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SEPARATION OF OWNERSHIP AND CONTROL: IMPLICATIONS FOR BOARD COMPOSITION

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ABSTRACT

This article investigates the implications of separation of ownership and control for board composition over a spectrum of ownership structures present in the U.S. property–liability insurance industry. We hypothesize that agency costs associated with manager–owner conflicts increase with the degree of separation of ownership and control. Greater agency costs imply a greater need for monitoring by outside directors on the board. Therefore, use of outside directors is expected to increase as the separation of ownership and control gets larger. Employing a sample of property–liability insurers exhibiting different degrees of separation of ownership and control, we find support for our hypothesis.

INTRODUCTION

When important decision agents do not bear a substantial share of the wealth effects of their decisions, incentive conflicts exist between residual claimants (owners) and decision agents (managers). How organizations control the agency problem caused by such separation of ownership and control has been a great concern to researchers from Smith (1776) and Berle and Means (1932) to Jensen and Meckling (1976) and Fama and Jensen (1983). In this study, we empirically examine the implications of separation of ownership and control for board composition.

Fama and Jensen (1983) theorize that a key top-level decision control device within both large and small organizations is a board of directors that deals with the agency problem caused by the separation of ownership and control. The board usually includes both directors who are managers of the firm (inside directors) and those who are not full-time employees of the firm (outside directors). These outside directors are widely believed to play a larger role in monitoring management than inside board members (Weisbach, 1988). In fact, Fama (1980) argues that "the probability of top

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management's collusion and expropriation of security holder wealth might be lowered, and the viability of the board as a market-induced mechanism for low-cost internal transfer of control might be enhanced, by the inclusion of outside directors" (p. 293).

Views such as these have led to the movement toward specific board guidelines, typically calling for greater outside representation and hence greater monitoring of management. Institutional investors such as TIAA-CREF have issued specific recommendations for how boards should be structured and run. Some of these board guidelines were codified into law via the Sarbanes–Oxley Act of 2002 (SOX). Major stock exchanges such as NYSE and NASDAQ amended their rules to require the board of directors of each listed company to consist of a majority of independent directors.

Economists have raised questions regarding these changes in rules and regulations. In particular, several recent studies have shown that the forces driving board composition are firm specific and industry specific (e.g., Adams and Mehran, 2003, 2008; Lehn, Patro, and Zhao, 2004; Boone et al., 2007; Linck, Netter, and Yang, 2008). Existing evidence, however, has been largely focused only on firms with publicly traded equity, so very little is known about board composition under alternative ownership structures. While firms with publicly traded equity may be the most prominent organizational form, they only represent a part of the whole continuum of ownership structures in corporate America.

This article investigates the implications of separation of ownership and control on board composition over a spectrum of ownership structures present in the U.S. property–liability insurance industry. Various ownership structures coexist in the property–liability insurance industry, and these ownership structures exhibit various degrees of separation of ownership and control. We hypothesize that agency costs associated with manager–owner conflicts increase with the degree of the separation of ownership and control. Everything else equal, greater agency costs imply a greater need for monitoring by outside directors on the board. Therefore, use of outside directors is expected to increase as the separation of ownership and control gets larger, *ceteris paribus*.

Employing a large sample of property–liability insurance companies exhibiting different degrees of separation of ownership and control, we find support for our hypothesis. In particular, our results show that: (1) mutual companies, which represent greater separation of ownership and control than stock companies, are associated with greater use of outside directors than stock companies overall, and (2) when breaking down the stock ownership into four subcategories and analyzing the continuum of ownership classes (i.e., stock closely held by management, stock closely held by others, widely held stock, mutual-owned stock, and mutual insurers), as the degree of separation of ownership and control increases, the use of outside directors generally increases accordingly, with only one of the ownership classes out of the expected order. Overall, the results are consistent with Fama and Jensen's (1983) hypothesis that "separation of residual risk bearing from decision management leads to decision systems that separate decision management from decision control" (p. 304).[1]

[1]Note that what Fama and Jensen (1983) call "separation of residual risk bearing from decision management" is simply the well-known "*separation of ownership and control*" (p. 323).

This study contributes to the corporate governance literature in general. First, we are able to derive a richer understanding of the general issue of separation of ownership and control by exploring a continuum of ownership structures present in the U.S. property–liability insurance industry. Previous research on separation of ownership and control has largely focused only on companies with publicly traded equity. These companies, by and large, have a large degree of separation of the decision and risk-bearing functions, and thus only represent a part of the spectrum of ownership–control separation in corporate America. By contrast, our research takes advantage of the rich variation in ownership within the property–liability insurance industry, representing a much more refined and complete spectrum of ownership–control separation. Second, by focusing this study on a single industry, our analysis is better able to control for differential effects of regulation and political pressure and allows us to assess more directly the influence of the separation of ownership and control on board composition. It is well known that the corporate governance literature is fraught with endogeneity problems, which are quite difficult to overcome. The majority of the existing literature studies firms across different industries. As Gillan, Hartzell, and Starks (2003) suggest, industry factors contribute most of the explainable variation in overall governance structure and appear to dominate time effects and firm factors. Since our sample firms are all from the same industry and thus are more homogeneous, the likelihood that our results are due to the spurious correlation caused by unobserved heterogeneity is significantly reduced (Blackwell, Brickley, and Weisbach, 1994). In this respect, our article is less prone than most previous studies to endogeneity problems, especially the issue of omitted variables.

This research also helps to expand the very limited current understanding of corporate governance in the insurance industry specifically. Except for Mayers, Shivdasani, and Smith (1997), no other published work to our knowledge has systematically examined the implications of separation of ownership and control on board composition in the insurance industry. Our study extends Mayers, Shivdasani, and Smith in several important ways.

First, we control for significant differences across ownership structures by examining not only mutual and stock companies but also various ownership structures within the population of common stock insurers. By distinguishing among mutual-owned stock, widely held stock, stock closely held by others, and stock closely held by management, we exploit more texture in ownership data than Mayers, Shivdasani, and Smith (1997). The finer categorization of ownership structure from simply mutual versus stock to the five ownership categories is a major contribution in that it provides a stronger test of the relation between board structure and separation of ownership and control. The results of Mayers, Shivdasani, and Smith are certainly consistent with greater separation of ownership and control being associated with more outside board members, since mutuals do indeed represent more separation of ownership and control than stock firms. However, it is difficult to rule out the possibility that some uncontrolled difference in business operations between mutuals and stocks is driving the result, apart from separation of ownership and control (Mayers, Shivdasani, and Smith, 1997, p. 48). We are able to perform a stronger test by having five ownership categories that represent a clear continuum of separation

of ownership and control. A finding that the extent of outside board representation follows the ordering of the level of such ownership–control separation would be powerful evidence supporting the conclusion that variations in outside board representation are indeed significantly driven by the level of separation of ownership and control.

Second, our sample covers nearly 1,400 mutual and stock property–liability insurers from 1996 to 2004, while the sample in Mayers, Shivdasani, and Smith (1997) consists of 120 mutual life insurers and 225 stock life insurers for the year 1985 only. As such, our study analyzes a larger sample that is more finely partitioned by the degree of separation between ownership and management among various ownership classes. Because the firms and time periods used in this study do not overlap with previous studies, our evidence provides a new test of the relation between ownership structure and board composition.

Finally, Mayers, Shivdasani, and Smith (1997) focus on life–health insurers, which are significantly different from property–liability insurers in many aspects. By looking at property–liability insurers, our analysis will serve as the first investigation of board structures in the property–liability insurance industry. The difference between the life–health insurance business and the property–liability insurance business is well documented (Pottier and Sommer, 1997). In particular, loss reserves in property–liability insurers are subject to high levels of discretion (Petroni, 1992; Beaver, McNichols, and Nelson, 2003; Gaver and Paterson, 2004) and are a critical component of earnings and book value. As a result, property–liability insurers are likely to be opaque to outsiders. Indeed, Ruhland and Sommer (2008) find that no industry is more opaque than the property–liability insurance industry. This characteristic makes strong corporate governance particularly important for property–liability insurers to assure that managers are not manipulating loss reserves against the interest of owners. Thus, a separate investigation of the property–liability insurance industry with respect to corporate governance is warranted.

The evidence documented in this research has important policy implications. Underlying SOX and other attempts to impose external rules to regulate corporate board size and board composition is the apparent view that corporate boards are structured either haphazardly or perversely to yield inefficiently large private benefits to managers (Boone et al., 2007). The evidence presented in this article does not support such views. Instead, the empirical results indicate that firms efficiently structure their boards in accordance with their ownership structures, consistent with the notion of efficient organizational design proposed by Brickley, Smith, and Zimmerman (2006). Moreover, consistent with previous findings (e.g., Boone et al., 2007; Linck, Netter, and Yang, 2008), the results indicate that board structure is firm specific, and uniform requirements on board composition are unlikely to be effective. Therefore, great caution seems warranted before imposing regulatory actions on corporate governance.

The remainder of the article is organized as follows. The second section reviews the relevant literature. The third section develops the hypotheses. The fourth section describes the sample selection. The fifth section presents the empirical framework and reports the results. The sixth section concludes.

LITERATURE REVIEW

Agency Problem Caused by Separation of Ownership and Control

The relationship between the stockholders and managers of a corporation with diffused ownership is a classic example of an agency relationship (Jensen and Meckling, 1976). When the manager is the sole equity owner of a firm, there is no separation of ownership and control, and thus no agency problem exists between the manager and the owner. In contrast, when residual claims to equity are diffused among many outside investors, the separation of ownership and control leads to potential divergence between the interests of owners and managers. This agency problem caused by the separation of ownership and control has long been a great concern for economists.

Both external and internal mechanisms have been identified to deal with agency problems between managers and owners. External monitoring mechanisms include the outside managerial labor market, monitoring from the capital market by financial analysts, institutional shareholders and block shareholders, and the takeover market. Internal monitoring mechanisms include a natural process of monitoring from higher to lower levels of management, mutual monitoring among managers, and the board of directors (Fama, 1980; Fama and Jensen, 1983). Of all monitoring mechanisms, the board is viewed as the "ultimate internal monitor" (Fama, 1980) and "the common apex of the decision control systems of organizations, large and small, in which decision agents do not bear a major share of the wealth effects" (Fama and Jensen, 1983).

Importance of Outside Directors as Monitors of Managers

According to Fama and Jensen (1983), the effectiveness of board monitoring is enhanced by including outside members because outside directors have incentives to perform their monitoring function effectively and not collude with managers to expropriate from residual claimants, as they are motivated to develop reputations as experts in decision control. Hermalin and Weisbach (1998) also argue that outside directors are important because a director's willingness to monitor the CEO increases with his or her independence from the CEO.

To investigate the effectiveness of outside directors in monitoring managers, researchers have taken two basic approaches. The first approach is to relate board composition to certain corporate events. A few examples include Brickley and James (1987), Weisbach (1988), and Rosenstein and Wyatt (1990). Specifically, Brickley and James find a negative relation between expenditures on salaries and the proportion of outsiders on the board. Weisbach finds a stronger association between firm performance and the probability of CEO turnover for companies with outsider-dominated boards. Rosenstein and Wyatt document a positive stock price reaction to the announcement of appointing an additional outside director. All this evidence is consistent with the notion that outside directors promote the interest of shareholders.

A second approach to the issue has been to examine the relation between board composition and firm performance. Numerous studies relating board composition to firm performance yield mixed evidence. While some researchers observe a positive relation between outside director representation and firm performance (e.g., Baysinger

and Butler, 1985; Schellenger, Wood, and Tashakori, 1989), others find just the opposite (e.g., Vance, 1978; Kesner, 1987), and many researchers find no relation between board composition and firm performance (e.g., Schmidt, 1975; MacAvoy et al., 1983; Molz, 1988; Hermalin and Weisbach, 1991).

The lack of evidence of a direct relation between board composition and firm performance is not entirely surprising, as corporate performance is expected to be a function of a number of other factors (Bathala and Rao, 1995). Moreover, board structure is endogenous, and such endogeneity may make the relation between board composition and firm performance hard to interpret. As a result, instead of focusing on what boards do, researchers began asking the question of how boards get to be the way they are.

Determinants of Board Composition

While the empirical literature on what boards do is well developed, much less is known about how boards get to be the way they are. Recognizing the lack of research in the literature, Hermalin and Weisbach (1998) model board effectiveness as a function of its independence, which in turn is a function of negotiations between existing directors and the CEO over who will fill vacancies on the board. Similarly, Raheja (2006) develops a model predicting that optimal board size and composition are functions of the directors' and the firm's characteristics.

In addition to theoretical models, several empirical studies focusing on identifying the driving forces behind board structure have been performed in recent years (Lehn, Patro, and Zhao, 2004; Boone et al., 2007; Linck, Netter, and Yang, 2008). For example, studying a sample of industrial firms that went public in the U.S. market from 1988 to 1992, Boone et al. (2007) document that board independence increases as firms grow in size and diversity over time.[2] Employing a large sample of publicly traded U.S. firms from 1990 to 2004, Linck, Netter, and Yang (2008) find that firm size, CEO power, and ownership structure are the economic determinants of board composition. Both studies come to the same general conclusion; that is, economic considerations and firm characteristics drive corporate board size and composition, and board structures are endogenously determined in ways consistent with value maximization.

Ownership Variation in the Property–Liability Insurance Industry

The range of ownership structures within the insurance industry is perhaps the broadest of any major industry (Mayers and Smith, 1988). Included are stock companies, mutuals and reciprocals, and Lloyd's associations (Mayers and Smith, 1994). Among common stock companies, ownership also varies greatly. At one extreme, the equity is held by a mutual insurer, and at the other extreme, the equity is held by one individual. Our discussion here is focused primarily on those studies examining the implications of ownership on corporate control.

[2]In Boone et al. (2007) and Linck, Netter, and Yang (2008), both board size and board composition are examined. Our discussions here, however, only highlight their results on board composition since it is the focus of this study.

Mutual Versus Stock Ownership. Stock and mutual insurers are the two most common ownership structures in the insurance industry. The comparison of mutual versus stock ownership structures has been subject to extensive research in the insurance literature. Prior studies consistently show that mutual and stock ownership forms are inherently different, and such differences have profound implications for firms' operation, investment, and other decisions (e.g., Mayers and Smith, 1988, 1992; Lamm-Tennant and Starks, 1993; Lee, Mayers, and Smith, 1997).

The difference between mutual and stock companies also has important implications for corporate control. For example, the restrictions on the transferability of ownership claims preclude monitoring by institutional shareholders and other blockholders, managerial equity ownership, stock-based incentive compensation, as well as hostile takeovers (Mayers, Shivdasani, and Smith, 1997). The lack of alternative control mechanisms in mutual companies increases the importance of monitoring by outside directors. Consistent with this hypothesis, Mayers, Shivdasani, and Smith (1997) find that mutual life insurers are associated with a higher fraction of outside directors on their corporate boards than stock life insurers.

Stock Company Ownership Classes. In addition to the variation between mutual and stock companies, ownership also varies greatly among common stock companies. The equity of a stock company can be closely held when it is concentrated in the hands of one or several individuals; it can also be widely dispersed among policyholders of the parent mutual company when it is mutual owned. While not as extensive as the literature on stocks versus mutuals, a number of studies investigate the differences among stock company ownership classes.

Mayers and Smith (1992) document that CEOs of mutual-owned stock life insurance companies are compensated at a lower level than are CEOs of comparable stock company subsidiaries, consistent with their hypothesis that the value of marginal product of executives is lower in mutual-owned insurance companies. Mayers and Smith (1994) find evidence consistent with the argument that the costs of controlling the owner–manager conflicts are greater in widely held companies than in closely held companies. Among closely held stock companies, Cummins and Sommer (1996) argue that "owner-manager conflicts are expected to be smallest in closely held firms owned by managers and largest in publicly traded firms, with closely held firms owned by other parties providing an intermediate case" (p. 1077). Ke, Petroni, and Safieddine (1999) find that CEO pay is sensitive to firm performance for widely held insurance companies but not for closely held insurance companies, consistent with their hypothesis that closely held insurers should have more direct monitoring of management by owners. These studies all indicate that ownership differences among common stock companies have important implications for corporate control.

HYPOTHESES DEVELOPMENT

In their seminal paper on "Separation of Ownership and Control," Fama and Jensen (1983) predict that the separation of ownership and control leads to the decision systems that separate decision management from decision control. They broadly define decision management as the initiation and implementation of decisions, and decision control as the ratification and monitoring of decisions. As the board of

directors is the common apex of the decision–control system of organizations, their hypothesis implies that the greater the separation of ownership and control, the greater will be the separation of management and the board of directors. A testable implication of Fama and Jensen's hypothesis, therefore, is that board independence increases in the degree of the separation of ownership and control.

In a mutual insurance company, the ownership resides with policyholders. Unlike in stock companies, where a shareholder can increase his voting rights by holding more shares, each policyholder of a typical mutual company has one voting right per policy regardless of the magnitude of the policy.[3] In this respect, a typical mutual company represents the strongest form of diffuse ownership. Residual claimants of mutual companies, one might argue, can withdraw resources by canceling their policies, and such withdrawal is a form of partial takeover or liquidation, which deprives management of control over assets. However, without further action either internally or from the market for takeovers, the assets of mutual companies are left under the control of the managers (Fama and Jensen, 1983). In addition, the takeover mechanism is weaker in a mutual company since the policyholders would have to remove the existing management through a proxy fight, and proxy fights are much more expensive in mutuals than in stock firms (Mayers and Smith, 1981, 1986). Therefore, mutual companies represent a larger degree of separation of ownership and control than stock companies and thus are expected to employ more outside directors on their board.

While stock companies in general represent less separation of ownership and control than mutuals, the degree of such separation also varies across stock company ownership classes.

In a stock company closely held by management, where the majority of shares outstanding are in the hands of managers or their family members, the manager and risk-bearer functions are merged and more of the wealth consequences of the managers' decisions are internalized. In other words, there is less separation of ownership and control and thus lower agency costs due to the separation of ownership and control, which in turn leads to less need for costly monitoring by outside directors. Therefore, stock companies closely held by management are expected to use the lowest proportion of outside directors among all stock companies.

When a stock company is closely held by parties other than management (i.e., closely held by others), the owner and manager functions are not merged as in companies closely held by management. However, the controlling owner(s) will have both the incentive and the ability to actively monitor managers' decisions (Shleifer and Vishny, 1997). In particular, the majority shareholder should have greater incentive to collect information and monitor the management, thereby avoiding the traditional free-rider problem faced by investors of widely held firms. The majority shareholder also has enough voting control to put pressure on the management in some cases, or perhaps even to oust the management (Shleifer and Vishny, 1986). As such, the effective control by the majority shareholder(s) partially offsets the agency conflicts created by the separation of ownership and control. The owner–manager conflicts,

[3]Note that this is the most common mutual voting rule. While other rules do exist, they are much less common.

as a result, are higher than that in stock companies closely held by management but lower than that in stock companies with diffuse ownership (Cummins and Sommer, 1996). Accordingly, the use of outside directors in stock companies closely held by others is expected to be higher than that in companies closely held by management but lower than those in widely held stock companies and in mutual-owned stock companies.

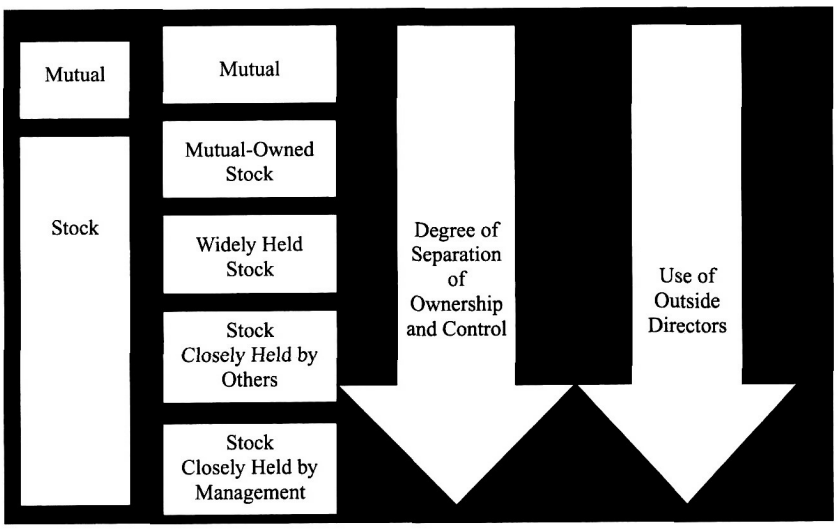
In a widely held stock company, the ultimate ownership rests with individual stockholders, with no individual or family having majority control. This form of ownership represents a potentially very high degree of separation of ownership and control. With ownership dispersed among many investors, investors are often too small and too poorly informed to exercise even the control rights they actually have. Moreover, the free-rider problem faced by individual investors makes them uninterested in expending effort to learn about the firms they have financed or even to participate in the governance (Shleifer and Vishny, 1997). As a result, the larger degree of separation of ownership and control in widely held companies leads to greater owner–manager conflicts than in closely held companies. Such agency conflicts due to the separation of ownership and control can be partially offset, however, by certain control mechanisms such as institutional ownership and block ownership. As the presence of some degree of ownership concentration offsets the complete separation of ownership and control in widely held companies, the owner–manager conflicts in widely held companies are expected to be greater than those in closely held companies, but less than those in mutual-owned companies where, as discussed next, the separation of ownership and control is the greatest. Therefore, the use of outside directors by widely held stock companies is expected to be more than that in closely held companies, but less than that in mutual-owned companies.

A mutual-owned company is a stock company that is ultimately owned by the policyholders of the mutual parent. As Mayers and Smith (1994) suggest, the problems of controlling the managers of a mutual-owned stock are similar to those of mutual companies. Since each policyholder of a typical mutual company has only one voting right, mutual-owned stock companies represent the most diffuse ownership structure among all stock company ownership classes. The nearly complete separation of ownership and control, in turn, causes the greatest owner–manager conflicts in mutual-owned companies and thus is expected to lead to the most extensive use of outside directors on their boards among all stock ownership classes.

Figure 1 illustrates our hypothesis graphically. In brief summary, we expect that as the degree of the separation of ownership and control increases, the agency costs related to owner–manager conflicts also increase, and so does the use of outside directors. Specifically, we expect to observe the following: first, mutual companies employ more outside directors than stock companies; second and more importantly, when analyzing the continuum of ownership classes, stock firms closely held by management employ the lowest proportion of outside directors, followed by stock firms closely held by others, widely held stock firms, mutual-owned stock firms, and finally, mutual firms, which we expect to use outside directors most extensively.

Our hypothesis is in line with the efficiency/equilibrium explanations of board structure, which view corporate control mechanisms as a remedy to the agency problem.

FIGURE 1
Illustration of Major Hypothesis



While such efficiency/equilibrium explanations are still the dominant approach to the study of corporate control mechanisms, alternative approaches have also been presented. For example, the "managerial power approach" by Bebchuk and Fried (2003) argues that "optimal contracting" has limitations, and organizational control structures are deeply flawed. Thus, the market for corporate control, the market for capital, and the labor market for executives are far from perfect and permit substantial managerial power. Such managerial power and rent extraction by managers, as they argue, are likely to have an important influence on the design of corporate control mechanisms including board composition. Following this rationale, we offer an alternative hypothesis as follows:

When ownership and management are separated, managers may have substantial power. Such managerial power may cause deviation of firms' board composition from what is optimal based upon their ownership structure. If that is the case, our efficiency/equilibrium explanations alone cannot adequately explain board composition. As such, we may not necessarily observe the order of board independence as predicted by the efficiency/equilibrium hypothesis discussed previously.

SAMPLE SELECTION

Data on Boards of Directors

We collect the information on corporate management and boards from the Best's Insurance Reports Property/Casualty Edition published annually by the A.M. Best Co. Our data cover a 10-year period from 1995 to 2004. As Best's Insurance Reports are published each year around July, management and board information in, say, the 2005 Best's Insurance Report is assumed to reflect the board information as of

December 31, 2004.[4] Management and board information of each firm from Best's Insurance Reports is then matched with demographic and financial information collected from the National Association of Insurance Commissioners' Database ("NAIC Database" hereafter).

Data on Firm Ownership Structure

To construct the sample of mutual firms, we start with 492 mutual companies reported in the 1995 NAIC Database and track them in both the NAIC Database and the Best's Insurance Reports from 1996 to 2004. If a mutual company converts to a stock company in any year during this period, we further investigate to which stock ownership category (i.e., mutual owned, widely held, closely held by others, and closely held by management) the mutual converts following the same approach as we construct the stock sample (described below). From 1995 to 2004, the number of mutual companies in the sample decreased by 116, for two reasons. First, 34 mutual companies converted to stock companies during this period.[5] Second, the number of mutual companies in the sample further decreased by 82 due to the fact that these companies were no longer reported in the NAIC Database at some point during the period.

To construct the sample of stock ownership classes, we start with 1,685 stock companies reported in the 1995 NAIC Database. The NAIC Database only reports each firm's basic ownership structure (i.e., stock, mutual, Lloyd's, or insurance exchange) but provides no information on the detailed ownership of stock insurance companies. We follow the approach suggested by Mayers and Smith (1994) and define ultimate ownership in terms of individuals. For example, if a company is owned by another, we examine the parent to determine the ultimate ownership. If the ownership of its parent rests with stockholders, policyholders of a mutual, or members of an association, that is the end of the process; if the parent, on the other hand, is owned by another company, we examine ownership of the ultimate parent company. We first look up the companies in the Best's Insurance Reports 1996 Edition. If the ultimate ownership is not clear from Best's, we conduct further investigation with the following sources: LexisNexis Academic Database, Dun & Bradstreet Million Dollar Database, and company websites.[6] If none of these sources provide the information on the insurer's ultimate ownership, we exclude the firm from the sample. Employing

[4]Note that sometimes this is inaccurate since in a few occasions we do observe officers or directors newly appointed in the early months of a year appearing in that year's Best's Insurance Report edition. However, it is impossible to assert the exact month in which officers and directors come into office because such information is not available in the vast majority cases.

[5]A company that changed from mutual to any of the four stock ownership categories is added to the stock sample starting from the year after the conversion. In the year of conversion, we exclude the firm from the sample as such a firm is mutual before conversion and stock after conversion. If the new ownership after conversion does not fall into any of the four stock ownership categories under investigation, the firm is excluded from the sample starting from the year of conversion.

[6]In a number of cases, we also perform a Google search on a company and search for news releases regarding mergers or acquisitions of or regulatory actions against the company.

this procedure, we are able to determine the ultimate ownership of 1,481 out of the 1,685 stock insurers in the 1995 sample.[7]

Of the 1,481 stock insurers whose ultimate ownership in 1995 is known to us, 1,263 companies fall into one of four subcategories under investigation.[8] Specifically, we classify 212 stock insurers as closely held, as each insurer's majority ownership rests with one or several individuals, or with a single family. We further distinguish between closely held by management and closely held by others. We classify 175 stock insurers as closely held by management, as the majority owner(s) or his/her family member(s) is (are) officer(s) of the corporation, and define the remaining 37 closely held insurers as closely held by others. We classify 881 insurers as widely held, which means that a company itself or its ultimate parent is publicly traded and thus the ownership ultimately rests with numerous individual stockholders. Finally, we define 170 stock insurers as mutual owned, since each company's ultimate parent is a mutual insurer.

For these 1,263 stock insurers for 1995, we go through an extensive process to track their ownership structure through 2004. That process is described in the Appendix.

To meet the panel data requirement, we further require all sample firms to have at least 2 years of observations. We also require all sample firms to have positive direct premiums written and net premiums written. In addition, since lagged board size and growth in direct premiums written (from year $t - 1$ to year t) are part of the independent variables, we further require that all firms in the sample have information available on the board structure and direct premiums written for the previous year.[9] After imposing these restrictions, we obtain 7,305 observations (i.e., firm-years) for the four stock ownership classes. Combining those with the 2,901 observations of mutual companies, we obtain a sample of 10,206 firm-years for our analysis. This sample consists of 380 unique mutual insurers and 1,008 unique stock insurers. Of these 1,008 stock insurers, we have 141 unique mutual-owned insurers, 672 unique widely held insurers, 31 unique insurers closely held by others, and 164 unique insurers closely held by management.

EMPIRICAL MODEL AND VARIABLES

Research Design and Methodology

The empirical model with which we test our hypothesis is as follows:[10]

% of outside directors = f(**ownership indicator variables** + **control variables**)

[7]The proportion of firms whose ultimate ownership cannot be determined is just under 14 percent, compared to 19 percent of stock insurers whose ultimate ownership could not be determined in Mayers and Smith (1994).

[8]The remaining stock insurers are excluded from the sample as they are firms where the ultimate ownership is held by associations, insurance exchanges, risk retention groups, partnerships, or trusts.

[9]The requirement for available information on board structure for prior period leads to the exclusion of data in 1995 for the full sample, since we do not have board structure information for years before 1995.

[10]Often, when board structure is studied, both board size and board independence are examined. However, here we focus on the association between ownership structure and board independence, because the theory offers clear indications regarding the implications of

Our data consist of a cross-section and time series panel. As discussed earlier, it is well recognized that endogeneity problems are common in the corporate governance literature and are very difficult to overcome. In particular, Hermalin and Weisbach (1998) suggest that there will be long-term persistence in firms' governance practices and long-term interfirm heterogeneity in these practices as well, raising concerns about the independence of the firm-level observations from year to year. In addition, board size and board independence are likely endogenously determined (Linck, Netter, and Yang, 2008). Following similar approaches employed by Boone et al. (2007) and Linck, Netter, and Yang (2008), we design our research to address such concerns of endogeneity in several ways. First, we estimate standard errors that are asymptotically robust to both heteroskedasticity and serial correlation. This approach is aimed at controlling for the lack of independence among firms in the same year and among observations of the same firm from year to year. Second, to control for the interdependence between board composition and board size, we include in the board composition regression lagged board size as an instrument for board size. Finally, we include year fixed effects in all our models.

As discussed previously, the changes across ownership classes among our sample firms are few, and thus our key explanatory variables, the ownership indicators, are rarely changing over time. Therefore, we adopt the fixed-effects vector decomposition (FEVD) estimation technique. When one or several independent variables are time invariant or rarely change over time, standard fixed-effects models are inappropriate, and a superior alternative to the regular FE model or other panel estimation models is the FEVD technique (Plumper and Troeger, 2007). Standard fixed-effects models are inappropriate because they cannot precisely estimate nearly time-invariant variables (Wooldridge, 2002) and their results are unreliable in the face of slowly changing variables (Beck, 2001; Plumper, Troeger, and Manow, 2005; Plumper and Troeger, 2007; Steinberg and Saideman, 2008). Not only does the FEVD model provide more efficient estimates than the fixed-effects model in these situations, it is superior to other panel estimation alternatives as well. Specifically, FEVD has better finite sample properties in estimating models that include either time-invariant or almost time-invariant variables correlated with unit effects than competing estimators including the fixed-effects model, the random-effects model, the pooled ordinary least squares (OLS), and the Hausman-Taylor procedure (Plumper and Troeger, 2007).

The FEVD technique involves three stages. In the first stage, the procedure estimates the firm fixed effects by running a fixed-effect estimate of the dependent variable on all but the time-invariant or almost time-invariant explanatory variables in the original model. In the second stage, the procedure regresses the fixed-effects vector on the

separation of ownership and control on board composition. In contrast, no existing theory clearly indicates the implications of the separation of ownership and control on board size. For completeness, we do run regressions on board size, and results not reported here indicate that mutual companies have significantly larger boards than stock companies in the property–liability insurance industry, contrary to the findings in Mayers, Shivdasani, and Smith (1997), who find no difference in board size between mutual and stock life insurers. We also find that mutual-owned companies have larger boards than stock-owned companies. However, board size is not significantly different among stock companies widely held, stock companies closely held by others, and stock companies closely held by management.

time-invariant or almost time-invariant explanatory variables. In this stage, the procedure decomposes the fixed-effects vector into two parts: one explained by time-invariant or nearly time-invariant explanatory variables, which are the ownership variables in our case, and the other unexplained and represented by the error term. In the third and final stage, the procedure performs a pooled-OLS estimation of the dependent variable on all explanatory variables used in the first stage plus the error term from the second stage (which represents the unexplained part of the fixed-effects vector).

Dependent Variable and Key Explanatory Variables

Our main hypothesis is that insurance companies adopt appropriate board composition based on their ownership structures. Therefore, the dependent variable is the fraction of outside directors. We define outside directors as nonofficer, nonfamily directors.[11] We define family members as those having the same last name as the firm's officers. The key explanatory variable is the ownership variable. For the analysis comparing mutual and stock companies, the ownership indicator variable is stock (stock company = 1; 0 otherwise). For the analysis on board composition across the continuum of ownership classes, we employ four indicator variables, one each for mutual, mutual-owned stock, widely held stock, and stock closely held by others. The omitted category is stock closely held by management.

Our key hypothesis is that use of outside directors on the board increases with the degree of separation of ownership and control. Specifically, we expect that mutual companies are associated with higher fraction of outside directors than stock companies, and among the five detailed ownership classes, the fraction of outside directors on the board increases in the following ranking order: stock insurers closely held by management, stock insurers closely held by others, stock insurers widely held, stock insurers owned by mutuals, and mutual insurers. Thus, the sign for the stock company indicator is expected to be negative. For the analysis on the continuum of ownership classes, all four indicator variables are expected to have a positive coefficient estimate, and the absolute magnitude of coefficient estimates is expected to be largest for mutual, followed by mutual owned, then widely held, and smallest for closely held by others.

Control Variables

Focusing on publicly traded entities, prior studies (e.g., Lehn, Patro, and Zhao, 2004; Boone et al., 2007; Linck, Netter, and Yang, 2008) have identified several firm characteristics that have an impact on board composition. Similar measures of firm characteristics are included in our regressions as control variables. Note that as the vast majority of our sample firms themselves are not publicly traded, the measures we use

[11] The issue of who is an outside director is debatable. For example, is a company's auditor really an outsider? The definition we use is common (e.g., Fama and Jensen, 1983; Brickley and James, 1987; Mayers, Shivdasani, and Smith, 1997; Lehn, Patro, and Zhao, 2004; Linck, Netter, and Yang, 2008). Moreover, our data source, Best's Insurance Reports, does not provide sufficient biographical data to construct more complicated definitions of outsiders. For most of our sample, proxy data used in most previous studies of board composition are unavailable.

for our sample firms are similar to but not exactly the same as those used in previous studies of publicly traded companies.

Firm Size. Lehn, Patro, and Zhao (2004), Boone et al. (2007), and Linck, Netter, and Yang (2008) all document a positive relation between firm size and board independence, consistent with the notion that larger firms have greater agency costs of free cash flow (Jensen, 1986) and that board independence increases in firm size as a means to mitigate the agency problems associated with firm size (Linck, Netter, and Yang, 2008). However, Linck, Netter, and Yang also suggest that the relation between firm size and board independence is nonlinear. Therefore, we include both firm size and a squared term of firm size in the regression. Firm size is defined as the natural log of firm's total admitted assets.

Firm Age. In addition to firm size, Boone et al. (2007) use firm age as another proxy for the scope and complexity of the firm's operations and expect board independence to increase in firm age. Their results, however, are inconsistent across different model specifications. Linck, Netter, and Yang (2008) suggest a possible nonlinear relation between firm age and board independence as the firm's complexity may not necessarily increase in firm age once a firm is "mature." Consistent with their hypothesis, they find that board independence increases in firm age but at a decreasing rate. Therefore, we include in the regressions both firm age and a squared term of firm age. Similar to previous studies, we define firm age as the number of years since the firm's inception.

Firm Diversification. Both Anderson et al. (2000) and Coles, Daniel, and Naveen (2008) argue that diversified firms employ more independent directors to monitor their wide scope of operations. In this respect, more diversified firms are expected to have greater board independence. On the other hand, however, the more diversified a firm's operations are, the greater information asymmetry is present, and the higher the costs of monitoring by outside directors. If this is the case, more diversified firms may require more insiders on the board to help oversee the firm's operations (Boone et al., 2007), resulting in a negative relation between firm diversification and board independence. Given these competing hypotheses, the overall impact of diversification on board independence remains an empirical question. We employ two measures for business complexity: line of business Herfindahl index and geographic Herfindahl index, two standard measures of diversification in insurance studies (e.g., Mayers and Smith, 1994; Carson and Hoyt, 1995; Kleffner and Doherty, 1996; Pottier and Sommer, 1997; Bajtelsmit and Bouzouita, 1998).

Firm Growth Opportunities. The expertise brought in by outside directors does not come free. Besides the direct costs such as director compensation, costs of monitoring by outside directors also result from transfer of information, which are presumably higher for high-growth firms. Outside directors face information acquisition and processing costs in transferring their general expertise to the specific firm on which they serve as board members (Linck, Netter, and Yang, 2008). High-growth firms represent a higher degree of information asymmetry and thus have higher

costs of obtaining information by the outside directors, resulting in higher costs of monitoring by outside directors. Adams and Ferreira (2007) and Raheja (2006) both suggest that board independence is decreasing in the costs of monitoring. For this reason, we expect an inverse relation between firm growth opportunities and board independence.

The most commonly used proxy for growth opportunities is the market-to-book ratio, but its calculation requires stock price data. Since our sample contains a large proportion of mutual and nonpublicly traded stock firms, such a proxy is not feasible for our analysis. However, Baber, Janakiraman, and Kang (1996) propose using past growth rates as a proxy for future investment opportunities. We use the growth in direct premiums written from year $t - 1$ to year t as a proxy for a firm's growth opportunities. We recognize that this proxy is far from perfect, but we hope that it will help capture part of the information asymmetry associated with firm growth.

Fraction of Business From Long Tail Lines. To proxy for the risk embedded in a firm's operations, we also include the fraction of business from long tail lines as an additional control variable. The higher fraction of business in long tail lines, the more variable its performance is likely to be. In this respect, this measure serves as an additional proxy for information asymmetry. If this is the case, we would expect an inverse relation between board independence and fraction of business in long tail lines. On the other hand, this variable may also serve as a proxy for managerial discretion. The more a firm is engaged in long tail lines, the higher the required managerial discretion and the greater need for monitoring by outside directors. In that case, one would expect to observe a positive relation between the percentage of business from long tail lines and the fraction of outside directors. Therefore, the expected sign of this variable is an empirical question.

Firm Performance. Hermalin and Weisbach (1998) suggest that firms add outsiders to the board following poor performance. Consistent with such hypothesis, Linck, Netter, and Yang (2008) find an inverse relation between firm performance and board independence. To control for the possible impact of firm performance on board independence, we include the average annual industry-adjusted return on assets over year t and year $t - 1$ and expect to observe a negative coefficient estimate on this variable.

Number of Affiliates. As group affiliations are very common in the property–liability insurance industry, we include in the regression an additional control variable for the number of affiliated companies in the same group as the firm. Fama and Jensen (1983) argue that less formal mutual monitoring among agents (managers) serves as an additional internal control mechanism that buttresses the formal monitoring by the board of directors and higher level agents. The larger the number of affiliates within the same group, the more potential mutual monitoring among top managers of affiliated companies and thus the less need for costly monitoring by the outside directors. This could lead to a negative relation between the number of affiliates and the fraction of outside directors.

Board Size. Linck, Netter, and Yang (2008) show that board composition is affected by board size. In particular, they find that board independence increases in board size. To control for the impact of board size, we include board size in the regression as an additional control variable. As discussed previously, lagged board size is used as an instrument to control for the interdependence between board composition and board size in the same period.

Year Effects. As part of effort to control for the endogeneity problems, we also include year dummies for years 1997 to 2004, with 1996 as the omitted year. We do not offer any predictions on these year dummies.

Descriptive Statistics

Table 1 reports the summary statistics for all mutual and stock companies in our sample. Table 2 reports board characteristics for both mutual and stock insurers as well as for the four stock ownership classes. Panel A of Table 2 indicates that the mean (median) number of directors is 10.1 (9) for mutual companies and 7.8 (7) for stock companies. Differences in both the means and medians are statistically significant. Moreover, the mean (median) fraction of outside directors is 0.74 (0.78) for mutual companies and 0.47 (0.50) for stock companies. The means and medians

TABLE 1
Descriptive Statistics for Sample Firms

Firm Characteristics of All Mutual and Stock Insurers	*N*	Mean	Median
Assets (in $million)	10,206	699	87
Direct premiums written (in $million)	10,206	217	43
Net premiums written (in $million)	10,206	221	31
No. of affiliates in the same group	10,206	10	3
Growth in direct premiums written	10,206	0.18	0.06
Firm performance	10,206	−0.002	−0.002
Line of business Herfindahl	10,206	0.47	0.39
Geographic Herfindahl	10,206	0.52	0.46
% of business from long tail lines	10,206	0.67	0.73
Firm age	10,206	50	32

Notes: This table reports the summary statistics for all mutual and stock insurers in our sample. We obtain firms' demographic and financial information from National Association of Insurance Commissioners' Database ("NAIC Database"). Assets are total admitted assets. No. of affiliates in the same group is the number of affiliated companies with the same group code as the company. Growth in direct premiums written is the growth rate in direct premiums written calculated as follows: $(DPW_t - DPW_{t-1})/DPW_{t-1}$. Firm performance is the average annual industry-adjusted return on assets over year t and year $t-1$. Line of business Herfindahl is the Herfindahl index calculated based on direct premiums written from all lines. Geographic Herfindahl is the Herfindahl index calculated based on direct premiums written from all states. Percent of business from long tail lines is total direct premiums written from long tail lines divided by total direct premiums in all lines. Firm age is the number of years since the firm starts its operation.

TABLE 2
Board Characteristics

Panel A: Mutual and Stock Sample Firms (1996–2004)

	Mutual			Stock		
Variable	*N*	Mean	Median	*N*	Mean	Median
Board size	2,901	10.10	9.00	7,305	7.84	7.00
% of outside directors	2,901	0.74	0.78	7,305	0.47	0.50
% of firms with outsider-dominated boards	2,901	0.88	1.00	7,305	0.47	0.00

Panel B: Four Stock Ownership Classes (1996–2004)

	Mutual Owned			Widely Held			Closely Held by Others			Closely Held by Management		
Variable	*N*	Mean	Median	*N*	Mean	Median	*N*	Mean	Median	*N*	Mean	Median
Board size	1,090	9.26	9.00	4,858	7.87	7.00	268	6.40	6.00	1,089	6.63	6.00
% of outside directors	1,090	0.64	0.70	4,858	0.46	0.46	268	0.57	0.57	1,089	0.35	0.33
% of firms with outsider-dominated boards	1,090	0.72	1.00	4,858	0.45	0.00	268	0.56	1.00	1,089	0.28	0.00

Notes: This table reports summary statistics for board characteristics for our sample firms. In Panel A, we report the board characteristics for all mutual and stock sample firms. In Panel B, we report the board characteristics for the four stock ownership classes under investigation. Board size is the total number of directors on a firm's board. Outside directors are nonofficer, nonfamily directors, where family members are those having the same last name as the firm's officers. Outsider-dominated boards are boards whose proportion of outside directors is more than 50 percent.

are significantly different (p-values from both t-test and median test are less than 0.0001). While 47 percent of stock insurers have outsider-majority boards, 88 percent of mutual insurers have their boards dominated by outsiders.

For comparison, we look at the board characteristics reported in Mayers, Shivdasani, and Smith (1997). While the mean (median) board size is 12.2 (12) for their mutual life insurers and 8.3 (7) for their stock life insurers, the mean (median) fraction of outside directors is 0.72 (0.78) for their mutual life insurers and 0.44 (0.44) for their stock life insurers. Without statistical testing, we can only conclude that their sample mutual insurers appear to have larger boards than our mutual sample firms, while their stock sample firms seem to have slightly lower fraction of outside directors than our stock sample firms.

Panel B of Table 2 summarizes board characteristics across stock ownership classes. The fraction of outside directors is highest among mutual-owned stock insurers, followed by closely held by others, widely held, and closely held by management. The order of the board composition is consistent with our predictions for all ownership classes except for the category of closely held by others. It is worth noting that the number of stock insurers closely held by others is much smaller compared to those of other ownership classes.[12] Thus, caution should be taken when interpreting the results for stock insurers closely held by others. Both Wilcoxon two-sample tests and Kruskal–Wallis tests are performed to compare each pair of subcategories. The test statistics are all highly significant (with p-values < 0.05), rejecting the null hypothesis that any two subcategories have the same distribution of board composition.

Correlation of variables is examined and Pearson correlation coefficients are reported in Table 3. No serious correlation is detected among the independent variables, reducing the potential concern of multicollinearity.

EMPIRICAL RESULTS

Results for Mutual Versus Stock Ownership

The first regression analysis includes only one ownership variable, indicating whether a firm is a stock company or a mutual company. Results for the FEVD regression are reported in Table 4. As expected, stock companies are associated with a lower fraction of outside directors than mutual companies, consistent with previous findings in Mayers, Shivdasani, and Smith (1997). Board size in the previous period is positively related to board independence, indicating that large boards tend to have more outside directors, consistent with findings in Boone et al. (2007) and Linck, Netter, and Yang (2008). As anticipated, the relation between board independence and firm size is nonlinear: board independence increases in firm size but at a decreasing rate, consistent with previous findings in the literature. Companies associated with larger groups have lower fraction of outside directors on their boards, consistent with our prediction that mutual monitoring among colleagues may substitute, at least to some extent, for the formal monitoring by outside directors. Firm performance is negatively related to board composition, which is consistent with prior findings in Linck,

[12]The number of stock insurers closely held by others in our sample ranges from 26 in 1998 to 37 in 2003. The next smallest number of ownership category is stock insurer closely held by management, which ranges from 93 in 2004 to 155 in 1996.

TABLE 3
Pearson Correlation Coefficients and Associated *p*-Values for the Sample of Mutual and Stock Companies, $N = 10{,}206$

	Board Independence	Stock Indicator	Board Size	Firm Size	No. of Affiliates	Growth in Direct Premiums Written	Performance	Line of Business Herfindahl	Geographic Herfindahl	% of Business From Long Tail Lines
Board independence	1									
Stock indicator	−0.41	1								
	<0.0001									
Board size	0.40	−0.30	1							
	<0.0001	<0.0001								
Firm size	−0.05	0.16	0.20	1						
	<0.0001	<0.0001	<0.0001							
No. of affiliates	−0.24	0.36	−0.07	0.34	1					
	<0.0001	<0.0001	<0.0001	<0.0001						
Growth in direct	−0.01	0.08	−0.01	−0.05	0.02	1				
premiums written	0.239	<0.0001	0.451	<0.0001	0.126					
Performance	−0.03	0.09	−0.03	0.06	0.07	−0.001	1			
	0.0031	<0.0001	0.001	<0.0001	<0.0001	0.886				
Line of business	−0.04	0.11	−0.10	−0.24	−0.12	0.08	0.14	1		
Herfindahl	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Geographic	0.18	−0.33	0.05	−0.52	−0.31	−0.01	−0.02	0.18	1	
Herfindahl	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.203	0.033	<0.0001		
% of business from	0.12	−0.13	0.13	0.10	0.02	0.02	−0.20	−0.19	0.07	1
long tail lines	<0.0001	<0.0001	<0.0001	<0.0001	0.078	0.082	<0.0001	<0.0001	<0.0001	
Firm age	0.16	−0.53	0.14	0.08	−0.10	−0.09	−0.12	−0.32	−0.04	0.09
	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.000	<0.0001

TABLE 4
Panel Fixed-Effects Regression With Vector Decomposition: Board Independence of Mutual Versus Stock Companies

Variable	Estimates (*t*-stat)
Stock (= 1 if a stock)	−0.242***
	(−61.74)
Lagged board size	0.010***
	(24.62)
Firm size	0.104***
	(10.77)
Firm size square	−0.003***
	(−12.03)
No. of affiliates	−0.001***
	(−6.09)
Growth in direct premiums written	0.003
	(1.49)
Firm performance	−0.069***
	(−3.63)
Line of business Herfindahl	0.028***
	(5.56)
Geographic Herfindahl	−0.037***
	(−8.85)
% of business from long tail lines	0.020***
	(4.54)
Firm age	0.001***
	(8.59)
Firm age square	−0.00001***
	(−11.66)
Intercept	−0.233***
	(−2.56)
Indicator for year 1997	−0.004
	(−0.85)
Indicator for year 1998	0.007
	(1.38)
Indicator for year 1999	0.012**
	(2.49)
Indicator for year 2000	0.001
	(0.26)
Indicator for year 2001	0.010**
	(2.04)
Indicator for year 2002	0.006
	(1.12)
Indicator for year 2003	0.002
	(0.34)
Indicator for year 2004	0.006
	(1.18)
No. of observations	10,206
No. of clusters (firms)	1,388
Adjusted R^2	0.82

* and ** indicate significance at the 5% and 1% levels, respectively.

Netter, and Yang and lends further support to Hermalin and Weisbach (1998), who argue that firms increase board independence in response to poor firm performance. The coefficient estimates for the two Herfindahl indices are both significant but have opposite signs, thus providing mixed evidence regarding the relation between firm diversification and board independence. The coefficient estimate for the fraction of business from long tail lines is positive and significant, consistent with the managerial discretion hypothesis that higher level of managerial discretion required by long tail lines creates greater need for monitoring by outside directors.

Results for Five Ownership Classes

As indicated earlier, we are more interested in how the variation of ownership among the five ownership classes—stock companies closely held by management, stock companies closely held by others, widely held stock companies, mutual-owned stock companies, and mutual companies—affects board composition, as these ownership classes represent a continuum of separation of ownership and control. Table 5 reports the results from this part of the analysis. As hypothesized, mutual companies, mutual-owned stock companies, widely held stock companies, and stock companies closely held by others all employ a significantly higher fraction of outside directors than stock companies closely held by management. With the exception of closely held by others, the magnitude of the coefficient estimates of the ownership classes is also consistent with our predictions: largest for mutual companies, followed by mutual-owned stock companies, and smallest for widely held stock companies. The coefficient estimate for closely held by others falls between that for mutual owned and that for widely held, contrary to expectations.

Additional tests indicate that the coefficient estimates for the ownership variables are all significantly different from one another. Of six pairwise comparisons, five of them have the expected sign. The only exception is that insurers closely held by others exhibit significantly higher fraction of outside directors than widely held insurers, contrary to our predictions. One possible explanation is that the presence of a controlling outside shareholder may not be enough to substitute for the use of the outside directors. Alternatively, the fact that the number of observations for the closely held by others category is so much smaller than any other categories may make the results for this variable unreliable. With the exception of this variable, the results are consistent with our hypothesis that the use of outside directors increases as the degree of separation of ownership and control increases along the continuum of ownership structures.

The results on the control variables are very similar to those reported in Table 4. A final brief comment on the findings regarding mutual-owned stock companies is in order, since these results are quite interesting. While Mayers and Smith (1994) find that mutual-owned stock companies are more like mutual companies in their operating characteristics, Lee, Mayers, and Smith (1997) find that mutual-owned stock companies react more like stock companies in their response to the introduction of guaranty funds. Whether mutual-owned stock companies behave more like mutuals or stocks, then, appears to be an open question. In terms of board composition, at least, our results indicate that mutual-owned stock companies fall somewhere in between mutuals and other categories of stock companies.

TABLE 5
Panel Fixed-Effects Regression With Vector Decomposition: Board Independence Across the Continuum of Ownership Classes

Variable	Estimates (*t*-stat)
Mutual (β1)	0.371***
	(71.07)
Mutual owned (β2)	0.267***
	(49.23)
Widely held (β3)	0.117***
	(24.89)
Closely held by others (β4)	0.219***
	(26.30)
Lagged board size	0.009***
	(21.70)
Firm size	0.086***
	(8.94)
Firm size square	−0.003***
	(−10.09)
No. of affiliates	−0.001***
	(−7.18)
Growth in direct premiums written	0.002
	(1.44)
Performance	−0.067***
	(−3.55)
Line of business Herfindahl	0.029***
	(5.73)
Geographic Herfindahl	−0.036***
	(−8.59)
% of business from long tail lines	0.017***
	(3.83)
Firm age	0.001***
	(6.96)
Firm age square	−0.000***
	(−10.15)
Intercept	−0.431***
	(−4.78)
Indicator for year 1997	−0.004
	(−0.84)
Indicator for year 1998	0.007
	(1.50)
Indicator for year 1999	0.012**
	(2.52)
Indicator for year 2000	0.000
	(0.05)
Indicator for year 2001	0.009*
	(1.76)
Indicator for year 2002	0.004
	(0.75)

(*Continued*)

TABLE 5
Continued

Variable	Estimates (*t*-stat)
Indicator for year 2003	−0.001
	(−0.27)
Indicator for year 2004	0.003
	(0.55)
t-value for test: $\beta 1 = \beta 2$	21.06***
t-value for test: $\beta 1 = \beta 3$	58.46***
t-value for test: $\beta 1 = \beta 4$	18.29***
t-value for test: $\beta 2 = \beta 3$	33.99***
t-value for test: $\beta 2 = \beta 4$	5.71***
t-value for test: $\beta 3 = \beta 4$	12.96***
No. of observations	10,206
No. of clusters (firms)	1,388
Adjusted R^2	0.82

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

While the FEVD approach is the most appropriate method for this study given the characteristics of our data, we also try three other approaches for robustness purposes.[13] First, we repeat our test with a between-effects (BE) regression, which estimates the model using the means of all variables for each firm across time. The results for the key variables based on the BE regression are very similar to those reported from the FEVD regression. The only difference is that the coefficient estimate of stocks closely held by others is no longer significantly different from that of widely held stocks and that of mutual-owned stocks. Second, we run year-by-year cross-sectional regressions for each of the sample years. Overall, the results are quite consistent with the findings from the FEVD model, except for the closely held by others category. In 5 out of 9 years, stocks closely held by others are not statistically different from two of the remaining four ownership categories. In the remaining years, stocks closely held by others are not statistically different from one of the other four categories. Finally, we run simple pooled OLS. Again, the results are very similar to the FEVD results, except that stocks closely held by others is not significantly different from mutual-owned stocks.

Based on the findings using FEVD, BE, OLS, and year-by-year regressions, it appears that the overall results are robust to different methodologies, with the exception of the significance of the closely held by others variable. As indicated previously, the number of observations in the stocks closely held by others category is much smaller than any other ownership categories in our sample. Thus, it is not surprising that results for this variable are most sensitive to the approach used.[14]

[13]To conserve space, results for these robustness checks are not shown. They are available from the authors upon request.

[14]The FEVD models yield R^2 values above 0.80, compared with 0.39 for the BE regression, 0.32 for OLS, and in the range of 0.28 to 0.36 for the year-by-year regressions. The higher R^2 values for the FEVD models are due to the fixed-effects methodology. Controlling for firm fixed effects substantially increases the explanatory power of the models.

Additional Tests[15]

We manually tracked the firms over the entire sample period, hoping to observe a significant number of changes across the five ownership structures under investigation. If board structure changes around ownership changes are consistent with our predictions, it would serve as confirming evidence of our hypothesis. Unfortunately, the number of changes across the five ownership structures in our sample is very small. Of 10,206 firm years in the sample, only 98 of them involve ownership changes across the ownership classes under investigation. The number of changes becomes very small when looking at a particular type of change between two categories, with the largest number being 17 (17 firms changed from closely held by management to widely held, and 17 firms changed from widely held to mutual owned). To draw any meaningful inference from our tests, we require the number of changes to be least 10. Of the 12 types of cross-class changes, only 4 types of changes meet this requirement: closely held by management to widely held, widely held to mutual owned, mutual owned to widely held, and mutual to mutual owned. The changes in the average board composition after these ownership changes are all in the expected direction. However, only one of them, mutual-owned stock to widely held stock, is statistically significant, thus providing weak evidence for our hypothesis. The lack of statistical significance is not necessarily surprising, given the very small sample sizes of the tests.[16]

Our major empirical evidence suggests that firms of different ownership structures overall seem to have optimal board structures. It is interesting to know whether firms that are deviating from the supposedly optimal board structure operate less efficiently than those with optimal boards. Using the predicted value of the fraction of outside directors as a proxy for the optimal level of board independence, we subtract the observed value of board independence from the predicted value of board independence and use the absolute value of this difference as the proxy for an insurer's deviation from the optimal level of board independence. If the optimal level of board independence is value maximizing, then firms whose board independence is farther away from the optimal level should be associated with lower efficiency. Since the vast majority of our sample firms are not publicly traded, we use industry-adjusted return on assets (ROA) and industry-adjusted return on equity (ROE) as proxies for firms' efficiency. We run Pearson correlation tests between our proxy for deviation from the optimum and ROA/ROE for the five ownership classes separately. The results indicate a negative relation between the deviation from optimal board independence and firms' ROA and ROE across all five ownership classes, consistent with our predictions. Such negative relation is statistically significant at the 5 percent (or lower) level for three of the five ownership classes and marginally insignificant for one of the ownership classes, thus providing some confirming evidence for our hypothesis.

[15]We thank an anonymous referee for suggesting these additional tests, as well as the robustness checks above.

[16]We also tried grouping changes into just two groups, one including all ownership changes where board independence is predicted to increase, and the other including all ownership changes where board independence is predicted to decrease. The hope was that the tests might have greater power due to a relatively larger sample size. However, the test statistics are statistically insignificant for both groups.

CONCLUSIONS AND DISCUSSION

How to construct the corporate governance systems to control the agency conflicts caused by the separation of ownership and control has long been the subject of extensive academic research. The existing literature on the implications of the separation of ownership and control on corporate governance, however, has focused on publicly traded companies whose ownership is generally widely diffused among individual investors and thus represent very substantial separation of ownership and control. While publicly traded companies might be the most prominent organizational form, they are only part of the whole spectrum of ownership structures present in corporate America. The spectrum of ownership structures includes mutual companies as well as companies that are closely held. To date, little is known about the impact of these alternative ownership structures on firms' governance systems. The main reason for such lack of research is the difficulty in obtaining data on governance systems for companies that are not publicly traded.

Rich variation in ownership structure within the U.S. property–liability insurance industry affords an excellent opportunity to test the implications for corporate governance of the separation of ownership and control. Not only do mutual and stock companies coexist in this industry, but ownership varies widely among stock ownership classes. We focus on the board of directors, arguably the most important corporate governance mechanism within a firm, and empirically examine the implications of the separation of ownership and control on board composition.

Various ownership structures present in the insurance industry, namely, mutual, mutual-owned stock, widely held stock, stock closely held by others, and stock closely held by management, represent various degrees of the separation of ownership and control. At one extreme, the ownership of mutual insurers is widely vested with each policyholder and thus represents the largest separation of ownership and control among all insurers; at the other end of the spectrum are firms that have the majority of shares outstanding held by their management, implying the least separation of ownership and control among all stock companies. The greater the separation of ownership and control, the higher the costs of agency problems between managers and owners, and the greater the need for monitoring by outside directors.

With a large sample of property–liability insurance companies, we empirically test this hypothesis on the relation between board composition and separation of ownership and control. Our results lend support to our hypothesis. Specifically, the results show that mutual companies are associated with higher fraction of outside directors than stock companies in general. Moreover, among the continuum of five ownership classes under investigation, with one exception, the degree of board independence decreases as we move from one end of the spectrum (i.e., mutual) to the other end (i.e., closely held by management).

Overall, the findings indicate that insurance companies structure their boards in accordance with their ownership structures in ways that are consistent with an attempt to minimize the costs associated with the separation of ownership and control. Our results reinforce the views presented in Lehn, Patro, and Zhao (2004), Boone et al. (2007), and Linck, Netter, and Yang (2008) that firms have generally adopted the governance practices most suitable for their organizational forms and economic environment.

Therefore, any proposed adoption of uniform mandatory changes in corporate governance, as opposed to voluntary evolutionary changes, should be viewed critically prior to the formulation of public policy.

APPENDIX

Tracking Stock Company Ownership Changes Over the Sample Period

We used the following process to track ownership over time for the stock companies. For the 1,263 stock insurers identified in 1995 as falling into one of our four ownership categories, we look up each company in the Best's Insurance Reports 2005 Edition, which reports ownership information as of year end 2004. If the ultimate ownership rests with the same parent in 2004 as it did in 1995, and if the parent's ownership structure does not change during the sample period, then our task to determine the ownership category ends there. This is the case for 618 firms in the stock sample. The remaining 645 firms fall into two groups. The first group consists of firms that are reported in 1995, but not reported in 2004. The second group consists of firms that are reported in both 1995 and 2004, but their ultimate parent is different in year 2004 from what was reported in 1995. We approach these two groups as described below.

For the first group, we track each firm in the 1996 through 2004 NAIC Database to see in which year the reporting of the firm stopped. We also look them up in Best Insurance Reports 1997 through 2005 Editions to see if any regulatory actions have been taken against these companies or if the companies merged into other companies. In a number of cases, we also perform a Google search on the company for news release regarding mergers and acquisitions, as well as regulatory actions taken against the company. Such investigation concludes that 164 stock insurers gradually drop out of our stock sample as follows: 34 stock insurers merged into other companies and no longer exist as independent entities, 70 stock insurers exit the sample due to regulatory actions, and the remaining 60 stock insurers are not reported in NAIC for reasons that are unclear.

For the second group, a stock firm is reported in both 1995 and 2004 according to Best's, but its ultimate parent in 1995 is different from that reported in 2004. In such cases, we track the firm during the entire sample period to determine when the ownership transfer occurs. Again, we turn to the Best's Insurance Reports 1996 through 2005 Editions, as well as LexisNexis Academic Database, Dun & Bradstreet Million Dollar Database, and company websites. When a firm's ultimate parent changes, we also investigate its new parent's ownership structure and record the ownership based on the ultimate parent's ownership structure. A firm drops out of the sample if the new parent's ownership structure is unable to be determined after research in the above data sources and Google search, or if the new parent's ownership structure is clear to us but it does not fall into any of the five ownership classes under investigation (e.g., the new parent is an insurance association). Consequently, 41 stock insurers drop out of the sample over the years. Note that although stock firms experience significant number of mergers and acquisitions (i.e., over 400 events) during the sample period, less than a quarter of such events actually lead to change across ownership classes. For example, most of the mergers and acquisitions involving our sample firms are between publicly traded parent companies, and thus the old and new ownership

structure of the individual firm remains the same (i.e., widely held) before and after the event.

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