MANAGEMENT DISCRETION OF ACCRUALS PRIOR TO THE DEMUTUALIZATION OF PROPERTY-LIABILITY INSURANCE COMPANIES

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ABSTRACT

This study examines whether management of property-liability insurance companies use their discretion in estimating the claim loss reserve in the year preceding demutualization. Since valuation of a mutual insurance company is a critical component of the conversion process. I posit that the incentive to manage surplus by either overstating or understating the insurer's largest accrual, claim loss reserves, is dependent on management's role subsequent to the conversion process. If management has a significant role (i.e., principal shareholder) after conversion, the incentive is to overestimate the loss reserves to transfer wealth from policyholders to themselves. The regression for 48 property-liability insurance companies that demutualized identifies that claim loss reserves are overstated as a means to decrease surplus and that a significant role by management in the post conversion company provides the incentive to overstate the loss reserve in the year preceding the conversion. The study provides an opportunity to study the impact of the regulatory process on management discretion in loss reserves, provides further insight into the demutualization process, and extends earnings management research. Finally, while prior literature identified stabilization of earnings and avoidance of regulatory intervention as reasons for management discretion in loss reserves, this study documents management of policyholders' surplus for management benefit, as an additional effect of discretion in the reserve estimate.

INTRODUCTION

The purpose of this study is to evaluate management flexibility in determining accounting estimates in a specialized setting; property-liability insurance companies conversions from mutual ownership to stock ownership. As discussed more fully below, the valuation of the mutual insurance company is a critical component of the conversion process and provides incentives for earnings (surplus) management. Therefore, surplus management is particularly salient in the demutualization setting.

An insurance company's claim loss reserve is by far the largest accrual that involves management discretion for these companies. Overestimating (underestimating) the reserves has the effect of decreasing (increasing) policyholders' surplus. Insurance companies experiencing growth and/or financial distress have an increased demand for additional surplus. Two methods of obtaining this additional surplus are through internally generated funds (e.g., underwriting profits) or externally generated funds (e.g., surplus notes, demutualization).

Demutualization is the conversion of a mutual insurance company to a stock company. The difference between the two forms of organization is the claim to unassigned surplus. The amount of unassigned surplus limits the amount of non-liquidating dividends available to policyholders in a mutual insurance entity and to stockholders in a stock company. Even if the

company is a stock company, the stockholders' claims are subordinate to the claims of policyholders and other creditors.

This study examines whether managers of property-liability insurance companies use their discretion in estimating the claim loss reserve accrual prior to the demutualization of the company. The incentive to either overstate or understate the claim loss reserve is dependent on management's role subsequent to the demutualization process. If management has a significant role (i.e., principal shareholder) after demutualization, management's incentive will be to overstate the estimated reserves to transfer wealth from policyholders' to themselves. By overstating reserves, surplus is decreased resulting in a lower value for the company and lower price paid to policyholders, therefore transferring wealth. I hypothesize that if management has more than a limited role as an investor, in their self-interest, they will overestimate the insurer's loss reserve in years preceding demutualization as a method to decrease surplus. Alternatively, if management has a limited role as an investor and an insurer intends to generate funds through demutualization, managers acting in the best interests of policyholders will have the incentive to increase firm value prior to demutualization. A limited role by management, after demutualization, predicts that managers will increase surplus to increase firm value by underestimating the loss reserve in the year preceding demutualization

The regression results of 48 property-liability companies that demutualized during the period of 1982-1999 are consistent with the hypothesis of overstatement of reserves as a means to decrease surplus. No evidence was found to support the understatement of reserves. The results indicate that the management process has an impact on the reserve estimate in the year preceding demutualization with the evidence suggesting that management incentives impact the demutualization process. The impact on the demutualization process exists when there is no change in management. The direct impact on surplus management by the demutualization transaction itself appears to be limited. An insurance company's financial condition does not appear to impact the results.

The primary contribution of this paper is twofold. The first contribution is identifying other potential reasons for management discretion in determining the reserve estimate. Prior literature finds that management uses discretion in estimating claim loss reserves as a method of stabilizing underwriting results and that financially distressed firms use their discretion as a means to smooth earnings to avoid regulatory intervention. This study examines the management of policyholders' surplus. Specifically, it addresses management's discretion in estimating loss reserves as a result of managers' incentives within the conversion process. The second contribution is to give further insight to the incentives of an insurer to demutualize. Prior literature has found mixed results as to the reasons for an insurer to demutualize. Testing the hypotheses of surplus management prior to demutualization will add further insight into these incentives, including better access to capital, reduction in agency costs, and management self-interest.

A secondary contribution is the extension to prior earnings management research. The advantage of the insurers providing losses reserve development in regulatory reports allows more direct and accurate tests of earnings management. Other earnings management research relies on models that estimate potential earnings management. The insurance setting also provides an opportunity to study earnings management research and the impact of the regulatory process on management discretion. Within the insurance industry, regulation prevents some discretion in the choice of accounting policies as well as the active involvement in the stock conversion process through the state insurance commissioners.

The organization of this paper is as follows: Section 2 develops the demutualization environment. Section 3 outlines the theoretical development for earnings management. The sample is described in Section 4 with the model described in Section 5. Section 6 presents the results of the empirical test while Section 7 summarizes the paper.

DEMUTUALIZATION ENVIRONMENT

Surplus

For the test conducted in this paper, it is important to understand the role that policyholders' surplus has in an insurance company and the demutualization transaction. Three primary purposes of surplus include 1) providing the initial funds to establish the company and begin operations, 2) providing a continuing source of funds for growth, and 3) providing a safety cushion to absorb adverse underwriting and investment experience without loss to policyholders. Factors affecting surplus are derived from the second and third purposes and include underwriting results, investment performance, loss reserve developments and growth rate. Due to the adverse effects these factors could have on surplus, insurers are required by state insurance regulators to maintain minimum surplus levels to continue operations and protect policyholders from loss.

Insurance companies experience increased demand for capital as a result of growth and/or financial distress. If a company intends to grow, this growth must be accompanied by increased surplus. The traditional method to support growth is through internally generated profits. If the internally generated funds are insufficient, the insurer looks for other sources to obtain the surplus requirements. Financially distressed firms are firms that do not meet regulatory requirements or meet the requirements but their financial strength is vulnerable to unfavorable changes in underwriting or economic conditions. Not meeting or barely meeting the requirements results in regulatory surveillance. Therefore, financially distressed insurance firms have incentives to increase surplus by various methods. Raising capital through an equity offering is one method. However, mutual insurance companies, which are owned by the policyholders, do not have this option and are therefore required to demutualize to raise capital through an equity offering.

Demutualization

There are various incentives for companies to demutualize. The two most prominent incentives are better access to capital and reduced agency costs (Mayers & Smith, 2004). Companies, both financially healthy and financially distressed, want better access to capital to meet economic and competitive changes. Companies can meet these changes by either restricting operations to reduce costs or to expand operations to spread its overhead (Fitzgerald, 1990). Companies choosing the latter require additional capital and the necessary capital is obtainable through either internally generated funds or externally generated funds, such as demutualization. Up-front capital is required for expansion because statutory accounting principles do not allow the acquisition expenses to be matched with the generated revenue as in generally accepted accounting principles. Therefore, surplus is decreased as new business is written with the level of surplus measuring the company's underwriting capacity and expansion through internally generated funds (i.e., policyholders' surplus) is extremely difficult when underwriting losses occur in successive years[4].

Reduction of agency cost is another incentive for demutualization. The three functions performed within an insurance company include: 1) the management function, 2) the owner function, and 3) the customer function. These three functions of management, owner (shareholder), and customer (policyholder) are separate in stock companies while owner and customer are merged in mutual companies (policyholder) (Mayers & Smith, 1988). Fama and Jensen (1983) argue that separation of decision making and risk bearing is likely to accompany separation of decision making and decision control to minimize agency conflicts. Mayers & Smith (1988) and Cagle, Lippert & Moore (1996) summarize the advantages and disadvantages of stock and mutual companies in regards to agency conflicts.

An important stock company advantage is that many decision control mechanisms are already in place, therefore limiting the agency conflict between managers and shareholders. Some decision control mechanisms include: 1) shareholder monitoring, 2) the market for corporate control, 3) the managerial labor market, 4) monitoring by analysts, institutions and regulatory authorities, and 5) the capital and product markets. Another advantage to a stock company is the ability to align manager's interest with shareholders' interest through performance incentives. The disadvantage to stock companies is the additional agency conflicts between shareholders and policyholders. In a stock company, managers are agents for the shareholders. This relationship gives management the incentive to increase share value by altering investment, financing, and dividend policies at the expense of policyholders. The expense to policyholders may be increased probability of insolvency and reduced expected benefits of policyholders. This incentive is further increased if performance incentives exist. This becomes an advantage to mutual companies, because the merging of owner and customer functions eliminates the owners' incentive to transfer wealth from the policyholder to shareholders.

At the same time, the advantages of stock companies are disadvantages for mutual companies. In general, mutuals have fewer methods to monitor management, therefore increasing agency problems between management and policyholders. Control mechanisms include: 1) regulatory authority oversight, 2) presence of redeemable claims held by policyholders, and 3) supervision by the board of directors. Heller (1986) argues that regulatory oversight is the strongest control mechanism but at the expense of the mutual's flexibility and efficiency in operations. A mutual's management is immune to pressures from policyholders due to a lack of a mechanism for concentrating ownership (Heller, 1986). The only method to influence management is through threat of exit (i.e., presence of redeemable claims) by policyholders. However, the presence of redeemable claims is only effective if it is inexpensive for policyholders to change insurers. If the cost of changing insurers is high, management is immune to pressures from the owners.

Supervision by the board of directors also is limited since internal managers and residual claimants choose outside board members. Since mutual companies are owned by policyholders, performance incentives are unavailable to management. Because both forms of structure minimize agency costs through different means, companies demutualizing may seek to reduce existing agency conflicts. For example, a company may determine that the agency problem between shareholders and policyholders is less costly than the agency conflict between management and owners. While changing to a different organization structure may result in a trade-off of conflicts and benefits, the demand for capital may outweigh this trade-off and lead to demutualization.

The various methods of demutualization are determined by states (Fitzgerald, 1990). The majority of states adopt a straight conversion plan and a majority of the companies included in

this paper's sample demutualized through some form of straight conversion. The general process of a straight conversion is the valuation of the embedded equity claims of the policyholders, the identification of policyholders, and the settlement in some form of stock, cash, or both to policyholders. The remaining shares are sold to interested parties which accomplish the goal of obtaining additional surplus[2]. Other types of conversions, but not as widely used, are preferred stock bail-out, bulk reinsurance, and merger or consolidation (Fitzgerald, 1990).

Valuation

Important in the demutualization process is the valuation of the embedded equity claim of policyholders. The valuation is important because insurance regulation requires distribution of the embedded equity claim to policyholders. Demutualization is a corporate-control transaction and corporate control transactions result in a high demand for information (DeAngelo, 1986). The valuation process in the demutualization transaction occurs in a non-market setting since there are no separately traded equities of these companies. Valuation of a company relies heavily on accounting numbers, especially policyholders' surplus (Mayers & Smith, 2004). Due to the impact of the valuation process on both the distribution of wealth and the social welfare of parties involved, appropriate valuation in this non-market setting is a concern (Perry, 1990). Determination of value affects the feasibility of control transactions.

Heller (1986) argues that there are two methods in determining value. The first method is to value it administratively and consists of commissioning an appraisal committee to estimate market value. This method is appropriate when the market for the firm's assets is thin, with few bidders. The second method is a capital market valuation. This method is applicable only if there are many bidders with the bids ultimately converging to a market price. Capital market valuation is seldom used since most demutualizations do not solicit bids. All states except New York, Ohio, and Wisconsin use an appraisal committee to determine value.

A common approach used by many state regulators is the adjusted book value approach (Tillman, 1985). The approach starts with statutory financial statements (policyholders' surplus) with adjustments to generally accepted accounting principles with other relevant adjustments. One of the more significant adjustments is the elimination of the loss reserve deficiency/redundancy. Due to the relative weight in valuation and the subjectivity in determining reserve levels, reserve adjustments are sensitive to the valuation process. Once the value of the embedded equity is determined, the processes of actual distribution to policyholders and issuance of stock begins. In general, the distribution process uses a formula whereby mutual policyholders, either overall or by type of policy over a predetermined time period, receive a pro-rata portion of the equity (Heller, 1986). The stock issuance can be in the form of a private offering (e.g., to a holding company and/or management) or a public offering.

Prior Research

Demutualization

Limited research exists regarding accounting issues of property-liability insurance companies. A 20-year demutualization case study identified overall characteristics of companies that have demutualized (Fitzgerald, 1990). The study documented that firms were primarily older Midwest firms that operated in limited lines of insurance. These companies wrote insurance in limited states and developed financial difficulties as a result of unprofitable underwriting

practices over a period of time. Unprofitable underwriting practices results in a combined ratio exceeding 100% implying that the estimated insurance claims and operating expenses exceeded the premium income[3]. Investment income is only remaining item to offset this loss and if it is not sufficient to cover the excess insurance claims and operating expenses over premium income (i.e., underwriting loss), depletion of capital is the result. Losses over a period of time mean that net income is an unreliable source of expansion financing.

If net income is an unreliable source of financing, an insurer requires other access to capital (i.e., additional surplus) to expand or survive. As mentioned earlier, one disadvantage of mutual companies is the restricted access to capital. Unprofitable underwriting practices further limit the access to capital which leads to demutualization as a means to raise additional surplus. Fitzgerald (1990) results were determined without the use of any controls for exogenous factors.

In addition to examining the incentives to demutualize, Mayers & Smith (2004) examine the accounting managements incentives associated with demutualization. They argue that accounting information is important in the valuation process and that management is interested in reducing the embedded equity value allocated to policyholders by managing surplus. To investigate this argument, they examine the increase in loss reserves, the recognition (non-recognition) of losses (gains) in the company's asset portfolio, and the acceleration in claims settlement to increase underwriting losses. Their results support the growth hypothesis in that demutualization facilitates the acquisition of capital and reduces the growth restrictions imposed by mutual companies. In managing surplus, their results suggest that companies have more discretion in adjusting liabilities than managing investment and underwriting returns. The evidence is also consistent with controlling management having personal motives for demutualization. Their study does not evaluate the actual claim loss reserve development to test management of loss reserves. They use a model that evaluates the discretionary component of the change in total liabilities.

Earnings Management

Management's incentive to manage earnings has been examined in various contexts. The form of the earnings management varies among these contexts and is not identified in all contexts. DeAngelo (1986) and Perry & Williams (1994) studied going private transactions, McNichols & Wilson (1988) examined income smoothing through the provision of bad debts, Petroni (1992) and Weiss (1985) studied earnings management in insurance companies through estimated loss reserves.

Demutualization is similar to going private transactions in that accounting numbers are used to assess the fair value of the firm for settlement to shareholders in going private transactions and policyholders in demutualization transactions. In both transactions, the role management has subsequent to the transaction determines the incentive management has to manage earnings. DeAngelo (1986) found no evidence that managers manage earnings prior to the transaction but Perry & Williams (1994) identified mixed results of earnings management in this context.

The similarity between McNichols & Wilson (1988), Weiss (1985), and Petroni (1992) is that all three chose a single accrual to examine income smoothing. McNichols & Wilson (1988) examined the allowance for bad debts and found evidence supporting earnings management through this accrual. Weiss (1985) did a multivariate analysis of loss reserve estimates for stock and mutual automobile insurers and found evidence supporting the smoothing of reported financial position by discretion in estimating loss reserves. The study examined the automobile

liability insurance line using a pooled, cross-section time series regression. The smoothing of financial results was examined by testing the significance of the relationship between loss reserve error and actual combined ratio. Loss reserve error is the difference between the estimated and actual development of claims paid using a five-year lag period. Tests also examined exogenous economic developments such as inflation and interest rates. An increase in inflation and/or interest rates will result in underreserving the loss reserve estimate. The empirical analysis supported the hypothesis and concludes that exogenous economic developments affect the degree of accuracy of loss reserve estimates.

Petroni (1992) investigated only stock property-liability insurance company's managerial choices in their estimates of the claim loss reserve. The findings support the hypothesis that the incentive to underestimate the claim loss reserve is a decreasing function of the insurance company's actual financial position. The sample was chosen from all stock property-liability companies domiciled in the United States in 1979 and does not identify companies that have demutualized. To test the understatement of reserves, Petroni divided the sample between companies having financial difficulties and financially healthy companies. The subsamples were developed using a set of ratios that determined the financial condition of the companies. After controlling for tax rates and exogenous factors, the results of the research indicated that managers of the financially troubled institutions bias downward their liability relative to other insurers. This bias toward understating reserve increases as the risk of receiving regulatory scrutiny increases. Regulatory scrutiny increases as insurers become more financially distressed.

A significant difference between this paper and the non-insurance industry papers is that, like Petroni (1992), this paper is able to test the understated (overstated) liability directly by the use of regulatory reports. In general, tests of abnormal accruals in other industries are based on expected future cash receipts and payments from past and current transactions. The accuracy of expected future cash flows is very difficult to measure directly. Measuring the accuracy of the claim loss reserve can be done directly through regulatory reports that are issued subsequent to the recording of the estimated liability. The reports identify the actual claims incurred to date and enable comparison between actual and estimated reserves.

Since the (Weiss, 1985) paper studies both mutual and stock companies and the (Petroni, 1992) paper studies only stock companies, this paper differs because its sample only consist of mutual companies. This paper also differs from the (Petroni, 1992) study in that the prior study investigated financial distressed stock companies and management discretion in the claim loss reserve. This paper also is interested in management discretion of reserves but is interested in determining if the discretion is an effect of mangers' incentives within the demutualization process. Demutualization does not necessarily mean that the company has financial troubles, although financial troubles could be the reason for demutualizing.

For example, Heller (1986) argues that a company's decision to demutualize depends on the risks of the conversion process as well as on the advantages of operating as a stock company. He argues that companies most likely to demutualize are rapid growth companies and companies that face dim prospects as a mutual and therefore convert to revitalize the company. Therefore, this paper will look at mutual firms that demutualize and control for financially troubled firms. This study will differ from the (Weiss, 1985) study in that it will examine demutualized companies and more than the automobile liability line of business. It will examine the total business of property-liability companies that have demutualized. Instead of looking at management discretion in estimating loss reserves for smoothing effects, this paper is interested in management's surplus management within the demutualization transaction.

HYPOTHESES

The claim loss reserve is one of the largest liabilities on an insurance company's balance sheet. Because of their relative size and degree of difficulty in achieving reasonable accuracy in their determination, claim loss reserves are the most important and critical liability in the balance sheet. In the short-run, overstatement (understatement) of this liability results in a decrease (increase) to underwriting gains and policyholders' surplus. As the overstated (understated) reserves develop, the overreserving (underreserving) of those losses will strengthen (depress) future underwriting gains. The concern of regulators is that serious misestimating in reserves affects the future financial condition of an insurer, possibly leading to insolvency. Exhibit A summarizes the effects of understating claim reserves.

Anderson (1971) studied the effects of under-and-overevaluations in loss reserves. His findings included the following conclusions. First, errors in loss reserves are of sufficient magnitude to have significant effects on surplus and thus an influence on financial stability. Second, changes in loss reserve margins may be a tool in stabilizing underwriting results. While the evidence suggests the use of reserves as a smoothing technique, the evidence is not conclusive. This paper is testing for the significant effect on surplus from overstatement (understatement) of loss reserves.

Development of the hypothesis must consider management's incentive between loss reserve management and demutualization. Schipper (1989) recommends that to test for earnings manipulation, both economic incentives and circumstances surrounding the transaction need to be considered. Demutualization requires valuation of the mutual company and the level of surplus is a key component of the valuation process. Since loss reserve management impacts surplus and therefore valuation, the link between loss reserve management and demutualization is established. I review management's role (i.e., ownership/control) in the demutualization process to identify the different economic incentives facing managers. It is recognized that in a regulatory environment, there are features of the insurance setting that may control management incentives. Examples of these features are the policyholders' contracts, fewer opportunities to manage earnings, and active involvement in the demutualization process by state insurance regulators. What is difficult to determine is the net effect of these features on management incentives. An example of this difficulty is the possibility of ineffective controls due to the regulators' lack of expertise in determining earnings management.

Management's incentives to manage surplus for valuation purposes are dependent on the role of management in the demutualization process. If management has much to gain from the transaction, such as significant ownership interest in the newly formed stock company, their incentive would be to manage earnings by overstating reserves, thereby reducing surplus. Decreasing the surplus by overstating reserves could result in a lower value of the company and therefore lower stock prices. Lower valuation results in a lower settlement to policyholders as well as enables managers to buy stock at a lower price. This transfer of wealth from existing shareholders to themselves result in an agency conflict between policyholders and management. This incentive leads to the first hypothesis:

H1: *The year prior to demutualization, managers of property-liability insurance companies who have a significant ownership interest after demutualization will overstate their estimates of claim loss reserves as a means to decrease the companies' surplus.*

The incentive to overstate reserves reflects management's significant role subsequent to the demutualization transaction. In contrast, if management has a limited role subsequent to the demutualization process, they may have an incentive to understate the loss reserves and therefore overstate surplus. An incentive is to act in the best interest of policyholders; increase firm value. Reported firm value would be increased as a result of the increase to surplus by understating loss reserves. Increasing reported firm value results in policyholders receiving a higher payoff from the conversion process. Also, considering the cost of demutualization, the additional surplus could be used to offset the cost[4]. This incentive leads to the second hypothesis:

> H_2:   *The year prior to demutualization, managers of property-liability insurance companies will act in the best interest of policyholders by understating their estimates of claim loss reserves as a means to increase the companies' surplus.*

Claim Loss Reserve and Claim Loss Reserve Error

The claim loss reserve is a liability for unpaid claims and unpaid loss adjustment expenses incurred as of a given valuation date[5]. Included in the reserve are estimates of unpaid losses for reported cases, incurred but not yet reported (IBNR) claims, and future loss adjusting expenses to settle the unpaid claims. The loss reserve estimate is determined by individual case estimates and/or formulas and requires management judgment.

Subsequent to the reserve valuation date, additional information becomes available about the actual incurred losses from prior periods. This information is the continuing development of the claim payments made subsequent to the period the claims were incurred. After all claims are paid for that prior period, the actual losses for that period are known. The actual loss amount is then compared to the original estimate of incurred losses and any difference is adjusted and charged to the current year's operations as a change in accounting estimate. The change in estimate is referred to as the claim loss reserve error and is measured as follows:

$$\begin{pmatrix} \text{Claim Loss} \\ \text{Reserve Error} \end{pmatrix}_t = \frac{(\text{Originally Reported Incurred Losses})_t - (\text{Losses as Actually Developed})_{t+2}}{(\text{Admitted Assets})_t} \times 100$$

where t denotes the end of year values for the variables. The originally reported incurred losses include settled and unsettled reported claims, IBNR and incurred loss adjustment expenses (paid and estimated). Losses actually developed are adjusted for inflation. The adjustment is the difference between the geometric average rate of inflation over the years losses are developed and the geometric average rate of inflation in the five years prior to the year losses were originally reported as incurred (Weiss, 1985)[6]. A positive (negative) loss reserve error indicates overreserving (underreserving).

Petroni (1992) and Weiss (1985) used similar measures with the exception that they both used 5 years development in comparison to the 2-year development used in this study[7]. Kazenski, Feldhaus'' and Schneider (1992) did a study on loss development horizons. They found that that the precision of the reserve estimates converge to fully developed values during the third development year. They also find evidence that 2 to 3 years of development is sufficient to find statistically significant reserve errors if testing a sample of insurers. If individual insurers

are analyzed, a longer horizon may be needed. Because of those results and the fact that less data would be required therefore keeping as many firms in the sample as possible, this study tests the reserve error using a 2-year development horizon.

SAMPLE

The initial sample for this study consists of companies that demutualized during the period of 1968-2004. The initial sample of 97 insurance companies was collected from *Best's Insurance Reports Property-Casualty (Best's Reports)*. *Best's Reports* are compiled by A.M. Best Company, Inc. and contain qualitative as well as quantitative information about individual companies. Annual statement information as well as a financial rating of individual companies is included in this data source. Firms are eliminated from the sample if financial statement data and loss reserve development data are not available. This data is used directly to measure the financial health of the firm and the error in the claims loss reserves. The financial health of a firm is determined from financial statement data available from either *Best's Reports* or the insurer's Annual Statement. Loss reserve development data is obtainable from Schedule P of the insurer's annual statement and includes a ten-year loss reserve development identifying actual claims paid subsequent to the financial statement date when the original reserve estimate was recorded (Exhibit A)[8].

Forty-nine of the firms are eliminated from the initial sample for the following reasons: 1) no information was available for thirty-one insurers[9], 2) five firms converted from a Lloyd's company to a stock company[10], 3) two firms were placed in conservatorship after demutualization[11], 4) eight firms primarily issue workers' compensation or medical malpractice policies[12] and, 5) three firms are 100% reinsured[13]. The final sample consists of 48 companies that demutualized during the years of 1982 through 1999. During this period, 16 firms were from the first half of this period (1982-1990) with 32 firms from the last 9-years of the period (1991-1999). None of the sample firms demutualized in either 1989 or 1990. Exhibit B identifies the 48 firms and dates of the demutualizations.

Table 1 reports the descriptive statistics for the 48 insurers. Panel A of the table gives the statistics for a ten-year time period which includes the five years preceding demutualization, the demutualization year and four years after demutualization. Panel B of Table 1 gives the statistics for the five years prior to demutualization and Panel C gives the statistics for the year of demutualization and the four years following the demutualization. For all data in Panel A, the loss reserve mean (median) represents 31% (33%) of admitted assets and Panel B and Panel C report means (medians) of 33% (33%) and 30% (31%) of admitted assets, respectively. Net premium written increased in mean (median) by 25% (30%) between the years prior to demutualization (Panel B) and the year of and after demutualization (Panel C). Surplus also increased in mean (median) by 58% (69%) between the years. The increase in net premium written and surplus would support the expansion and/or distress incentives for demutualization. In addition, the descriptive statistics shown, combined with large standard deviations, suggest that size varies significantly across demutualized insurers.

Table 1
DESCRIPTIVE STATISTICS FOR 48 PROPERTY-LIABILITY INSURERS
(In thousands)

Panel A: All Data [a]

	Insurer -Years	Median	Mean	Standard Deviation	Minimum	Maximum
NPW	449	8,619	26,404	43,941	-3,014	235,863
Admitted Assets	449	17,325	57,547	92,907	316	590,920
Loss Reserve	445	5,696	18,096	29,313	22	163,156
Surplus	447	7,139	17,870	24,965	141	127,528

Panel B: Data for years –1 to –5 [b]

	Insurer -Years	Median	Mean	Standard Deviation	Minimum	Maximum
NPW	243	7,862	23,733	40,700	-1,663	227,073
Admitted Assets	243	14,048	47,468	76,480	316	436,793
Loss Reserve	237	4,679	15,654	26,401	26	154,504
Surplus	241	5,046	14,083	19,535	141	114,347

Panel C: Data for years 0 to 4 [c]

	Insurer -Years	Median	Mean	Standard Deviation	Minimum	Maximum
NPW	206	10,248	29,554	47,388	-3,014	235,863
Admitted Assets	206	22,413	69,437	108,148	2,931	590,920
Loss Reserve	208	6,879	20,879	32,152	22	163,156
Surplus	206	8,504	22,300	29,539	557	127,528

[a] 10 years include 5 years prior to demutualization through 4 years after demutualization
[b] Years include 5 years prior to demutualization to the year prior to demutualization
[c] Years include year of demutualization to four years after demutualization
NPW: Net premium written

MODEL

I test whether a claim loss reserve error exists as a result of management's incentive to adjust policyholder surplus through the claim loss reserves. The regression results are based on pooled cross-sectional time series data with controls for various insurer and exogenous economic factors.

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The model used to test the hypotheses is expressed as follows:

$$ERROR_{it} = \alpha_t + \beta_1 DIS_{it} + \beta_2 TAX_{it} + \beta_3 DM_{it} + \beta_4 DM*DIS_{it} + \beta_5 DM*MGMT_{it} + \epsilon_{it} \quad (1)$$

where

i	=	insurer index
t	=	year index
ERROR	=	reserve estimation error scaled by total admitted assets in year t;
DIS3	=	dummy variable assigned a value of 1 if an insurer is determined to be financially distressed and 0 otherwise <u>or</u>
DIS4:	=	Best rating assignment;
TAX	=	dummy variable, taking on the value of one in year t if insurer i incurred taxes and 0 otherwise;
DM	=	dummy variable assigned value of 1 if year before demutualization and 0 otherwise;
MGMT	=	dummy variable assigned a value of 1 if change in management resulted from the demutualization and 0 otherwise;
ϵ	=	error term.

Table 2 reports the descriptive statistics for all variables in the regression. The median (mean) for the dependent variable, *ERROR*, is 2.525 (2.162). The positive numbers indicate that overall, the firms' claim loss reserves are overstated.

The paper's focus is on the year prior to demutualization and management incentives to manage surplus through the estimated loss reserves. I use the control variable *DM* to determine if the demutualization event had an effect on the claim reserve error in the year preceding demutualization. In the year prior to demutualization, the variable is assigned a 1; otherwise a 0 is assigned. A positive relationship to claim reserve error is expected with the coefficient predicted to be positive when reserves are overstated.

The variable *MGMT* controls for the management incentive effects of managing surplus through the estimated loss reserves. *Best's Reports* for years prior to and after demutualization were reviewed to determine if a change in management occurred. If there is no change in management, the variable is assigned a 0; otherwise a 1 is assigned for a change in management. The mean of the *MGMT* variable is 0.182, indicating that approximately one-fifth of the firms changed management with demutualization.

The regression controls for financially distressed firms. Financially distressed firms have incentives to understate reserves to avoid regulatory intervention. The regression is tested separately using two different variables with both variables developed from the Best Rating system[14]. Best classifies the overall rating of A++ through B+ as secure ratings and the ratings of B through F as vulnerable. Best uses NR for not rated. At times, Best will assign a FPR but not an overall rating. Best classifies FPR's of 5 through 9 as secure and FPR's of 1 through 4 as vulnerable. *DIS3* is a dummy variable of 0 if rating is a secure rating and a variable of 1 if a vulnerable rating[15]. From Table 2, the mean of *DIS3* is 0.269, suggesting that approximately one-quarter of the insurer-years is considered distressed. Since *DIS3* involves some subjectivity, *DIS4* is an alternate variable used and is the same variable that Petroni (1992) used in her paper to test the adequacy of ratios used in determining distress. Financial ratings of A or A+ (FPR 8 or 9) are assigned a 1, B+ or A- (FPR 5-7) a 2, B- or B (FPR 4) as 3, C+ (FPR 3) a 4, and C or lower (FPR 1 or 2) a 5. Non-rated insurers are assigned a 6[16]. From Table 2, the mean of *DIS4* is 2.702, suggesting an average of B ratings and therefore vulnerable. Since non-rated insurers are assigned a 6, *DIS4* may be biased towards distressed. If distressed firms have more incentive to

understate and not overstate reserves, the coefficient would be positively correlated to a negative claim loss error (Petroni, 1992). Since the claim reserve error reported in this study is positive, indicating overreserving, the coefficient should be negatively correlated. A negative coefficient is predicted.

I interact the *DM* variable with both *MGMT* and *DIS* to determine if *MGMT* and *DIS* are different in the year prior to demutualization, in comparison to other years, as a result of the demutualization. The coefficient on *DM*MGMT* will be negative since an overreserve (underreserve) of losses is a result of no change (change) in management indicating a negative relationship. The *DM*DIS* variable will be negatively correlated (coefficient negative) to the claim loss reserve error if the error is a result of overstatement.

The model also controls for taxes and the effects of tax rates on the estimated loss reserves[17]. Scholes *et al*. (1990) argue that firms with a net operating loss (NOL) carryforward are expected to have low tax rates and firms with no NOL carryforward high tax rates. The insurance industry has a similar structure[18]. Since the tax status of companies is not disclosed in *Best's Reports* but taxes incurred or refunds received/receivable are identified in the reports, companies not currently paying taxes or receiving a refund on prior-year taxes are assigned a variable of 0. Companies indicating incurred taxes for the year are assigned a variable of 1. The mean is 0.481, indicating that slightly more insurer years are without taxes. Since overreserving the loss reserve results in less income and underreserving produces more taxable income, the tax variable should be negatively correlated to the reserve error. Since the average claim loss error identifies overstatement, it is predicted that the coefficient is negative.

Table 2
DESCRIPTIVE STATISTICS OF VARIABLES FOR THE 48 PROPERTY-LIABILITY INSURERS USED IN THE REGRESSION ANALYSIS

Variable	Insurer-Years	Median	Mean	Standard Deviation
ERROR	377	2.525	2.162	5.104
DIS3	450	0	0.269	0.444
DIS4	450	2	2.702	1.905
MGMT	455	0	0.182	0.387
TAX	455	0	0.481	0.500
DM	455	0	0.107	0.310
DM*DIS3	450	0	0.038	0.191
DM*DIS4	450	0	0.356	1.221
DM*MGMT	455	0	0.018	0.132

ERROR = reserve estimation error scaled by total admitted assets in year *t;*
DIS = DIS3: dummy variable assigned a value of 1 if an insurer is determined to be financially distressed and 0 otherwise or *DIS4:* Best rating assignment;
MGMT = dummy variable assigned a value of 1 if change in management resulted from the demutualization and 0 otherwise;
TAX = dummy variable, taking on the value of one in year *t* if insurer *i* incurred taxes and 0 otherwise;
DM = dummy variable assigned value of 1 if year before demutualization and 0 otherwise;

RESULTS

Univariate Analysis

I first examine the claim loss reserve error in the 5 years prior to demutualization. To examine the claim loss reserve error, I calculate averages for each firm of various groupings of years prior to demutualization and compare the averages to the year(s) prior to demutualization for each firm. A paired comparison t-test is applied to the difference. Results for comparison of three different groupings of the 5 years are reported in Table 3. The analysis of the first group consisted of 5 years prior through 2 years prior to demutualization compared against the year prior to demutualization. Group two compared the 5 years to 3 years prior to demutualization against the year prior to demutualization. The last group compared the 5 years to 3 years prior to demutualization against the prior 2 and 1 years.

Table 3 reports the results of the univariate analysis. The means for all three groups and the median for the first two groups indicate overreserving rather than underreserving. Even though the univariate results indicate no statistical significance, the results indicate that when the year prior to demutualization is separated from the other prior years, a difference in the reserving pattern appears. The mean and median for the first two groups are similar but the mean and median of the third group differ from the mean and median of the first two groups. If the year prior to demutualization is grouped with the second year prior to demutualization, not much difference exists between those two years and the 5-years through 3-years preceding demutualization[19]. Statistical insignificance may be a result of other confounding factors that are not controlled for in the univariate analysis. The sensitivity analysis section will test the claim loss reserve error in the years preceding demutualization in a multiple regression setting.

Table 3
UNIVARIATE ANALYSIS OF CLAIM LOSS RESERVE ERROR FOR 48 INSURERS
2-YEAR DEVELOPMENT OF CLAIM LOSS RESERVE ERROR

Group	Mean	t-test p-value	Median	Wilcoxon p-value
1. Year = -1 Year = -5 to -2	0.823	0.323	0.236	0.296
2. Year = -1 Year = -5 to -3	0.802	0.417	0.217	0.374
3. Year = -1, -2 Year = -5 to -3	0.300	0.638	-0.133	0.578

$$\binom{\text{Claim Loss}}{\text{Reserve Error}}_t = \frac{(\text{Originally Reported Incurred Losses})_t - (\text{Losses as Actually Developed})_{t+2}}{(\text{Admitted Assets})_t} \times 100$$

Regression Results

Table 4 reports the results of the multiple regression estimated over the ten-year period for each of the 48 insurers resulting in 375 insurer-years. Panel A of Table 4 reports the regression results with the distress variable *DIS3*. Since *ERROR* is positive, it is predicted that

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the *DIS3, TAX, DM*DIS3,* and *DM*MGMT* coefficients are negative and the *DM* coefficient positive. All variable coefficients are as predicted.

The *DM*MGMT* has a negative coefficient of -5.163 that is statistically significant at less than the 0.01 level. The *DM* coefficient of 1.695 is significant at the 0.10 level. The *DIS3, TAX,* and *DM*DIS3* coefficients are as predicted but are all insignificant. The insignificance of the distress variables and interactive distress variables may be a result of approximately only one-quarter of the firms being classified as distressed. I will test the sensitivity of the regression to this variable in the sensitivity analysis section.

The results support the first hypothesis in that management will overstate the estimates of claim loss reserves. It is hypothesized that managers with significant ownership interest will have the incentive to overstate the estimated claim loss reserve as a means to decrease surplus. The lower level of significance of the *DM* variable suggests that the management of claim loss reserves is not only impacted by the intent to demutualize. The results do suggest that the management process impacts the demutualization process. The results for the variable *DM*MGMT* imply that, in comparison to other non-demutualization years, more management incentive exists to overstate reserves in the year prior to demutualization.

Panel B of Table 4 reports the regression results with the distress variable, *DIS4*. The results report the predicted negative coefficient for *DM*MGMT (–4.383)* and is statistically significant at the 0.05 level. Similar to the first regression, since the *ERROR* is positive, it is predicted that *DIS4, TAX,* and *DM*DIS4* coefficients are negative and the *DM* coefficient positive. All the coefficients are as predicted but only the *DIS4* coefficient is significantly negative at the 0.10 level. Achieving this level of significance for the *DIS4* in this regression but not for *DIS3* in the first regression must be interpreted with caution. Since non-rated insurers are arbitrarily assigned a 6, *DIS4* may be biased towards distress.

Similar to the regression with the *DIS3* distress variable, the first hypothesis is supported. The difference between the two regressions is that the insignificance of the *DM* variable in the second regression suggests that the management of claim loss reserves is not directly impacted by the intent to demutualize. Similarities in both regressions include the suggestion that management incentives do impact the demutualization process.

Sensitivity Analysis

In the univariate analysis, there exists some significance and therefore an indication of changing reserve patterns between the year preceding demutualization and the other years prior to demutualization. To test for the possibility of other factors influencing the results, I ran the full regression but only for the years preceding demutualization. Table 5 reports the results of the regression estimated over the 5-year period for the 48 insurers (234 insurer-years). The coefficients of all variables are as predicted. The regression, with either distress variable, results in significant *DM, DM*MGMT* and *TAX* coefficients.

Similar to the full regression with all insurer-years, the second hypothesis is supported. The difference between the results of all years and the pre-demutualization years is that with either *DIS* variable, the significance of the *DM* variable suggests that the management of claim loss reserves is directly impacted by the intent to demutualize. This may be a result of truncating the data. The significance of the *DM*MGMT* variable remains consistent throughout all regressions and supports the hypothesis that more management incentive exists to overstate reserves in the year prior to demutualization.

Table 4
REGRESSION RESULTS FOR 48 INSURERS
(375 Insurer-Years)

$$ERROR_{i\,t} = \alpha_t + \beta_1 DIS_{i\,t} + \beta_2 TAX_{i\,t} + \beta_3 DM_{i\,t} + \beta_4 DM*DIS_{i\,t} + \beta_5\ DM*MGMT_{i\,t} + \approx_{i\,t,}$$

**Panel A: Two-Year Development with DIS (N=375)**

Dependent Variable[a]	Independent Variable	Coefficient	Standard Error	t-statistic
ERROR				
Adjusted R^2 = 0.011	**DIS3**	-0.073	0.638	-0.12
	TAX	-0.422	0.543	-0.78
	DM	1.695	1.006	1.69*
	DM*DIS3	-1.441	1.669	-0.86
	DM*MGMT	-5.163	1.989	-2.60***

**Panel B: Two-Year Development with DIS4 (N=375)**

Dependent Variable [a]	Independent Variable [a]	Coefficient	Standard Error	t-statistic
ERROR				
Adjusted R^2 = 0.022	**DIS4**	-0.279	0.151	-1.85*
	TAX	-0.688	0.546	-1.26
	DM	2.012	1.469	1.37
	DM*DIS4	-0.253	0.410	-0.62
	DM*MGMT	-4.383	2.110	-2.08**

***(**/*) Statistical significance at the 0.01 (0.05/0.10) level
[a] Variables:
ERROR   = reserve estimation error scaled by total admitted assets in year _t;_
DIS   = _DIS3_: dummy variable assigned a value of 1 if an insurer is determined to be financially distressed and 0 otherwise _or DIS4:_ Best rating assignment;
TAX   = dummy variable, taking on the value of one in year _t_ if insurer _i_ incurred taxes and 0 otherwise;
_DM_   = dummy variable assigned value of 1 if year before demutualization and 0 otherwise;
MGMT   = dummy variable assigned a value of 1 if change in management resulted from the demutualization and otherwise.

In the pre-period, the results of the two distress variables, _DIS3_ and _DIS4,_ are insignificant, indicating less variation in distress across firms. The insignificance of the distress variables and interactive distress variables may be a result of the subjectivity used in assigning a distress variable and/or approximately only one-third of the firms being classified as distressed. To test the sensitivity of this variable to the regression, I ran the regressions for all years without the distress variable. Table 6 reports the results of this regression. The results report similar coefficients and significance. The coefficient of -5.418 for _DM*MGMT_ is as predicted and is significant at less than the 0.05 level. The negative _TAX_ coefficient of -0.366 and the _DM_ coefficient of 1.228 are as predicted but statistically insignificant. Results are similar to the full regression and therefore continue to support the second hypothesis[20].

Table 5
REGRESSION RESULTS FOR 48 INSURERS YEARS PRIOR TO DEMUTUALIZATION
(234 Insurer-Years)

$$ERROR_{it} = \alpha_t + \beta_1 DIS_{it} + \beta_2 TAX_{it} + \beta_3 DM_{it} + \beta_4 DM*DIS_{it} + \beta_5 DM*MGMT_{it} + \approx_{it,}$$

Panel A: Two-Year Development with DIS3 (N=234)

Dependent Variable	Independent Variable	Coefficient	Standard Error	t-statistic
ERROR				
Adjusted R^2 = 0.019	***DIS3***	-0.213	0.945	-0.23
	TAX	-1.530	0.822	-1.62*
	DM	2.252	1.245	1.81*
	DM*DIS3	-1.514	2.041	-0.74
	DM*MGMT	-5.284	2.344	-2.25**

Panel B: Two-Year Development with DIS4 (N=234)

Dependent Variable [a]	Independent Variable [a]	Coefficient	Standard Error	t-statistic
ERROR				
Adjusted R^2 = 0.034	***DIS4***	-0.407	0.231	-1.76*
	TAX	-1.671	0.817	-2.04**
	DM	2.227	1.815	1.23
	DDIS4	--0.166	0.503	-0.33
	DMGMT	-4.472	2.481	-1.80*

***(**/*) Statistical significance at the 0.01 (0.05/0.10) level.
[a] Variables:

ERROR   = reserve estimation error scaled by total admitted assets in year *t;*
DIS   = *DIS3*: dummy variable assigned a value of 1 if an insurer is determined to be financially distressed and 0
          otherwise <u>or</u> *DIS4:* Best rating assignment;
TAX   = dummy variable, taking on the value of one in year *t* if insurer *i* incurred taxes and 0 otherwise;
DM   = dummy variable assigned value of 1 if year before demutualization and 0 otherwise;
MGMT   = dummy variable assigned a value of 1 if change in management resulted from the demutualization and 0
          otherwise.

CONCLUSION

This study examined whether managers of mutual property-liability insurance companies use their discretion in estimating the claim loss reserve accrual in the year preceding demutualization of the company. Insurance companies experiencing growth and/or financial distress have a need for additional surplus. The paper examines one of two methods that companies have in obtaining additional surplus; demutualization. The insurance industry and the demutualization process provide a specialized setting to examine earnings management. Since the valuation process is a key component in the conversion process, opportunity for management discretion in determining the reserve estimate is established. Because of the more accurate and direct tests of the largest accrual on the balance sheet, claim loss reserves, the insurance industry also provides a richer environment for examining earnings management. Therefore, the paper not only provides a strong motivation for management incentives, but also grants the opportunity to

improve the measurement of earnings management since actual losses are compared to estimated losses.

Table 6
REGRESSION RESULTS FOR 48 INSURERS
(375 Insurer-Years)

$$ERROR_{it} = \alpha_t + \beta_1 TAX_{it} + \beta_2 DM_{it} + \beta_3 DM*MGMT_{it} + \in_{it}$$

Two-Year Development   (N=375)

Dependent Variable	Independent Variable	Coefficient	Standard Error	t-statistic
ERROR				
Adjusted R^2 = 0.014	**TAX**	-0.366	0.524	-0.70
	DM	1.228	0.850	1.45
	DM*MGMT	-5.418	1.966	-2.76**

***(**/*) Statistical significance at the 0.01 (0.05/0.10) level
[a] Variables:
ERROR = reserve estimation error scaled by total admitted assets in year *t;*
TAX = dummy variable, taking on the value of one in year *t* if insurer *i* incurred taxes and 0 otherwise;
DM = dummy variable assigned value of 1 if year before demutualization and 0 otherwise;
MGMT = dummy variable assigned a value of 1 if change in management resulted from the demutualization and 0 otherwise.

With companies changing from mutual companies to stock companies, I predict that management will increase their discretion in estimating reserves to adjust surplus in alignment with their incentives. It was predicted that if management has a limited role in the newly formed company, the incentive of management would be to understate reserves as a means to increase surplus, which would result in increased firm value for the policyholders. If managers have a significant interest in the newly formed company, their incentive would be to overstate reserves, to decrease surplus, resulting in lower firm value and lower payoff to policyholders. This would enable mangers to buy the stock at a lower price.

The regression results support the hypothesis of overstatement of reserves. No evidence was found to support the understatement of reserves. The results indicate that, in comparison to other non-demutualization years, more management incentive exists to overstate reserves in the year prior to demutualization. The demutualization transaction itself has limited impact on surplus management.

Better access to capital for growth and/or financial distress is one reason for demutualization. The descriptive statistics identify an increase in net premium written and surplus as a result of the transaction, indicating expansion, which supports prior research (Mayers & Smith, 1996). The regression results do not support poor financial condition as a factor in demutualization.

The results of this study imply that a change in organizational structure does give management an opportunity to manage earnings. Limitations of the study include small sample size and the use of a proxy for some distress classifications. It is possible that stronger results are not obtained because of the regulatory environment in which the change in organizational structure operates. Future research could study the impact of the regulatory environment on the insurer's transactions.

ENDNOTES

1. Besides underwriting capacity constraints, other constraints are imposed on other traditional funding mechanisms for mutuals. Fitzgerald (1990) states, "restricted access to capital is inherent in the structure of a mutual, for using traditional means to obtain capital-contribution notes and surplus is limited by the financial resources of the contributor and legal restrictions that limited marketability of these notes."

2. An example of a conversion is as follows: An insurance company domesticated in Wisconsin must adopt a plan of conversion and have resolution by the board that it is in the best interest of policyholders. The plan includes the number of shares proposed to be authorized for the new stock corporation, their par value and their price at which they will be offered to policyholders, which may not exceed one-half of the median equitable share of all policyholders under par. Determination of policyholders is any person who has been a policyholder and has paid premiums within 5 years prior to the resolution. The policyholders need to vote for approval of the conversion. These are the general rules. More detail is included in the statutes. WI Statute ¶611.76.

3. The combined ratio is the sum of the claims and claims expense ratio and the expense ratio. Claims and claims expense ratio (loss ratio) = incurred losses and loss adjustment expenses/earned premiums. The ratio measures the company's underlying profitability (or loss experience) on its total book of business. Expense ratio = underwriting expenses/premiums written. The ratio measures the company's operational efficiency in underwriting its book of business. Premium written is the premium on all policies a company has issued in a period of time, as opposed to earned premiums.

4. Fitzgerald (1990) interviewed 25 mutual insurers. A question asked was whether the company considered conversion in the past or future and what their reaction to demutualization was. A sample of the responses indicated that demutualization is a relatively expensive option and very time consuming.

5. Unpaid claims are claims reported but not paid and incurred but not yet reported claims (IBNR). Unpaid loss adjustment expenses are unpaid expenses that were incurred to estimate the amount of loss for reported claims and an estimate for the adjustment expense related to the IBNR claims. Unpaid losses and unpaid loss adjustment an expense is the claim loss reserve.

6. $[(\text{Index of average weekly wages})_{t+2} / (\text{Index of Average Weekly Wages})_t]^{1/2} -$

    $[(\text{Index of average weekly wages})_{t-6} / (\text{Index of Average Weekly Wages})_{t-1}]^{1/5}$

    Data for average weekly wages are taken from Business Statistics. For 13 firms, a proxy for the inflation adjustment is used for the 2-year development of reserves set in 1994. They proxy is the average of the inflation adjustment factor over the past 5 years.

7. The regression was also run with the error weighted by the original reserve estimate (Weiss, 1985) instead of admitted assets:

    $$\begin{pmatrix} ClaimLoss \\ ReserveError \end{pmatrix}_t = \frac{(Originally Reported Incurred Losses)_t - (Losses as Actually Developed)_{t+2}}{(Originally Reported Incurred Losses)_t} \times 100$$

8. The 10-year loss reserve data became available for the 1989 Annual Statement. Statements prior to 1989 only included 5 year development for the liability lines and 2-year development for the casualty lines.

9. The majority of the 28 firms are demutualizations prior to 1984. Prior to 1989, the reserve development for most lines of business is only 2 years. The 1989 Annual Statement is the first year to include a 10-year reserve development for all lines.

10. The sample includes reciprocals and Lloyd's firms. A reciprocal is a group of persons, firms, or corporations that exchange insurance contracts through an attorney-in-fact. They are similar to a mutual in that the policyholders own the firm, but differ from mutuals in terms of legal control and capital requirements. Lloyds firms are similar to stock in the residual claim holders assume the risk, but it is a proprietary rather than corporate form.

11. Conservatorship is a firm that is in financial distress and operations are scrutinized and directed by regulatory agencies.

12. Management has less discretion in reporting loss reserves for this line since well-establish actuarial tables determine the reserves for workers' compensation and medical malpractice claims are long-tail claims.

13. Reinsurance is the transaction in which a reinsurer (the assuming party) assumes all (100%) or part of a risk undertaken originally by another insurer (the ceding party). The ceding party pays the reinsurer a premium for this transaction. The legal rights of the insured are not affected by this transaction. The insurance company issuing the policy remains liable to the insured for payment of policy benefits.

14. A study comparing the Best's Ratings and selected financial ratios (Ambrose and Seward, 1988) for predicting insolvency concluded the two methods are statistically equivalent. (Petroni, 1992) used a subset of the financial ratios from the (Ambrose and Seward, 1988) paper. The ratios consist of eight of the eleven ratios that regulators use to evaluate financial condition and adequacy of claim loss reserves. The ratios are industry-specific and are part of the Insurance Regulatory Information System (IRIS). This paper will use the Best's overall rating or financial performance rating (FPR)

15. Many firms were not rated during the year of demutualization and other years for various reasons. For those years with no rating, the most recent rating prior to those years was used as a proxy for the non-rated period.

16. Assigning a 6 for non-rated is subjective and is unclear if non-rating is related to lower financial strength relative to other ratings. Ambrose and Seward (1988) do find an increase proportion of insurers are not rated prior to insolvency.

17. In general, demutualization is a tax-free transaction (per conversation with a partner of an accounting firm). There are special circumstances that may cause the demutualization to be taxable. Since the data does not indicate whether the transaction is tax-free or taxable, I make the assumption that the transactions are tax-free.

18. Basically, insurance companies are taxed as ordinary corporations. The differences include 1) modification of tax law for insurance companies to allow expense recognition that is consistent SAP which results in a mismatching of revenue and expenses and reduced taxable income in a period of expansion and 2) discounting of claim loss reserves for tax purposes (present-value basis).

19. The tests were also run with the claim loss reserve error scaled by original reserve. The trend in the claim loss reserve error for groups 1 and 2 in comparison to group 3 are similar to the tests when scaled by admitted assets.

20. The error term is tested on all regressions for heteroscedasticity and autocorrelation. Heteroscedasticity is tested using the White (1980) method. The specification test does not reject the null hypothesis of homoscedastic errors or independence of the error terms and explanatory variable (p=0.34). The Durbin-Watson test for autocorrelation indicates that some autocorrelation does exist ($\circledR = 0.199$).

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Exhibit A

ACCOUNTING EFFECTS OF SELECTED LOSS TRANSACTIONS

The following table illustrates the recording of a claim with an underestimation of the loss. Transactions two and four would be affected in the opposite direction if the initial reserve was overestimated.

The first transaction is to record the claim liability and incurred expense as a result of policyholder's submitting claims for their losses. Transaction two records an increase to the liability and incurred losses. The original loss recorded in transaction one was underestimated.

Partial payment is made to policyholder on reported loss in transaction three. At the time of final settlement, the reserve is closed with any difference between the remaining reserve and final payment adjusted to the Incurred Losses and Policyholder's Surplus accounts.

Transaction	Loss Reserve effect[a]	Incurred Losses effect[a]	Underwriting Gain effect[a]	Policyholder's Surplus effect[a]
1. To record new loss claim-**19x6**	Increase	Increase	Decrease	Decrease
2. To increase the estimate of total cost of the loss-**19x6**[b]	Increase	Increase	Decrease	Decrease
3. To make partial payment on loss claim-**19x7**	Decrease	None	None	None
4. To make final payment at amount greater than reserve-**19x7**[b]	Decrease to zero	Increase	Decrease	Decrease (deficiency on reserve)

[a] Loss Reserve, Incurred Losses, Underwriting Gain, and Policyholder's Surplus under Statutory Accounting Principles (SAP) is similar to Current Liabilities, Cost of Goods Sold, Gross Profit, and Stockholders' Equity under GAAP.

[b] To increase the estimate of total cost of the loss is representative of initially underreserving the loss. Therefore, the initial decrease to Policyholders' Surplus is understated.

Exhibit B
CONVERSIONS - YEAR OF CONVERSION

Company New Name	_Date_
AAOMS National Insurance Company, RRG	1992
Addison Farmers Insurance Company	1985
American West Insurance Company	1986
Atlantic Insurance Company of Savannah	1987
Atlas Insurance Company	1986
Bankers Independent Insurance Company	1987
Delaware American Insurance Company	1994
EastGUARD Insurance Company	1995
Empire Insurance Company	1988
Erie Insurance Company of New York	1994
Excess Reinsurance Company	1995
Exchange Insurance Company	1992
Farm Family Casualty Insurance Company	1996
Farmers Casualty Insurance Company	1999
First Patriot Insurance Company	1997
Georgia Mutual Insurance, A Stock Company	1994
Health Care Insurance Company	1991
Intermed Insurance Company	1995
Interstate Bankers Casualty Company	1995
Lake States Insurance Company	1985
Lakeland Insurance Company	1999
MEEMIC Insurance Company	1999
Midwest Medical Insurance Company	1988
Milbank Insurance Company	1982
Minnesota Fire and Casualty Company	1993
New Castle Insurance Company of Delaware	1998
New York Bakers Insurance Company	1995
Old Guard Fire Insurance Company	1997
Old Guard Insurance Company	1997
Patrons Oxford Insurance Company	1997
Penn Millers Insurance Company	1999
Pioneer Insurance Company	1993
Pioneer Insurance Company	1998
Prairie State Farmers Insurance Company	1993
Preferred Physicians Insurance Company	1987
Progressive Max Insurance Company	1991
Prudential-LMI Commercial Insurance Company	1986
Select Risk Insurance Company	1997
Shelby Insurance Company	1986
Southern Insurance Company of Virginia	1988
Southern Michigan Insurance Company	1998
The Millers Insurance Company	1999
Uniguard Security Insurance Company	1984
Union Automobile Insurance Company	1993
Union Insurance Company of Providence	1994
Valley Insurance Company	1988
Wausau Business Insurance Company	1987
Yorktowne Insurance Company	1996