# Ownership Concentration and Governance in the U.S. Insurance Industry

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**Abstract:** Concentration in the U.S. insurance industry's market shares and ownership, coupled with a network interlocking ownership relationships by institutional investors, raise social concerns. Studying the relationship between Tobin's q and corporate governance features of the industry, we fail to find support for the incentive alignment or entrenchment hypotheses, but our findings are consistent with the hypothesis that controlling owners may couple with others to expropriate private value from minority shareholders. An interesting observation from the study is the degree to which family control is prevalent in the industry; combining family control and institutional ownership makes most stock insurers closely held.

## INTRODUCTION

The primary purpose of this paper is to perform an investigation and synthesis of the relationships between ownership, governance, and performance in the insurance industry in the United States. The supply of insurance in the United States is controlled by a relatively small number of firms and individuals. The market share of the top 25 property-liability insurers was 63 percent in 2002. This market share and the firms involved are persistent over time.[1] The same firms that have the largest market share in a state and line of business have been the market share leaders for decades. Some of the market share leaders are mutual insurers; other firms controlling industry supply are organized in the stock form and are themselves characterized by more concentrated stock ownership or control than

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is true for other industries. This control concentration has both efficiency and social implications, but the focus of this paper is on U.S. stock insurers.

Discussions of corporate ownership structure typically start by observing that the separation of firm ownership and control pits the preferences of owners against those of managers. The utility preferences of the managers may work against the owners' presumed goal of value maximization, substituting goals such as the maximization of compensation. Such incentive conflicts cause owners to incur expenses, agency costs designed to reduce the conflicts at the expense of corporate performance (Jensen and Meckling, 1976). According to the incentive alignment theory, policies that dilute owners' shares by granting higher levels of equity ownership to managers may increase corporate performance by aligning the financial incentives of the manager and other equity owners.[2] The entrenchment hypothesis, on the other hand, argues that performance is sacrificed at levels of managerial ownership sufficiently high to render unlikely their replacement by other shareholders.[3] The manager-owners strive to balance the benefits from the maximization of firm value and the maximization of their personal utility (Kamerschen, 1968; Bebchuk, Cohen, and Ferrell, 2004). The level of managerial stock ownership sufficient to guarantee entrenchment differs with the features and interactions of other owners. Similarly, the entrenchment hypothesis has a logical limit at managerial ownership levels so concentrated that all benefits accrue to the owner-managers (Hart, 1995). Merging these hypotheses, we expect that the relation between performance and ownership is U-shaped; the effect of the incentive alignment hypothesis is dominant for low and high levels of managerial ownership, while the entrenchment effect is dominant for intermediate levels, about 5 to 25 percent managerial ownership (Morck, Shleifer, and Vishny, 1989; Stultz, Walkling, and Song, 1990).[4] Finally, working against the "logical limit" argument, reductions in performance may occur even when there is one controlling shareholder, or a small group, if the concentrated ownership conveys private value to the controlling owners (Bennedsen and Wolfenzon, 2000; Grossman and Hart, 1988; Harris and Raviv, 1988; Bebchuk, 1994, 1999). In this situation, the majority owners may willingly bear agency costs rather than cede control. For example, concentrated ownership levels may decrease the marketability of the firm's shares, as potential purchasers recognize that the share price does not carry with it an equal voice in the firm's operations. Lower performance would result as the firm's cost of capital increases in recognition of the decreased market liquidity (Fama and Jensen, 1983). Thus, we consider the possibility that high ownership levels may be associated with an expropriation of private benefits, which offsets, to a degree, the incentive alignment effect.

**Table 1. Director and Officer Ownership Concentration**

| | Year | | |
|---|---|---|---|
| | 1935 | 1995 | 2000 |
| All industries | 12.9% | 21.1% | |
| Finance, Insurance, and Real Estate (FIRE) | 8.4% | 17.4% | |
| Insurance only | | | 29% |

The values for 1935 and 1995 are from Holderness, Kroszner, and Sheehan (1999). Insurance values for 2000 are the authors' computations.

A separation of ownership and control of the U.S. corporation was documented for the early twentieth century by Adolph Berle and Gardiner Means.[5] Their work spawned modern financial theory. Later investigators felt that Berle and Means's 1932 treatise, *The Modern Corporation and Private Property*, described an early snapshot of the evolution of the corporate form (e.g., Larner, 1966). These later researchers continued to find declining managerial ownership by the directors and officers of corporations until an exhaustive survey comparing 1935 and 1995, and using more data than was available to Berle and Means, reached the conclusion that the trend had been reversed (Holderness, Kroszner, and Sheehan, 1999).[6] Following declining estimates of mean managerial ownership from 1935 through the 1960s, the average rose for all industries—from 12.9 percent in 1935 to 21.1 percent in 1995. The mean managerial ownership percentages for the 1935 and 1995 Finance, Insurance, and Real Estate (FIRE) sector, reported in Table 1, show a similar pattern—8.4 and 17.4 percent, respectively (Holderness et al., 1999).

We construct a subset of FIRE, calculating the 2000 ownership patterns for insurance companies using data from the Securities Exchange Commission form 14A for a sample of firms identified as in NAICS code 6331 (Fire, Marine and Casualty Insurance) on the SEC's Edgar database.[7] The corporate entities in the sample had revenues of $224.6 billion, or 53.2 percent of the $422.1 billion U.S. total industry premium for 2002. Average managerial ownership for the insurance companies in this study is 29 percent, but this measure of the concentration of corporate control in the insurance industry is conservative because, unlike other industries, many large insurance firms are organized as mutual companies, ostensibly owned by their policyholders but controlled by the firm's managers.

In addition to requiring reports of the holdings of directors and officers, the SEC requires firms to report on *other significant beneficial owners*.[8]

When director and officer shareholdings are combined with the holdings of other significant owners, the values for all industries and for the insurance industry are approximately 25 percent and 53 percent, respectively.[9] The effect of these typically institutional or fund investors is not clear. Some argue that the presence of such blockholders may work against the minority shareholders (Zeckhauser and Pound, 1999; LaPorta et al., 1999); others suggest that institutional investors improve corporate governance. This expropriation view relies on a blockholder incentive to partner with those controlling the firm to shift wealth from minority shareholders to themselves.[10] This view is supported by the observed behavior of unaffiliated blockholders who are found to be passive or support managerial growth strategies at the expense of firm residual value (Gibbs, 1993).[11] In addition, the OECD *Principles of Corporate Governance* (OECD, 1999) suggests reform mechanisms to address potential governance-sourced shareholder abuses. These mechanisms include special procedures for approval of transactions in which large shareholders have a conflict of interest; requirements that a company issue and acquire its own shares only at market value; and redemption and appraisal rights for shareholders who do not approve of a company's strategic decisions (OECD, 1999). Evidence suggests that controlling shareholders actively lobby against such reforms, causing some to conclude that the probability of abuse of minority shareholders is high (LaPorta et al., 1999).[12] These behaviors negatively affect firm value (Jensen and Meckling, 1976; LaPorta et al., 1998; Wruck, 1989) but the private benefits to the controlling group and affiliated investors or debtors make the loss of firm value acceptable. Others call into question the logical basis for the conclusion that concentrated ownership results in a loss of firm value (Bennedsen and Wolfenzon, 2000). First, concentrated control and external fund concentration are inversely related. As the size of the equity stake of a large-block shareholder increases the marginal net benefit of expropriation declines (LaPorta et al., 2000). Therefore, ownership concentration should be associated with lower expropriation, and large-block ownership may be recognized by minority shareholders as a signal of a better-quality firm (Bennedsen and Wolfenzon, 2000).[13] Thus we consider the combination of a closely held firm coupled with high fund ownership a situation with a higher potential for the expropriation of minority value. In addition, the illiquidity of shares associated with concentrated ownership causes such firms to rely more on retained earnings and bank loans to finance investment projects (Modigliani and Perotti, 1997; Rajan and Zingales, 1995). The providers of debt may require provisions for the supply of regular information and face-to-face meetings, provisions sometimes viewed as an alternative to ownership dispersion in corporate governance debates (Hart, 1995; Jensen, 1986; Booth and Deli, 1999; Myers and

Majluf, 1984).[14] Research, however, has questioned the incentives of debt providers to effectively influence firm-level strategic and operating decisions (Holland, 1994). Debt holders may not be effective monitors when the interest of the debt holder and corporation are aligned. For example, banks have incentives consistent with that of an entrenched ownership concerning a preference for profit retention over distributing dividends; high profit retention reduces debt default probabilities (Baums, 1993).

Studies of the link between ownership, governance, and performance in the insurance industry are rare, though the insurance industry is more concentrated than most other industries. The few available studies of the insurance industry that focus on the performance-ownership link include those of Mayers, Shivdasani, and Smith (1997), Downs and Sommer (1999), and Ke, Petroni and Safieddine (1999).[15] Ke, Petroni, and Safieddine (1999) use the insurance industry to study of the effect of ownership and firm performance on executive compensation by distinguishing between publicly held (less concentrated) and privately held (concentrated) stock firms. Their study is based on a combination of 18 public companies using SEC data (GAAP) and 45 privately held stock insurers using NAIC data (SAP). Regressing CEO compensation on a dummy variable for public versus privately held companies, they find that publicly held companies pay more and reward better for good performance. Their results are consistent with those of Mayers, Shivdasani, and Smith (1997), who look beyond compensation at other perquisite expenditures. Mayers, Shivdasani, and Smith (1997) investigate the relationship between ownership structure in the insurance industry, the composition of the board of directors and officers—specifically, board size and the number of outside directors—and the cost consequences of these relationships. They study the relationship in two ways. First, because the insurance industry has both stock and mutual companies, they compare board structures across these organizational forms. In addition, for stock firms, they draw distinctions between firms that are controlled by corporate managers or outside directors. Their clearest finding is that when stock to mutual (or mutual to stock) conversions occur, the number of outside board members increases (or decreases). They find that CEOs are more highly compensated by stock firms, a finding consistent with governance theories about the benefits of outside board members; in a general setting, Beiner et al. (2004) obtain similar findings regarding board size. Finally, Downs and Sommer (1999) study the impact of guaranty funds on monitoring, ownership, and risk-taking by insurers. They find that risk-taking by insurers increases with the level of insider ownership but, consistent with Hart (1995), they conclude that the relationship is nonlinear—it weakens as insider ownership increases. The nonlinear conclusion is based on a set of variables that

identify firms in different ownership ranges. The ranges are not consistent with those used in the general literature to study the entrenchment and incentive alignment hypotheses, so we retest using more recent data and the approach generally pursued in the ownership-performance literature.[16]

To investigate the hypotheses discussed above we rely on SEC data drawn from forms 10-K and 14-A for a sample of 38 stock corporations operating during the six-year period from 2000 through 2005—ultimately, a sample containing 224 firm-year observations. The remainder of the paper is structured as follows: the next section presents the empirical issues raised in this and prior studies that test for evidence regarding the incentive alignment, entrenchment, and expropriation hypotheses; the third section describes the sample and data issues and presents the empirical results of a regression model with fixed and time-series effects. Section four concludes and presents a discussion of the import of those results. Appendices provide a more detailed descriptive review of ownership concentration and cross-firm linkages.

## EMPIRICAL ISSUES

In addition to measures of performance and ownership, tests of the entrenchment and incentive alignment hypotheses involve variables to adjust for differences in the risk of different firms, the size of the firm, and other governance-related factors that are a cause of performance differences. Merging these various studies, we investigate property-liability stock insurer performance as a function of ownership, size, risk, leverage, liquidity, and governance. We integrate and extend the empirical models used by Morck, Shleifer, and Vishny (1988), Agrawal and Knoeber (1996), and Cho (1998). Each uses Tobin's $q$ as a measure of performance, but they approach the estimation of ownership and governance differently. They all control for firm size but differ in their use of other control variables; for example, they differ in the use of variables regarding the influence of leverage, liquidity, and the volatility of historical profit influences on firm performance. We add an adjustment for firm risk (as in Stano, 1976; Bothwell, 1980; Leech and Leahy, 1991, and the insurance work of Downs and Sommer, 1999).

### The measure of performance

Studies of the entrenchment and alignment hypotheses use a variety of measures as a proxy for performance, but Tobin's $q$ is the most common.[17] Theoretic Tobin's $q$ is the ratio of the market value of a firm to the replacement cost of its assets (Brainard and Tobin, 1968; Tobin, 1969). In addition

to the difficulty of obtaining the replacement value of assets, theoretic $q$ requires the market value of a firm's common and preferred stock, and its debt. Because firms generally record book values, a variety of complex procedures have been employed to estimate these values (for recent examples, see Lewellen and Badrinath, 1997; Lee and Tompkins, 1999). Other authors argue that more readily available book values provide sufficiently accurate approximations (Pruitt, 1994; Perfect and Wiles, 1994). For the computation of $q$, we follow Pruitt (1994). He describes a formula for approximating theoretic $q$ that relies on basic financial and accounting information and shows that the approximate $q$ values account for almost 97 percent of the variation of Lindenberg and Ross's (1981) theoretically correct computation.

Approximate $q$ is (V + PS + DEBT)/TA, where V is the product of a firm's share price and the number of common stock shares outstanding, PS is the liquidating value of the firm's outstanding preferred stock, DEBT is the value of the firm's short-term liabilities net of its short-term assets, plus the book value of the firm's long-term debt, and TA is the book value of the total assets of the firm. Each of these values is available in the Compustat files.

The logic underlying $q$ is the efficient market hypothesis. If efficient financial markets price stocks to yield an anticipated return that is competitive with comparable alternative investments, firm value is enhanced if the return a firm can earn on retained earnings is higher than the return generally available in the market (Brainard and Tobin, 1968; Tobin, 1969). If the market value of a firm is less than the sale price of its assets ($q < 1$), the firm should sell its assets and distribute the proceeds either through dividends or share repurchases. A low market value relative to replacement cost may also motivate takeover bids, since an outside group may profit by purchasing enough stock to gain control of a company and then liquidating its assets. For the sample in this study, the average $q$ value is 0.40.

## Ownership and governance

The typical measure of corporate control in empirical research is a set of dummy variables for various ownership percentage ranges. As noted above, tests that consider the possibility that both the entrenchment and incentive alignment hypothesis operate are conducted by identifying low and high levels (typically less than 5 percent and more than 25 percent) to signify incentive alignment with the entrenchment effect dominant at intermediate levels of managerial ownership (Morck, Shleifer, and Vishny, 1989; Stultz, Walkling, and Song, 1990).[18] The relationship between the hypotheses is seen in Figure 1. At lower levels of managerial ownership,

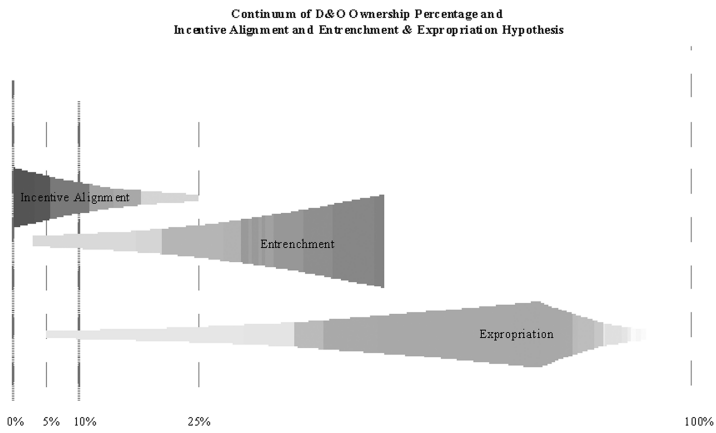


**Fig. 1.** Summary of governance hypotheses

managerial contracts are more likely to be designed to provide an incentive aligning managerial and ownership goals. As managerial ownership percentages rise, it becomes more difficult for stockholders to discipline managers who pursue strategies that reward themselves at the expense of the other owners of the firm; managers become entrenched. In empirical research the use of a 5 percent cutoff provides a dividing line below which the incentive alignment hypothesis rather than the entrenchment hypothesis is believed to be more typical. Managerial entrenchment brings a cost in terms of performance as the goals of management take precedence over those of other shareholders. A limit to this sets in at some higher managerial ownership percentage as the goals of the managers become the goals of the shareholders (e.g., if the managers own almost all of the firm's shares). In empirical studies, researchers have used 25 percent as a cutoff to distinguish between the likelihood that managerial entrenchment will result in lower performance and the higher performance hypothesized to be likely when managers are the significant shareholders. With no significant difference, Downs and Sommer (1999) use a variety of different cutoff points.

The level of stock ownership required to effectively control varies from firm to firm, but researchers have long used a ten-percent rule to identify dominance (Larner, 1966; Kamerschen, 1968). While there are examples of control with market shares as low as three to four percent, the likelihood of control increases as the ownership percentage of a significant shareholder, or family, increases.[19] Berle and Means (1932, p. 69) described control as "the actual power to select the board of directors (or its majority). Berle and Means considered control with a minority ownership of the

firm's stock to occur at ownership rates of between 20 and 50 percent. Thirty-four years later, Larner (1966) felt that larger firms could be controlled with as little as ten percent ownership. He gave a few examples but cited Federated Department Stores as the best illustration. "In 1963, the chairman of its board, its president, and five of its 19 directors were members of the Lazarus family, even though the combined stock interest of the entire family was only 1.32 per cent." In insurance, similar examples can be given for both stock firms, such as American International Group during the 1990s, and for mutual firms, such as State Farm.[20] In essence, the argument is that the more widely held the shares of a company, the smaller the percentage needed to control. We follow Kamershen (1968) and others in adopting Larner's ten-percent rule as an indicator of control. We also follow the consistent practice more recently employed by Mayers, Shivdasani, and Smith (1997) to identify the likelihood of control in the insurance industry—we sum the holdings by family members to identify the controlling group. For the U.S. insurance industry, we find control by families or small groups to be the norm. In fact, of the 38 firms identified in the stock sample, 22 are controlled by families and another three are controlled by a mutual. We use a dummy variable to identify as closely held these controlled firms for purposes of testing two possibilities. First, we consider that closely held firms perform better than average because the benefits accrue to the controller. Second, when close control coexists with a high level of institutional investment we consider the possibility that minority value is expropriated. Combining the hypotheses, we expect higher performance for closely held firms but a reduction in performance as the percent of institutional holdings in a closely held firm increases. Working against the notion that high levels of ownership concentration imply better performance is a theory that dominant shareholders may extract a control premium from minority shareholders (LaPorta et al., 1999; Filatotchev and Mickiewicz, 2001). This expropriation occurs when managers and the significant shareholders can coordinate firm activities for their mutual benefit, regardless of the impact on minority shareholders. This possibility exists at virtually all levels of managerial ownership but is more likely as the concentration of ownership increases. Like the entrenchment hypotheses, there is a logical limit to the likelihood of the expropriation motive; as stock concentration in the hands of an individual or family increases, the benefits of the firm are largely internalized and the benefit of expropriation is reduced.

The exploitation of minority shareholders is made possible when governance controls do not adequately protect their rights. Consequently, we also consider related governance variables; we look to the number of board meetings, the percentage of outside board members, whether these

outside members are "busy," and the percentage of outside board members serving on the nominating and compensation committees.[21]

Good governance suggestions almost always presume that owners and managers are the primary corporate stakeholders, that the responsibility of board members is to serve the interests of owners, and that outside directors are independent of managers. The identification of a board member as "outside" is an issue that started to receive attention in the past two decades (Weisbach, 1988). Independent or outside directors are better positioned to monitor and control the conflicts of interest affecting executive directors and management. Consequently, among the measures of good governance is the count of outside directors and the quality of their position on the board as measured by whether they are on the compensation, audit, or nomination committees. We consider variables for the number of outside members and the percent representation of outside members on the compensation committee. But the system of determining board membership and the incentive structure embedded in board operations is designed to predispose directors toward managers. Outside directors rarely cause trouble for managers in board meetings. Directors receive perks as long as they are in the good graces of management; these perks may be ego-, reputation-, or financially-enriching (Tirole, 2006). Consistent with the seeming desire of managers for board members who do not impede their actions, "deadwood" directors, who occupy seats on corporate boards but rarely bother to attend meetings or keep abreast of company matters, yet are routinely reappointed.[22]

Directors are often hand-picked by senior managers from among their socioeconomic network (Belliveau, O'Reilly, and Wade, 1996).[23] "The Higgs Report … noted a high level of informality surrounding the process of appointing non-executive directors. Almost half of the non-executive directors surveyed for the report were recruited through personal contacts or friendships and only 4 per cent had had a formal interview" (OECD, 2002, p. 70). While the threat of legal action provides an incentive for directors to balance their loyalties toward shareholders, other incentives, such as corporate-funded insurance for directors and officers, add to the likelihood of managerial bias by board members (Barrese and Scordis, 2006). Finally, outside directors are sometimes chosen who are overcommitted, and thus come to board meetings relying on the selective information disclosed to them at the actual meeting. Studies show a positive relationship between CEO pay and the number of outside directors appointed by the CEO and the number of busy directors. The notion of outside board member quality is addressed through the identification of overcommitted or "busy" directors. The effect of busy board members—those who hold multiple directorships—is debated in the literature (Hart,

1995; Ferris, Jagannathan, and Pritchard, 2003). At one level, the argument considers multiple directorships a reward for directors who enhance and oversee firms that perform well; hence a board with members who hold multiple directorships would be associated with positive performance (Ferris, Jagannathan, and Pritchard, 2003).[24] Surveys of directors indicate that they themselves believe a director with multiple boards is too busy to give the necessary attention to each. The Council of Institutional Investors (2006) argues that in the absence of unusual and highly specific circumstances, directors with full-time jobs should not serve on more than two other boards. The National Association of Corporate Directors (1996) is more lenient, suggesting that directors with full-time positions should not serve on more than three or four other boards. The argument that some limit to the number of directorships is logical, but the answer to the question of "how many is too many" is not established. Accepting the lenient National Association of Corporate Directors' suggestion, we identify outside board members as busy if they serve on more than four boards. Unfortunately, data limitations restrict the use of the "busy" variable. Of the 224 firm-year sample, insufficient information exists to obtain a verifiable statistic for 94 observations. That is, limited information or format problems make a careful determination of other directorships difficult. Of the 130 valid observations, over half had boards with a zero "busy" percentage; for 80 percent of the valid observations, fewer than a third of outside members were "busy."

Arguments about the number of meetings suggest both positive and negative relationships with firm value. Vafeas (1999) explains a negative relationship by suggesting that more meetings are held when the firm's stock price is falling. Larcker, Richardson, and Tuna (2005) argued that a higher number of meetings suggests a more closely monitored firm; they expect and also find a negative relationship between meetings and performance measures. Consequently, though we identify firms with nominating and compensation committees composed of outside board members, we do not expect a significant relationship because identification as an outside board member is not a perfect proxy for independence.

## Other control variables

In most ownership-performance studies, researchers include a measure of size for a variety of reasons. Causal arguments exist but empirical results consistently demonstrate a positive relationship between compensation levels and firm size, especially CEO compensation (confirmed for insurers by Mayers and Smith, 1992). Thus, managers may attempt to maximize firms' size because larger firms provide higher levels of salary, power, and status (Marris, 1963; Belliveau, O'Reilly, and Wade, 1996); or

managers, as potential CEOs, maximize their human capital in hopes of winning the CEO tournament (Main, O'Reilly, and Wade, 1993). Measures of firm size include a variant of assets (Cubbin and Leech, 1983; Agrawal and Mandelker, 1990; Mayers et al., 1997; Ke et al., 1999; Downs and Sommer, 1999), employment (Nickell, Nicolitsas, and Dryden, 1997), and the market value of the firm's stock (Agrawal and Mandelker, 1990). Other variables considered as measures of size by insurance researchers include the level of premiums, revenue, and loss levels (Joskow, 1973; Grace and Timme, 1992; Cummins and Weiss, 2001). For a measure of size, we consider the sum of assets and revenue. Assets is an appropriate measure of size for firms concentrating in longer-tail, asset-accumulating lines of business, while revenue is appropriate for firms concentrating in shorter-tail lines. The sum of assets and revenue should capture size regardless of the firm's mix of business lines.

It is a basic tenet of finance that, on average, higher levels of firm risk-taking are associated with higher returns, so empirical work studying firm performance is often adjusted for risk differences among firms. Sometimes the risk adjustment is accomplished by a manipulation of the data, such as a division of firm profit by the risk measure (Bothwell, 1980), but we follow the more usual approach and use beta as an independent variable to adjust for risk differences (Stano, 1976; Cubbin and Leech, 1983; Leech and Leahy, 1991).[25] Because the trading frequency for some insurers is not a daily event, CRSP data were used to develop Scholes-Williams betas as the measure of risk.

A simple definition of liquidity is the ability to change an asset to cash or a cash equivalent. The definition is where the simplicity ends, because the term applies to a broad range of situations. For corporations, liquidity is generally measured by the so-called current ratio: the ratio of current assets to current liabilities. We consider liquidity in a risk context. Liquidity risk refers to the likelihood of unexpected volatility in a firm's cash flows. The most common liquidity risk for insurance companies is contingent liquidity risk, the risk associated with finding additional funds to replace maturing liabilities under potentially poor future market conditions. In practice, Viswanathan and Cummins (2003) suggest a measure for the insurance industry, the ratio of the sum of NAIC class 1 and 2 bonds, common and preferred stock, and cash and short-term investments to total assets. Because this measure requires an unavailable link between SEC and NAIC data, we approximate the measure using the sum of common and preferred stock plus cash and short-term investments to assets from the firm's 10-K.

A firm's return on equity is typically higher (or lower) than its return on assets if the assets are funded by debt. This is the traditional description

of the effect of financial leverage, and it is typical for investigators to consider the effect of liquidity variations on firm performance. For manufacturing industries the ratio of long-term debt to size (either equity or assets) is a measure of leverage (Holderness, Kroszner, and Sheehan, 1999). While insurers sometimes obtain traditional debt, more often their debt is the use of the insured's premiums until payment of a loss is required, thus we use the measure of leverage used in insurance research to investigate the causes of variation in performance—the ratio of premiums to surplus or equity (Szczepanski 1992).[26]

## DATA AND EMPIRICAL RESULTS

Some empirical studies in the literature investigate hypotheses that higher levels of managerial ownership have a positive impact on firm performance, others expect a negative impact, while more recent studies allow for both positive and negative impacts in various ownership ranges. This study relies on a sample containing 224 firm-year observations—38 insurance firms (see Appendix 1) for the years 2000 through 2005 (some data limitations bring the set to 224 observations). The initial screen to identify potential firms for the sample is the existence of the firm in the SEC Edgar database with the SIC code 6331. After dropping insurance agencies or firms providing investment, underwriting, or loss adjusting services to the industry, and setting the additional screen that data for each of these firms self-identified as primarily stock property-liability firms must exist on both the Compustat and CRSP data sets, the 38 firms remained.

The regression estimates are generated using a model with time and fixed effect dummies. A Hausman test confirms that a fixed effect model is preferred to a random effect model given this sample. We do not report the dummies in the tables, but the only significant time effect is for 2002, the only recorded year in which U.S. insurers, in the aggregate, realized losses. The average reduction in $q$ for 2002 was 2 percent. Firm-specific effects, variation in $q$ not accounted for by the set of hypotheses, were found in six of the 38 firms sampled. Negative firm-specific effects were found for CNA Financial, Markel Corp., and Unico American. Positive firm-specific effects were found for Progressive Corp., Mercury General, and Leucadia National. Brusch-Pagan-Godfrey tests failed to reveal evidence of heteroskedasticity. Summary statistics for selected variables are presented in Table 2 (correlations are provided in Appendix 2).

Among the governance variables, the most trustworthy is the count of the number of meetings held: the average is 5.46 per year. The other

**Table 2. Mean and Standard Deviation of the Variables in the Sample**

| | Mean | Standard deviation |
|---|---|---|
| Tobin's $q$ | 0.39 | 0.24 |
| Size (Book value of assets in millions of dollars) | 35,679 | 118,896 |
| Risk (Scholes-Williams Beta) | 0.78 | 0.46 |
| Leverage (Premiums to surplus) | 1.45 | 0.71 |
| Liquidity (Liquid assets to total assets) | 0.35 | 0.22 |
| D&O ownership (percent) | 28.46 | 24.55 |
| Number of board meetings | 5.46 | 2.32 |
| Number of outside directors | 7.37 | 3.13 |
| Outsiders on the board (percent) | 56.33 | 19.32 |
| Closely held firms | 72.00 | 45.00 |
| Institutional funds when firm is closely held (percent) | 14.38 | 19.88 |

governance variables are less reliable for a combination of theoretical and measurement error issues. For example, having a nominating committee of outside board members is considered a good governance condition but it does not guarantee that the nominating committee members will not follow the dictates of a strong board influence. In addition, the existence of a committee at all is dictated more by the desire of corporations to live within the letter rather than the spirit of regulatory dictates. Nominating committees were not common prior to 2003, when the SEC required firms to address their nominating procedures. The number of firms in the sample with a nominating committee increased from 11 to 25 firms from 2001 to 2004. Even the number of meetings held does not provide a consistent sense of the importance of the variable. All meetings are not equally important, and the general notion is that an increase in the number of meetings reflects either greater care (suggesting a positive relationship with firm value) or a need to deal with an emergency situation (suggesting a negative relationship with firm value). In addition, the executive committees of most boards are empowered to act in the absence of a full board meeting. Executive committee action can occur by telephone meetings.

Table 3 reports outcomes of the pooled regression of Tobin's $q$ on insurance industry variables that describe ownership concentration, firm governance, and the financial characteristics of the firm.

**Table 3. Expected Signs and Estimated Regression Coefficients**

| | | Dependent Variable: Tobin's $q$ | | | |
|---|---|---|---|---|---|
| | | Model 1 | | Model 2 | |
| Independent variables | Expected sign | Estimated coefficient | p-value | Estimated coefficient | p-value |
| Intercept | | 0.160 | 0.213 | 0.176 | 0.114 |
| Log(Size) | + | 0.083 | 0.000 | 0.084 | 0.000 |
| Risk | + | 0.039 | 0.047 | 0.042 | 0.025 |
| Leverage | + | 0.027 | 0.049 | 0.030 | 0.026 |
| Liquidity | + | 2.793 | 0.000 | 2.860 | 0.000 |
| (Liquidity × Liquidity) | – | –0.647 | 0.000 | –0.668 | 0.000 |
| 0% < D&O ownership < 5% | – | –0.010 | 0.832 | | |
| 5% < D&O ownership <25% | + | 0.044 | 0.876 | | |
| Percentage of outsiders on board | + | 0.109 | 0.127 | 0.113 | 0.028 |
| Closely held firms | ± | 0.051 | 0.087 | 0.059 | 0.013 |
| Institutional funds when firm is closely held | – | –0.185 | 0.002 | –0.186 | 0.000 |
| Adjusted $R^2$ | | 0.712 | | 0.727 | |

The listed results do not provide the coefficients for the significant firm and year dummies. The only significant year is 2002, reflecting the 2001 effect, the first year of an aggregate industry property-liability loss. Significant and positive dummies are for Luecadia, Mercury, and Progressive. Significant and negative dummies are for CNA, Merchant, and UNAM.

For the variable "Closely held firms owned by institutional funds," a total of 161 of the firm-year observations are closely held. Sixty-three of these observations occur when D&O ownership levels are in the 5 to 25 percent range. Only one firm, Horace Mann, has a D&O percentage lower than 5 percent and is considered closely held for four years of its operation; the remaining 94 closely held firm-year observations occur when D&O levels measure in the over 25 percent range.

The table shows that the sign and significance of the basic economic variables—size, risk, leverage, and liquidity—are as expected. Perfor-

mance is shown to increase at a decreasing rate with both size and liquidity; and higher levels of risk and leverage yield higher performance. It is the ownership and governance variables that provide interesting analysis because, to a large degree, the results are not consistent with the entrenchment of incentive alignment hypotheses. The relationship of ownership and performance is positive and significant for closely held firms, negative and significant for closely held firms with higher levels of fund ownership. These ownership results require careful consideration.[27] The results do not support the entrenchment or alignment hypotheses, perhaps because ownership in the insurance industry is so highly concentrated. D&O ownership levels below five percent are found in only 14 percent of the observations; another 40 percent of the observations have D&O ownership in the 5 to 25 percent range; the largest group, 46 percent of the observations, have D&O ownership levels over 25 percent.[28] The measure of how closely held a firm is, however, is positively related to performance. The combination of a positive "closely held" estimate and a negative estimate for the "institutional ownership when closely held" variable suggest support for the expropriation hypothesis. Finally, regarding governance, the average percent (and number) of outside directors, 56 percent (7.27), suggests that shareholder representatives have a majority voice on most insurance company boards. As noted, however, a high percentage of outside members does not guarantee the independence of the board.

A limitation affecting the generalization of this study is its focus on stock firms rather than stock and mutual insurers. Given the different reporting requirements for each, assembling consistent information for the two types of insurer is problematic. We argue that mutual firms behave like closely held stock firms; this result is consistent with the findings that suggest mutual firms perform better than the average stock firm. Mutual policyholders legally own the firm but the directors and officers control the firm because policyholder block voting is almost impossible to coordinate.[29] Recognizing that one of the largest mutual insurers, State Farm, is persistently among the top four market share leaders, it is clear that the exclusion of this group of firms leads to an understated sense of the importance of control of the industry by a small group of individuals.

## SUMMARY AND CONCLUSION

This paper describes the results of an investigation and synthesis of the relationships between stock ownership, governance, and performance in the U.S. insurance industry. The supply of insurance is controlled by a relatively small number of firms, and we find that these firms, in turn, are

controlled by a relatively small number of individuals and families. This control concentration has both efficiency and social implications.

Studies of the link between ownership, governance, and performance in the insurance industry are rare. The industry studies find that executive compensation rewards for firm performance are greater when the firm is more concentrated (Ke, Petroni, and Safieddine, 1999); that perquisites, as well as compensation, are higher among better performing and more concentrated insurers (Mayers, Shivdasani, and Smith, 1997); and, consistent with the notion that more concentrated firms do perform better, that such firms engage in higher risk activities, though risk-taking may increase at a decreasing rate with concentration increases (Downs and Sommer, 1999). We add to these findings—after correcting for firm performance (Tobin's $q$) variations associated with size, leverage, liquidity, and firm risk—by studying governance and ownership conditions in the industry.

Unlike the generally accepted view that there is a trend toward the separation of ownership and managerial control, our finding is that the insurance industry is more like the recent description of industry provided by LaPorta et al., (1999). Most stock insurers are relatively closely held; the managers are the owners. Discussions of value maximization, in this situation, should consider the effect of private value expropriation by manager/owners and the effect on minority shareholders. Following the tradition established in the literature to test for the effect on performance of incentive-alignment practices, at a director and officer ownership concentration range lower than 5 percent, versus the 5 to 25 percent range where managerial entrenchment is presumed to make managers less susceptible to incentive awards, we find evidence of neither effect. While this finding is not without precedent in the literature, in the current study this failure may be due to the relatively small number of insurance firms with managerial ownership in these lower percentile ranges. Fifty-five percent of the insurance firms studied are controlled by a significant shareholder or family.

With a sample containing 224 firm-year observations for insurance firms that account for over half of all 2005 industry premiums, 29 percent of the stock of the average insurer is controlled by the firm's directors and officers. The firm's ownership concentration averages 53 percent when the investments by institutional investors are added to this D&O concentration. Investments by institutional investors (holding at least five percent of a firm's shares) typically reflect support for existing management. The effect of these typically institutional or fund investors is not clear and is a direction for future study. Some argue that the presence of such blockholders may work against the minority shareholders, others suggest that institutional investors improve corporate governance, while more recent

studies consider that the investment activities of institutional investors disproportionately reward large firms (Gompers and Metrick, 2001; Zeckhauser and Pound, 1990; Claessens et al., 1999).

While we follow traditional approaches to estimate the significance of an incentive-alignment or entrenchment effect, like LaPorta et al. (1999) we also consider the possibility that a controlling shareholder or family might affect performance. Our positive finding suggests that the performance of the firm is driven by the controlling owner's incentive for high performance, but the negative relationship found when such control is coupled with the existence of other significant shareholders suggests the possibility that profit is expropriated from minority shareholders, a finding consistent with LaPorta. Further study in this area is warranted to identify the nature of such expropriation. Finally, we consider the effect of different governance controls on firm performance: the percentage of outside directors, and whether the compensation and nominating committees are independent. Not surprisingly, we do not find the variables to be significant, a result that suggests that rather than exerting independence, outside board members align their allegiance with management.

Among the more interesting issues raised by this study is the fact that so much of the U.S. insurance industry is controlled by a small set of individuals. While we do not investigate the social implications of this phenomenon, we recall the century-old warning of Justice Brandeis that the concentration of ownership is important not only for its implications about the competitiveness of the industry but also for its implications about the distribution of societal wealth, power, and welfare.

## NOTES

[1] In 2002 the A.M. Best Company listed 1,117 group or unaffiliated property-liability insurers; the top ten and twenty-five groups account for 44 and 63 percent of 2002 industry premiums, respectively. Suspicions of a link between market share concentration and market power have long existed but claims are problematic because of a theoretical disagreement about the causal direction of the link (Bain, 1951; Demsetz, 1973). However, DeVany and Kim (2002) note that high market shares over time, coupled with persistent market share leaders, are atypical in competitive markets. We find that most state personal lines markets are characterized by persistent market share leaders. For example, for private passenger auto, in 18 of 51 states the top four firms in 2002 were also the top four firms in 2000, 1995, 1990, and 1985. In 47 states, the top four 2002 firms occupied at least three of the top positions in the earlier years.

[2] For a summary of these arguments and earlier related empirical work, see Morck, Shleifer, and Vishny (1989).

[3] Evidence supporting the expected relationship between managerial ownership concentration and managerial compensation is presented by Ruiz-Verdu (2003), who finds a positive relation between increasing managerial ownership and managerial non-stock compensation. However, while the causal direction of their study is reversed, Ofek and Yermack (2000) investigate the impact of stock-based compensation on managerial ownership and find that equity

compensation succeeds in increasing incentives of lower-ownership managers, but higher-ownership managers negate much of its impact by selling previously owned shares. When executives exercise options to acquire stock, nearly all of the shares are sold. The authors claim that the "results illuminate dynamic aspects of managerial ownership arising from divergent goals of boards of directors, who use equity compensation for incentives, and managers, who respond by selling shares for diversification." We believe this pattern is reflected in the description of a fading incentive-alignment hypothesis.

[4] Mathiesen (2002) provides an exhaustive survey of 94 empirical studies produced between 1966 and 2000 that build on Berle and Means (1932) (www.encycogov.com/).

[5] For a historical review of the works of Berle and Means, see Nodoushani and Nodoushani (1999).

[6] Holderness et al. (1999) also provide a brief history and critique of the studies performed from 1933 through 1990.

[7] The 14A information for 1995 is not available in electronic form on the SEC database. However, Downs and Sommer (1999) report an average director and officer percentage of 20.6 percent using data for a sample of 55 stock firms operating from 1989 through 1995.

[8] A beneficial owner is any person who, directly or indirectly, has or shares: (1) Voting power, including the power to vote, or to direct the voting of, such security; and/or (2) Investment power, including the power to dispose, or to direct the disposition of, such security. A significant beneficial owner controls at least 5 percent of such shares (Title 17, Chapter II, Part 240: 240.13d-3).

[9] The value for all industries is obtained using data from a sample of 2001 blockholders provided by Andrew Metrick, http://finance.wharton.upenn.edu/~metrick/data.htm (viewed September 21, 2004). The values for the insurance industry are computed by the authors using SEC 14A information for 2002.

[10] LaPorta, Lopez-de-Silanes, and Shleifer (1999) argue that controlling shareholders typically have control over firms considerably in excess of their cash flow rights. This is accomplished through pyramidal structures and, in part, because they manage the firms they control. Examples of expropriation include obtaining excessive management compensation through the appointment of friends to the compensation committee of the board or through pyramids—i.e., an arrangement in which the firm (A) uses a high priced supplier (B) that a manager of (A) privately owns, where B merely serves as a middleman between the true supplier (C) and (A).

[11] A recent Home Depot board meeting demonstrates the passivity of some institutional investors (Joe Nocera, "The Board Wore Chicken Suits" *New York Times*, page A1, May 27, 2006). The directors and officers of the firm control 1.45 percent of the stock, and the only beneficial owners controlling more than five percent are FMR Corp (5.5 percent) and Barclays Global Investors (5.3 percent). Excepting the chairman, and against all good-governance dictates, no Board members attended the meeting. All shareholder proposals each a proposal to change governance rules to increase the protections of shareholder rights—were defeated. The institutional investors voted with management.

[12] LaPorta et al. (1998) provide a description of the various techniques, the mechanics of which are not relevant to this paper.

[13] Larner (1966) and others use ownership of 10 percent of a firm's stock by an individual or connected group for purposes of testing the exploitation hypothesis.

[14] Debt and the dispersion of equity are complementary in terms of corporate governance functions (Dewatripont and Tirole, 1994).

[15] We found no published study discussing the importance of family control in the insurance industry. The importance of family in the Taiwan insurance industry was discussed in an unpublished study by Gene Lai, and, more generally, for other industries, by Anderson and Reeb (2004). We find family relationships to be strong in 20 of the 38 firms in the sample (see Appendix 1).

[16] Their variables for insider ownership are oddly constructed. They report ranges of [0–5%], [5–45%], and [45–100%] and construct variables measuring the marginal ownership partici-

pation in the range. For example, consider three firms with insider values of 4.5, 9.5, and 49.5 percent, respectively. In one variant of the construction of variables meant to capture increasing ownership levels, the three values for these firms would be:

| Firm | Insider < 5% | 5% < Insider < 45% | Insider > 45% |
|---|---|---|---|
| One | 4.5 | 0 | 0 |
| Two | 0 | 4.5 | 0 |
| Three | 0 | 0 | 4.5 |

Descriptive information for the individual variables is not provided nor is a theoretical argument presented to support the choice of range cutoffs (in fact, multiple cutoffs are tested but not reported). By comparison, other researchers use dummy variables to represent ownership levels of [0–5%], [5–25%], and [25–100%] ranges for purposes of testing the entrenchment and incentive alignment hypotheses (e.g., Morck, Shleifer, and Vishny, 1988).

[17] Other measures used vary with the specification of the model. For example, many event studies are performed in which the performance measure is a variant of cumulative abnormal returns (Holderness and Sheehan, 1988; Jarrell and Poulsen, 1987; Song and Walkling, 1993; Yermack, 1997).

[18] Without significantly different implications, some studies employ a Herfindahl-type index based on D&O ownership or voting percentages (Demsetz and Lehn, 1985; Agrawal and Mandelker, 1990; Leech and Leahy, 1991).

[19] In the insurance industry, AIG provides an example. During the 1990s, the firm was controlled by a shareholder holding between three and four percent of the AIG stock.

[20] While we do not focus on mutual control in this paper, a similarity exists. Mutual policyholders, like large stock with broadly distributed shareholdings, rarely can assemble a block of votes sufficient to overrule the proposals of the firm's directors. Succession at State Farm provides a hint of this control. Edward Rust Jr. became the chief executive officer (and later chairman) of State Farm Insurance Companies in 1985 at the age of 35 following the death of his 66-year old father; his father had succeeded his grandfather (see Mike France, "Father Knew Best—and So Did Grandfather," *Business Week*, November 8, 1999, p. 142.

[21] The nominating and compensation committees are particularly important governance committees. The slate of nominated directors is rarely rejected. Thus the nominating committee, by determining who will stand for election, controls the degree to which the firm will be independent of management in the future. Similarly, the compensation committee helps determine the degree to which managers are compensated, and here the concern is a controlling shareholder who sits as a manager or board chairperson. An independent compensation committee will be better positioned to reduce the likelihood of minority expropriation.

[22] Siwolop (1999) provides evidence of this phenomenon but suggests a degree of improvement started in the 1990s, during which some companies adopted mandatory retirement ages for board members or imposed term limits.

[23] Many other forces work against the maintenance of independence by outside board members. For example, by reducing the financial consequence of violations of fiduciary obligations, D&O insurance better aligns the interests of board members and those who are instrumental in maintaining their board membership (Battiston, Bonabeau, and Weisbuch, 2003). Allegiance by directors to management is logical given that most shareholder resolutions are advisory. Bebchuk is quoted as reporting that of the 131 good-governance resolutions to abolish staggered boards which passed in 1997 through 2003, less than a third were acted upon by late 2004 ("Battling for Corporate America," *The Economist*, March 9, 2006).

[24] Valued corporate director characteristics include having experience and contacts, having a public image that provides public credibility to the firm, being a trusted friend, and being generous in determining compensation (Shah and Sunder, 1999).

[25] Nine different measures of risk are studied by Downs and Sommer (1999) in their study of the insurance industry. We measure beta, the systematic risk of equity, using daily closing stock return data (in conjunction with a value-weighted market return) as reported in the CRSP database according to the method developed by Scholes and Williams (1977). McInish and Wood (1986), who compare various techniques for mitigating error in estimating betas, attest to the effectiveness of this method.

[26] See the Casualty Actuary Review, www.casact.org/pubs/dpp/dpp92/.

[27] Because the data for American International Group, AIG, are suspect for part of this period (see B. Mann, Feb. 12, 2002, "How Much Do AIG Execs Make? at www.fool.com/news/foth/2002/foth020212.htm), we also performed the regressions without AIG. The results are not affected (sign and significance are the same) except to the degree that the significance is improved for D&O<5%, 5%<=D&O<25%, nominating and governance but these variables remain insignificant.

[28] In a regression using D&O ownership percentages rather than ranges, the coefficient is positive and significant, but this is a result of the strong positive relationship between performance and ownership among the high ownership group.

[29] The relative importance of non-stock firms in the insurance industry means that any study of the control exerted by a small group of insurance company shareholders must understate true industry control levels. Policyholders are allowed minimal participation in electing a mutual insurance company's board of directors. For example, in New York, mutual life insurance policyholders are allowed one vote regardless of the number or value of their policies. Policyholders have the right to oppose the administrative ticket if they submit a petition signed by at least 500 eligible voters. To obtain a list of eligible voters, the policyholders interested in opposing the administrative ticket must file a petition, signed by twenty-five eligible voters, with New York's Superintendent of Insurance. After overcoming these two blocks, the insurer's board of directors can require voting by ballot only rather than by proxy.

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## Appendix 1. Sampled firms, ownership range 2000–2004

| Name | D&O ownership | Institutional ownership | Controlling family |
|---|---|---|---|
| Ace Ltd. | 2–4% | 22–42% | |
| Arch Capital Group, Ltd. | 7–89% | 8–70% | |
| American Financial Group | 50–59% | 0–14% | Linder |
| Argonaut Group, Inc. | 6–9% | 26–47% | Singleton |
| American International Group | 18–25% | 0–6% | Greenberg |
| Allstate Corp. | <1% | 11–19% | |
| Bancinsurance | 60–66% | 0–6% | Sokol |
| Berkley WR Corp. | 14–17% | 18–28% | Berkley |
| Baldwin & Lyons, Inc. | 54–58% | 0–23% | Shapiro |
| Chubb Corp. | 2–3% | 6–20% | |
| Commerce Group | 26–27% | 9–10% | |
| Cincinnati Financial Corp. | 12–16% | 0–9% | Schiff |
| CNA Financial | 87–90% | 0–6% | Loews (Tisch) |
| EMC Insurance Group, Inc. | 77–84% | 0–5% | |
| HCC Insurance | 7–19% | 9–22% | |
| Harleysville Group | 59–62% | 5–10% | |
| Horace Mann Educators | 2–6% | 16–47% | |
| Leucadia National Corp. | 26–38% | 0–12% | Cumming & Steinberg |
| Mercury General Corp. | 51–55% | 0–16% | Joseph |
| Merchants Group Inc. | 15–18% | 37–58% | Schwartz & Baird |
| Meadowbrook Ins. Group | 17–51% | 8–29% | Merton |
| Markel Corp. | 21–32% | 0–12% | Markel |
| Midland Co. | 53–57% | 5–8% | Hayden |
| Navigators Group | 29–43% | 10–24% | Deeks |
| Ohio Casualty Corp. | 8–11% | 21–33% | |
| Paula Financials | 15–38% | 24–48% | Snider |
| Progressive Corp. | 10–15% | 23–33% | Lewis |
| Proassurance Corp. | 10–12% | 13–21% | |
| RLI Corp. | 11–30% | 6–20% | Stephens |
| RTW Inc. | 30–51% | 7–40% | Prosser |
| Safeco Corp. | 8–9% | 5–11% | |
| Safety Insurance Group Inc. | 22–35% | 43–49% | |
| Selective Insurance Group | 6–7% | 6–19% | |
| St. Paul Travelers Cos. Inc | 1–2% | 9–19% | |
| State Auto Financial Corp. | 70–74% | 0–5% | |
| Unico American Corp. | 45–51% | 21–39% | Cheldin |
| White Mountain | 12–26% | 20–35% | Byrne |
| Zenith National Insurance Co. | 6–14% | 52–73% | |

The sample is restricted to those operating from 2000 through 2005 for which data exist in both the Compustat and CRSP databases. The initial screen identified Compustat firms in the property-liability industry code 6331 but this screen includes agencies and firms that provide outsourcing services to the insurance industry.

## Appendix 2: Correlations

| | EPS diluted | Log (Size) | Risk | Liquidity | (Liquidity +1)$^2$ | Leverage | D&O | D&O-LOW | D&O MID | Funds | Closely held | CH_ Funds | Board mting# | Outside Drctrs# | Busy % | Outside % | Nominating committee | Compensation committee |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tobin's *q* | **.131** | –.025 | **.149** | **.547** | **.528** | –.061 | .013 | *–.110* | –.021 | **–.155** | *.113* | –.090 | –.058 | .099 | –.049 | .095 | **.228** | *.109* |
| EPS diluted | | .088 | .007 | .025 | .014 | **–.146** | –.078 | .027 | *.110* | –.011 | –.036 | –.026 | –.075 | .062 | *.149* | –.002 | .100 | .024 |
| Log(Size) | | | –.040 | **–.505** | **–.466** | *–.114* | **–.290** | .392 | *.103* | **–.183** | **–.380** | **–.319** | .106 | **.575** | **.489** | **.149** | –.074 | **–.134** |
| Risk | | | | .026 | .019 | .033 | –.070 | .083 | –.008 | –.013 | –.107 | –.063 | –.035 | .097 | –.039 | **.151** | **.258** | .056 |
| Liquidity | | | | | **.992** | **–.231** | **.161** | **–.232** | –.074 | *.108* | **.255** | **.213** | –.001 | **–.319** | **–.252** | **–.205** | **.176** | –.026 |
| (Liquidity+1)$^2$ | | | | | | **–.229** | **.133** | **–.208** | –.066 | *.109* | **.243** | **.207** | .034 | **–.301** | **–.213** | **–.193** | **.164** | –.039 |
| Leverage | | | | | | | .056 | –.082 | .065 | *.126* | .037 | *.124* | –.044 | **–.167** | .122 | –.012 | –.003 | .102 |
| D&O | | | | | | | | **–.441** | **–.536** | **–.298** | **.521** | –.074 | **–.169** | **–.683** | **–.553** | **–.448** | **–.165** | **–.432** |
| D&O LOW | | | | | | | | | **–.344** | .057 | **–.511** | **–.167** | .069 | **.527** | **.498** | **.374** | .084 | .056 |
| D&O MID | | | | | | | | | | **.260** | –.077 | **.217** | .061 | **.231** | *.169* | *.121* | .028 | **.281** |
| Funds | | | | | | | | | | | .051 | **.867** | .002 | **–.174** | .127 | **–.139** | .074 | .085 |
| Closely held | | | | | | | | | | | | **.453** | –.049 | **–.475** | **–.247** | **–.198** | –.068 | –.087 |
| CH_Funds | | | | | | | | | | | | | –.015 | **–.335** | .048 | **–.199** | .030 | .037 |
| Board mting# | | | | | | | | | | | | | | **.249** | .018 | **.231** | .071 | **.191** |
| OutsideDrctrs# | | | | | | | | | | | | | | | **.546** | **.648** | **.141** | **.306** |
| Busy % | | | | | | | | | | | | | | | | **.567** | **.185** | **.300** |
| Outside % | | | | | | | | | | | | | | | | | **.320** | **.549** |
| Nominating committee | | | | | | | | | | | | | | | | | | **.370** |

Bold: significant at 0.05
*Italic*: significant at 0.10

## APPENDIX 3: FUND RELATIONSHIPS

There are many linkages between institutional investors and insurers. An example is provided in Table 4 for two funds and a selected sample of insurers. The table reports ownership percentages by directors and officers, ownership percentages by particular individuals or families (who are not listed in the D&O category), and the percentage owned by two funds—Dimensional Fund Advisors (DIM) and FMR Corp (FMR); the percentage owned by other funds is also provided. The list of other funds holding significant blocks of insurance company stock is large. For the 22 firms listed, 32 funds, including FMR and DIM, are involved as significant owners. Wellington Capital holds significant shares of four of these 22 insurers; Capital Research and Management owns a significant share of 3 of the 22 insurers; four funds own significant shares of two of the 22 firms; and another 24 funds have significant shares of only one of the 22 firms.

Of the firms sampled, DIM owns a large share of at least 13 insurers and FMR owns a large share of at least 11 of the firms; these two mutual funds own two of these 22 firms in common. The connections listed are based on the SEC reporting requirement that firms reveal beneficial owners of 5 percent or more of the firm's stock. If the fund owns less than 5 percent, SEC rules do not require that the ownership be identified. To understand the possible significance of ownership when less than 5 percent of the firm is owned, the stock holdings of Dimensional and FMR were obtained from the SEC and the insurers in each firm's portfolio were identified. For 2002, DIM and FMR own shares in 63 additional insurance companies and shares in 51 of these other companies are owned by both DIM and FMR. Linkages also exist through ownership of these firms by other funds. For example, DIM and FMR own 6.6 and 6.7 percent of Ohio Casualty; another 20.1 percent is owned by three other funds: T. Rowe Price (8.8%), First Bancorp (6.2%), and American Financial (5.1%). Each of these other funds owns the stock of more than one insurer. Finally, the stock of some insurers is held in the investment portfolio of other insurers, including mutual insurers. The degree of interrelated ownership of insurance company stocks, coupled with high ownership concentration in the industry, suggests the that coordinating behavior for the expropriation of private benefits could be accomplished with relative ease.

**Table 4. Significant Ownership Patterns of Selected Insurers from the Sample, 2002[1]**

| | Owned by D&O | Owned by family or individuals | Owned by Dimensional Fund Advisors | Owned by FMR Corp. | Owned by other funds | Total |
|---|---|---|---|---|---|---|
| Ace Ltd. | 2.0 | | | 10.1 | 27.2 | 39.3 |
| Argonaut Group, Inc. | 7.5 | 16.5 | 5.1 | | 25.8 | 54.9 |
| American International Group | 3.3 | 16.0 | | 5.2 | | 24.5 |
| Allstate Corp. | 0.8 | | | 6.0 | 12.5 | 19.3 |
| Bancinsurance | 61.1 | | 5.8 | | | 66.9 |
| EMC Insurance Group, Inc. | 3.4 | 79.8 | 5.3 | | | 88.5 |
| HCC Insurance | 7.3 | | | 6.9 | 11.1 | 25.3 |
| Merchants Group Inc. | 17.5 | 35.4 | 5.7 | | 10.6 | 69.2 |
| Ohio Casualty Corp. | 7.9 | | 6.6 | 6.7 | 20.1 | 41.3 |
| Paula Financials | 25.3 | 14.0 | 5.8 | | 6.8 | 51.9 |
| Proassurance Corp. | 10.5 | | 5.1 | | 15.4 | 31.0 |
| Unico American Corp. | 51.1 | 7.4 | 8.8 | 5.6 | 17.1 | 90.0 |
| RTW Inc. | 30.9 | | 8.0 | | 10.5 | 49.4 |

Maurice Greenberg of American International Group, an officer, controls most of the 16% listed as individual/family through a complex arrangement of offshore firms.

[1]All figures are in percentage.