financial performance. The number of employees is one of the common measures of firm size (Konrad & Mangel, 2000). We measured firm size as the logarithm of total number of employees. Second, we controlled for lagged financial performance. The change of current year's performance may be influenced by the previous year's performance level. Since our performance measures are year-to-year changes, these base variables for the five performance measures might explain relative magnitudes of change. Third, industry effect was controlled for because it has been argued to be a major determinant of financial performance and its changes may vary across industries (Porter, 2008). For this reason, we used the two digit NAICS code to classify our industry dummy variable since they are categorical.

Data Sources and Sample

We tested our hypotheses with data from Standard and Poor's (S&P) 500 companies. This study focuses on S&P 500, the most widely-followed index of large-capitalization U.S. securities and is considered to be an indicator of the state of the American economy. We obtained the S&P 500 index as of December 31, 2007 and randomly selected 200 companies. All of our data were collected from the post-implementation of SOX. Our analysis was specifically confined to the years of 2006 and 2007 to ensure the maximum length of time for SOX to take effect. Consistent with Hermalin and Weisbach (1988), we restricted our analysis primarily to

non-regulated industries since boards of directors for regulated firms may be systematically different from boards of directors of non-regulated firms (Baysinger & Zardkoohi, 1986; Subhramanyam, Rangan, & Rosenstein, 1997). Therefore, we eliminated all financial institutions, insurance companies, and real estate firms defined as SIC codes 6000-6799 and all utilities (i.e., electric, gas, and sanitary services) defined within the 4900 SIC codes (Farrell & Hersch, 2005).

Two university seniors collected demographic and board configuration data. They used diverse public archival sources such as annual reports, 10Ks, company Websites, magazines, and news releases to gather information on each firm's board of directors. One doctoral student checked the data and corrected errors. We collected financial performance data from COMPUSTAT for 2006 and 2007 to measure changes of financial performance over the period. Firms with missing data were excluded from the sample. Final sample size varies from 185 to 188 because the number of firms with missing data differs across dependent variables. The final sample of companies operates in 20 different two-digit North America Industry Classification System (NAICS) industries.

RESULTS

We used ordinary least square (OLS) regression analysis in SPSS (Windows 13.0 version) to test our hypotheses. Before conducting the main analyses, we checked assumptions for multiple regression analysis. First, no extreme outlier was detected through graphical representation of data. The data shows that some variables do not meet normality assumption. We corrected this problem as follows: logarithm transformation was used for previous year sales, previous year ROA, tenure diversity, price to book ratio, and number of employees; square root transformation was used for average tenure; and inverse transformation was employed for outside ratio, gender ratio, and percentage of directors with education background. The plus/minus signs were corrected for the inverse transformed variables so that we can properly interpret the results. Graphical plots with these transformed variables showed that there is no major concern about linearity assumptions. We also checked for multicollinearity with variance inflation factors (VIFs). The VIF values were less than 2 for all the variables we included in the regression model. These VIF values indicate that multicollinearity is not a problem for this analysis as the VIF values are below the recommended cutoff of 10 (Cohen & Cohen, 2003). Table 2 shows descriptive statistics and correlations for all variables.

TABLE 2
Descriptive Statistics and Pairwise Pearson Correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Revenue growth change	-0.07	.31	1									
2. ROA change	-0.00	.08	-.05	1								
3. Finance leverage change	.02	.14	.06	-.00	1							
4. Free cash flow change	.97	7.58	.06	.13	-.01	1						
5. Price to book ratio change	-2.01	22.70	.15*	.05	-.10	.01	1					
6. Duality	.65	.48	-.03	.16*	-.05	.03	-.04	1				
7. Ratio of outside directors	.81	.10	-.06	-.06	-.20**	.05	-.04	.22**	1			
8. Ratio of Female directors	.14	.09	-.10	.10	-.11	.16*	-.08	.02	.06	1		
9. Average age	59.90	3.68	.17*	.15*	.00	.01	-.02	.02	.04	-.02	1	
10. Average tenure	7.87	3.27	.12	.16*	.14*	-.03	.00	-.10	-.36**	-.00	.36**	1
11. Tenure heterogeneity	.74	.26	.04	.11	-.08	.04	.08	-.08	-.04	.09	-.14*	.13
12. Board size	10.48	2.15	.09	-.01	-.28**	-.07	.09	.03	.22*	.19*	.09	.04
13. Ratio of directors with education expertise	.08	.09	-.08	.12	-.08	-.03	.01	-.04	-.07	.17*	.16*	.01
14. Ratio of directors with finance expertise	.36	.17	-.04	-.06	.03	.02	-.14	-.15*	-.03	-.03	-.17*	-.18*
15. Expertise diversity ^a	.47	.12	.08	.02	-.09	-.01	-.00	-.13	-.01	.16*	.06	-.02
16. Number of employees	36.15	48.92	.12	-.00	-.06	-.04	.06	.15*	.05	.08	.02	.101
17. Previous year sales net (\$million)	7906	18181	-.10	.01	-.09	-.04	.03	.16*	.18*	.11	.02	-.11
18. Previous year ROA	.02	.08	.07	-.27**	.34**	-.13	-.19*	-.06	-.09	-.14	.06	.04
19. Previous year financial leverage	-.02	.14	-.03	-.01	-.25**	.01	-.06	.04	.26**	.21**	-.04	-.16*
20. Previous year free cash flow to income	-.85	7.46	-.06	-.13	.02	-.98**	-.01	-.03	-.05	-.16*	-.01	.02
21. Previous year price to book ratio	2.85	13.60	-.17*	-.04	.07	.00	-.95**	.04	.06	.11	-.00	-.02

^a While we hypothesize about homogeneity, we actually measure heterogeneity (i.e., diversity).

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

TABLE 2
Descriptive Statistics and Pairwise Pearson Correlations (Continued)

	11	12	13	14	15	16	17	18	19	20	21
12. Board size	.16*	1									
13. Ratio of directors with education expertise	-.06	.08	1								
14. Ratio of directors with finance expertise	-.03	-.16*	-.06	1							
15. Expertise diversity	.01	.15*	.49**	.34**	1						
16. Number of employees	.04	.21**	.03	-.15*	.02	1					
17. Previous year sales net (\$million)	-.01	.26**	.03	-.15*	-.04	.42**	1				
18. Previous year ROA	-.28**	-.23**	-.10	.06	-.08	-.03	-.01	1			
19. Previous year financial leverage	-.03	.21**	.11	-.04	.19*	.12	.14	-.20*	1		
20. Previous year free cash flow to income	-.04	.03	.03	.00	-.01	.04	.04	.13	-.03	1	
21. Previous year price to book ratio	-.13	-.12	-.01	.14	.00	-.06	-.04	.25**	.13	-.00	1

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

We used hierarchical regression analysis in two comparison models for each firm performance variable. In the first model, the number of employees and industry dummy variables were entered to control for firm size effect and industry specific effect on firm performance. In the second model, the hypothesized variables are also entered to show how much variance they explain over the control variables. Table 3 presents the results of our multiple regression analyses for the second model.² The R-square change in the second models over the control models showed our hypothesized board of director compositions are significant in explaining changes in revenue, ROA, financial leverage, and free cash flow-to-income during 2006-2007; they do not, however, explain changes in price-to-book ratios during the same time period. Moreover, initial levels of sales, ROA, and free cash flow-to-income are also significant in explaining the subsequent year's percent increase. We examine each hypothesized board characteristic further below.

TABLE 3
Results of OLS Multiple Regression Analysis for Each Performance Measure^a

Variables (with hypothesized relationships in parentheses)	Performance Measures				
	Revenue Δ 06-07	ROA Δ 06-07	Financial Leverage Δ 06-07	Free Cash Flow-to-Income Δ 06-07	Price-to-Book Ratio Δ 06-07 ^a
<i>Controls:</i>					
Industry dummies	Included	Included	Included	Included	Included
Number of employees ^b	.009 (.023)	-.011 (.007)	-.013 (.012)	-.057 (.133)	.093 (1.064)
<i>Hypotheses:</i>					
H1: Duality (+) ^d	-.010 (.035)	.044** (.015)	-.012 (.026)	.441 (.296)	.818 (2.347)
H2: Ratio of outside directors ^b (+)	-2.604 (3.069)	-.210 (1.281)	-1.349 (2.272)	1.996 (25.492)	40.313 (204.557)
H3: Ratio of female directors ^b (+)	.588 (.856)	.289 (.357)	-.475 (.636)	4.669 (7.171)	-83.981 (56.513)
H4: Average age (-)	.006 (.005)	.001 (.002)	-.001 (.004)	-.007 (.041)	-.089 (.326)
H5a: Average tenure ^b (+)	-.061 [†] (.033)	.031* (.014)	.043 [†] (.024)	-.317 (.274)	.069 (2.208)
H5b: Tenure heterogeneity ^b (+)	-.029 (.046)	.011 (.019)	-.041 (.033)	.899* (.379)	.650 (3.084)
H6: Board size (-)	.024** (.008)	-.003 (.003)	-.012* (.006)	-.138* (.067)	-.207 (.536)
H7a: Ratio of directors with education expertise ^b (-)	-1.712* (.858)	.392 (.359)	-.088 (.624)	6.282 (7.127)	17.465 (57.628)
H7b: Ratio of directors with finance expertise (-)	-.218* (.106)	.011 (.044)	.022 (.077)	.669 (.880)	-5.966 (7.109)
H7c: Expertise heterogeneity (-)	.377* (.166)	-.010 (.069)	-.081 (.121)	-8.75 (1.371)	12.041 (11.035)
<i>Base Measures:</i>					
Previous year sales net ^b (\$million)	-.045* (.022)				
Previous year ROA ^b		-1.867*** (.316)			
Previous year financial leverage			-.110 [†] (.067)		
Previous year free cash flow-to-income ^b				-.999*** (.017)	
Previous year price to book ratio					-94.184*** (5.389)
<i>Significance:</i>					
F	1.064	2.208***	1.319	132.270***	14.320***
R ²	.175	.305	.208	.984	.742
Δ R ² (vs. control model ^c)	.122*	.259***	.108*	.846***	.568
N	187	188	188	187	186

^a Standard errors are in parentheses; ^b Transformed variables; ^c Control model includes industry effect and size effect;

^d Hypothesized relationship with dependent variables

[†] $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$

Hypothesis 1 predicts CEO/COB duality will be positively related to stronger financial performance. Our empirical result shows that the coefficient for CEO/COB duality is positive and statistically significant with ROA change ($\beta = .044, p < .01$). Hence, when the CEO also serves as the board chairperson assets are more efficiently utilized in that the firm's ROA is likely to increase. Thus, hypothesis 1 is partially supported.

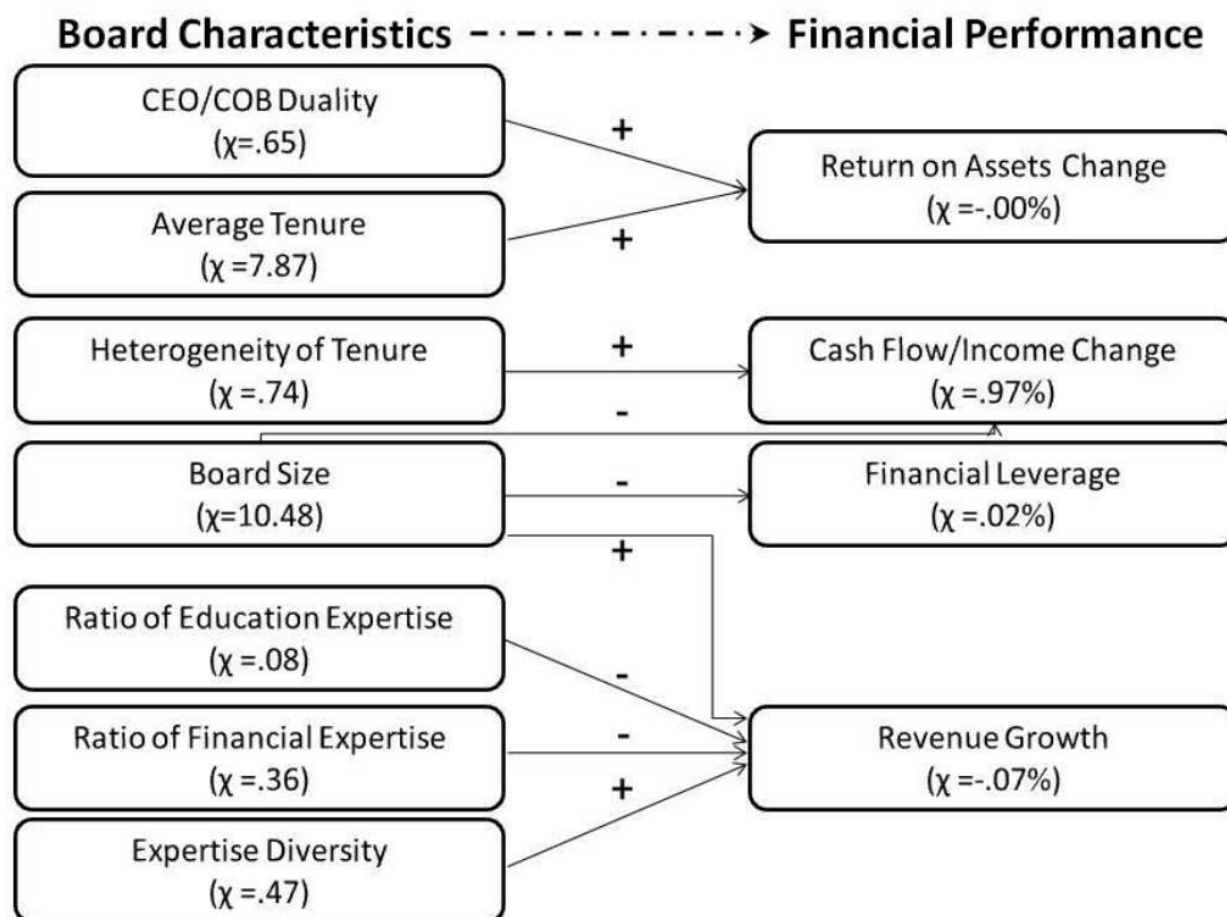
Hypotheses 5 dealt with board tenure. Hypothesis 5a predicts that average tenure of board of directors will have a positive influence on financial performance. Our empirical result shows that the coefficient for average tenure of board members is positive and statistically significant with ROA change ($\beta = .031, p < .05$). Hence, as board members gain experience with the company, familiarity with their responsibilities, and comfort with working with each other the firm is more likely to efficiently utilize its assets. Thus, hypothesis 5a is partially supported. Hypothesis 5b predicts a positive relationship between tenure heterogeneity among board members and financial performance. Our empirical result shows that the coefficient for tenure heterogeneity among board members is positive and statistically significant with the ratio of free cash flow to net income change ($\beta = .899, p < .05$). This result implies that when directors' tenures are dissimilar, a firm tends to maximize its unencumbered operating funds. Thus, hypothesis 5b is partially supported.

Hypothesis 6 predicts that small size board will be associated with positive financial performance. Our results provide mixed findings. First, contrary to our expectation board size is positively related to revenue growth ($\beta = .024, p < .01$) in that larger boards actually tend to actually increase revenues. Second, our results display a negative and statistically significant relationship between board size and the financial leverage ($\beta = -.012, p < .05$) meaning that smaller boards actually tend to increase their debt-to-asset ratio. Finally, our findings also show a negative and statistically significant relationship between board size and the free cash flow-to-net-income ($\beta = -.138, p < .05$) indicating that smaller boards do indeed tend to increase unencumbered operating funds. Hence, these results partially support hypothesis 6.

Hypotheses 7 dealt with board expertise. Hypothesis 7a predicts a negative relationship between the proportion of directors having education expertise and financial performance, and indeed the results show a negative and statistically significant relationship between proportion of board members with education expertise and the revenue growth ($\beta = -1.712, p < .05$) indicating that revenue growth tends to decrease when boards are comprised of more directors having education expertise. Thus, hypothesis 7a was partially supported. Hypothesis 7b predicts a negative relationship between the proportion of directors with finance expertise and firm leverage, but the results show a negative and statistically significant relationship between proportion of board members with finance expertise and the revenue growth ($\beta = -.218, p < .05$) indicating that revenue decreases with a greater number of bankers, accountants, and financial professionals on boards. Hypothesis 7c predicts that boards having greater heterogeneous occupational expertise will have greater performance and our results show a positive and statistically significant relationship between board member heterogeneity and revenue growth ($\beta = .377, p < .05$) indicating that revenue growth tends to increase when board members have diverse occupational backgrounds. Thus, hypothesis 7c is partially supported.

Other hypotheses regarding ratio of outside directors, ratio of female directors, and average age of directors were not supported. Figure 1 summarizes the findings of this study by presenting only the variables deemed to be significant along with their means.

FIGURE 1
Significant Multiple Regression Results
(Means in Parentheses)



Discussion

The purpose of this study was to examine how corporate board composition might influence firm financial performance in the current Sarbanes-Oxley environment. The SOX securities legislation directly and significantly addresses board actions and responsibilities (Klein, 2003) and there are clear and significant civil and criminal penalties associated with boards that fail to comply (Buccino & Shannon, 2003). In other words, although board composition and firm financial performance has been studied at length in the past, the new legislation may have motivated a new set of behaviors by corporate boards. Our study is different from others in not only timing but also in the number of measurement areas that we tested. Many prior studies focused on one or two performance dimensions. Relying on a small number of measures to investigate performance increases the potential for discovery oversight. We used four accounting and one market measure.

Our results confirmed several of our hypotheses as well as provide several surprise findings. Interestingly, despite previous findings that boards with a greater number of outside directors have a positive influence on performance, we found no such relationship. We also found no significant influence on performance associated with gender or average board age. On the other hand, duality, occupational expertise, board size, and board tenure were among the significant linkages to financial performance. We briefly note these four board characteristics.

Duality was shown to have a positive influence on growth in return on assets. While it is difficult to fully understand this relationship, we speculate that there may be more harmony between corporate boards and executive management when the CEO is also the COB. Since return on assets benefits shareholders in both profitability and in asset utilization, it is likely to be a concern to the board. Additionally, executive compensation packages are frequently tied to profitability (Conyon & Peck, 1998) which is a key component of the ROA measurement.

Board expertise was also found to influence performance in interesting ways. Boards with educators as members were associated with negative influences on revenue growth. Since many educators on corporate boards presumably have minimum exposure to the intricacies of business transactions, it is possible that they may be decision-apprehensive and thus influencing a slower, more conservative approach to corporate revenue expansion. We found that the ratio of directors with finance expertise decreases revenue growth. While further research may be necessary to explain this finding, one plausible way is to consider director's approach to new business opportunities. Revenue growth through market expansion often requires entrepreneurial efforts. It is possible directors with finance expertise are more analytical and more sensitive to risk that stockholders will bear. Thus, they are less likely to allow firms to take entrepreneurial initiatives, which results in loss of opportunities for revenue growth. Our result shows that heterogeneity of director expertise increases revenue growth. This findings show that diverse ideas generated from diverse perspectives can help firms to identify new opportunities in firm growth. Board size also influenced performance in interesting ways. As board size increases, financial leverage as measured by the debt-to-asset ratio decreases. The literature suggests that larger boards may hamper consensus building (Forbes & Milliken, 1999), thus debt-funded projects may be a victim of board indecisiveness.

Our findings indicate that the board of directors with high average tenure is positively related to ROA. Our conjecture to explain this finding is that the high tenure of BODs in a firm may enable them to develop better understanding on the process, routine, and strategy of the firm. They also become familiar with their roles and responsibilities as directors. This understanding helps them to make better decisions on how to use the firm's assets for the greater profitability. Finally, boards with diverse tenure were found to be associated with a positive influence on free cash flow (FCF). It is possible that heterogeneity of tenure leads to a greater array of ideas thereby delaying action on certain capital projects. Since FCF is commonly calculated as net income plus amortization/depreciation minus changes in working capital and capital expenditures, delayed capital expenditures would lead to greater free cash flow.

Limitations and Suggestions for Future Research

As with any research, there are some inherent limitations with our findings. First, we could find only limited support for our hypotheses. Also, even when we found statistically significant results, they existed for only one or a couple of dependent variables. Furthermore, we have a significantly inflated Type I error rate because of the relatively large number of hypothesized relationships. However, even after using a modified Bonferroni adjustment (Jaccard & Wan, 1996) to control for this, all the identified relationships are still statistically significant. It may be constructive in future research to collapse the dependent variables into a single comprehensive performance construct. As an example, a composite measure of performance, like Tobin's "q" (Tobin, 1969), could be used as the dependent variable.

The level of analysis could also be considered a weakness with the study. A critical assumption in linear regression is the independence of error terms. However, the data within our sample has a nested structure. As such, the businesses are nested within industries which are nested within economic sectors. The error terms are not necessarily independent because of this structure. Although we attempted to mitigate this weakness by using several control variables, it may be worthwhile to evaluate the data with a program designed to correct for the nested structure (e.g., hierarchical linear modeling).

In summary, although only a few of our hypothesized relationships were supported by the data we were able to find preliminary support indicating some of the impacts that board composition has on firm financial performance. The relationship between these variables has garnered increased attention under the Sarbanes-Oxley environment. Undoubtedly the recent economic meltdown will bring more attention to the relationship between corporate boards and firm financial performance and we encourage other researchers to build on our findings to develop even greater insights of how board composition influences firm financial performance.

¹ More information on SOX can be found at <http://www.sec.gov/spotlight/soxcomp.htm>.

² We only report the second model due to space limitation. The control model results are available from authors upon request.

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