Form over Matter: Differences in the Incentives to Convert Using Full versus Partial Demutualization in the U.S. Life Insurance Industry*

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Abstract

The recent wave of demutualizations has led to the declining significance of the mutual organizational form in the U.S. life insurance industry. Although the prior literature is fairly conclusive regarding the motivations that life insurers had to demutualize, previous research has only considered the decision of whether to convert from the mutual to the stock form of ownership but not the method of conversion. In this paper, we consider the different methods of conversion to explore if the motivations were similar across the firms that chose to fully demutualize versus those that chose to adopt the mutual holding company (MHC) form. Based on a sample of 108 life insurer demutualizations during 1986–2004, overall, we find that demutualizing insurers converted to the stock organizational form largely consistent with the maximization of firm value hypotheses. However our analysis suggests that mutual insurers, which chose to fully demutualize, were primarily motivated by a desire to gain access to external capital markets, while the decision by firms that chose to convert to the mutual holding company form can be explained by other motivations including, most notably, a tax-based incentive. We also find that demutualizing life insurers more aggressively hedge their interest rate risk and increase their exposure to the risks that they are likely to have a comparative advantage to bear—so-called core business risks—both before and after conversion. This coordination between interest rate risk and core business risk is stronger for firms that chose to fully demutualize than for firms that converted to the mutual holding company form.

Keywords: Demutualization, full conversion, MHC conversion
JEL classification: G22, G32

1. INTRODUCTION

The viability of the mutual form of ownership in the U.S. life insurance industry is currently in serious doubt. Consider, in 1986, 49 percent of the total industry assets were held by insurers employing the mutual form of ownership where the insurers' policyholders were also residual claimants of the firms. By 2006, this percentage dropped to less than 10 percent with the stock form ownership now dominating the industry[1] (A.M. Best 2007). Differential growth rates between stock and mutual insurers over this period explain a small portion of the change. However, the majority of the change can be explained by the wave of demutualizations that occurred during the 1990s and into the 21st century as a number of large and historically successful life insurers decided that the mutual form of ownership no longer provided a comparative advantage relative to being organized as stock company.

Given the dramatic change in industry structure, a number of papers have investigated the motivations behind demutualizations in the life insurance industry. Some of the proposed hypotheses suggest that insurers were attempting to increase the value of the organization by gaining greater access to capital markets, mitigating the costs of free cash flow, achieving greater overall efficiency, or by being able to better align the incentives of owners and managers through the design of stock-based compensation schemes. Other researchers suggest that the managers of converting mutuals had incentives to extract wealth from the policyholders, and the demutualization process provided a mechanism to do just that. Although we discuss in detail the prior literature testing these hypotheses in the next section of this paper, it is sufficient to note here that the majority of this research concludes that the value increasing motivations were the

[1] Similarly, mutual insurers represented 46% of the life insurance in force and they issued 38% of first year premiums issued in 1986. Both of these percentages dropped to less than 10% by 2006 (A.M. Best 2007).

dominant rationale for mutual insurers to demutualize (Viswanathan and Cummins 2003; Erhemjamts and Leverty 2010).

Although the prior literature is fairly conclusive regarding the motivations life insurers had to demutualize, there exists an interesting aspect of the demutualization story that has, until now, garnered little attention in the academic literature. In all of the previous empirical work, researchers have only considered the decision of whether an insurer converted from the mutual to the stock form of ownership. In reality, however, not only did the managers of a mutual life insurance company have to decide whether to demutualize, they also had to choose from different types of demutualization, including a full (or traditional) demutualization[2] and a mutual holding company (MHC) conversion.[3]

This paper adds to the literature in at least four important ways. First, we improve on the existing literature by considering the method of conversion in an effort to gain additional insight into what motivated insurers to demutualize generally and then to explore if the motivations were similar across the firms that chose to fully demutualize versus those that chose to adopt the mutual holding company form. We accomplish these goals by largely following the previous literature that employed binary regression techniques to analyze the determinants of

[2] Full demutualization occurs when a mutual insurance company becomes a stock company and its net worth is distributed to policyholders in exchange of their membership rights. Typically a stock holding company is formed which then forms downstream stock subsidiaries into which all of the former mutual's insurance obligations are transferred as a result of the demutualization. The value distributed to the policyholder is usually in the form of stock but can also be in the form of cash or policy credits. The amount of the surplus paid to each policyholder consists of fixed and variable components. The demutualization plan, which includes details of the surplus allocation, stock offering, and management stock option program, must be approved by policyholders and regulators. The converted company can issue an IPO to increase its capital and the IPO is typically executed soon after regulatory approval.

[3] In a MHC conversion process, a new mutual holding company (MHC) is created as part of a multi-tiered insurance holding company system. Under this conversion method, two new entities are formed: i) a new MHC which is the parent corporation, and ii) a new downstream stock intermediate holding company (SHC) into which the original mutual insurance company is converted into a stock insurance company. Under this arrangement, the insurance policies remain with the converted mutual company which is now a stock company. The ownership rights originally attached to the policy are transferred to the new parent mutual company. To raise capital, the MHC can sell shares of stock in its SHC subsidiary to the public, but typically retains a majority of the voting rights (usually 50.1% or 51%).

demutualization, but instead we relax the restriction that there is only one form of demutualization. The advantage of following the prior literature so closely is that we can directly compare our results with those of previous authors.

A second way that we improve upon the previous literature is by hypothesizing that the federal tax code provided mutual insurers an incentive to demutualize after Congress passed Internal Revenue Code (IRC) Section 809 in 1984. Prior to the enactment of Section 809, mutual companies could fully deduct policyholder dividend distributions before calculating their taxable net income. However, the proponents of Section 809 argued that dividends paid by mutual insurers represented both a refund of premiums to policyholders—an item typically considered a legitimate deductible business expense—and a return on capital invested in the firm—an item typically not tax deductible. Section 809 attempted to level the playing field between stock and mutual insurers by reducing a mutual company's dividend deductions by the product of the company's "average equity base" and a "differential earnings rate," which was defined as the difference between the average earnings rates of the stock and mutual segments of the life insurance industry. Thus, Section 809 represented an upward adjustment to the tax burden of mutual insurers and had a greater effect on mutual companies with larger average equity bases. To our knowledge, this tax hypothesis has not been tested in previous studies.

Our third contribution to the literature on life insurer demutualizations is our analysis of the risk taking incentives of converting firms both before and after their conversion to the stock organizational form. Drawing on the coordinated risk management hypothesis of Stulz (1996) and Schrand and Unal (1998), we argue that the managers of demutualizing insurers have a stronger incentive to maximize firm value. Therefore, they will increase exposure to risks more likely to generate positive economic rents and will minimize, or at least not increase, exposure to

risks expected to generate zero economic rents. Again, to our knowledge, we are the first to test this theory in the insurance literature.

The final way that we improve on the previous literature is by examining a larger and more recent time period—1986 to 2004—the time period that covers the majority of the recent conversion activity. By way of comparison, Viswanathan and Cummins (2003) examine 21 life insurer demutualizations that occurred between 1988 and 1999. The longer time period used in this study allows us to examine 108 life insurers that chose to demutualize.

A summary of our results is as follows. First, confirming the prior literature, our analysis reveals that demutualizing insurers converted to the stock organizational form largely consistent with the maximization of firm value hypotheses. We offer strong support for both the access-to-capital and the tax-savings hypotheses and find little support for the wealth expropriation hypothesis. In addition, our analysis is consistent with the access-to-capital hypothesis being the primary motivating factor for fully demutualizing insurers, while the tax incentives appear to be a significant motivation for MHC conversions.[4]

Second, consistent with our priors, we find evidence consistent with mutual insurers coordinating their risk exposure by limiting their exposure to interest rate risk—a risk we argue that trades in a large and liquid market and therefore no firm has a particular advantage to bear—and increasing their exposure to illiquid and informationally intensive asset classes. This

[4] The list of reasons to justify conversion to the either the stock or MHC form of ownership discussed in the paper is not exhaustive as insurance company managers cite a number firm-specific rationales to support the decision to demutualize. For example, in a public industry forum organized by the Society of Actuaries during this time period, a senior vice president for Guarantee Life suggested his company was incented to convert, in part, because of rating agency pressure to grow their business. A number of prospectuses of the demutualizing companies suggest management choose to convert via MHC to allow the insurer to retain its mutuality while preserving the flexibility to fully demutualize at some time in the future. Other companies suggested the demutualization process allowed the firm to reorganize its operating subsidiaries into different holding companies as a way to minimize tax liabilities. We appreciate our anonymous referees for reminding the reader and us that the decision to demutualize is complex and likely reflects not only the hypotheses tested in the paper but also a host of idiosyncratic reasons applicable to each insurer's own circumstances and history.

incentive to coordinate risk is stronger for converting mutuals than nonconverting mutuals with fully demutualizing firms having the strongest coordination. These results reaffirm the conclusion that mutual life insurers converted to the stock form in an attempt to increase firm value.

The remainder of the paper is organized as follows. In Section 2, we discuss the regulatory environment for life insurer demutualizations. In Section 3, we survey the related literature and present hypotheses under investigation. In Section 4, we present our data and empirical methods. We present results in Section 5 and conclusions in Section 6.

2. REGULATORY ENVIRONMENT FOR DEMUTUALIZATIONS

Since the insurance industry is regulated at the state level, it is the laws of each individual state that govern the process for a mutual insurance company to demutualize and convert to the stock form of ownership. Full (or traditional) demutualization has been allowed in most U.S. states since the early 1900s. However, the adoption of MHC conversion acts is a recent phenomenon, and the timing of the adoption of the acts varied significantly among states that allow MHCs. Iowa was first to allow MHC conversions in 1995, and 68 percent of states (21 out of 31) that now permit MHC conversions enacted these laws between 1996 and 1998 (see Appendix A). As of 2006, 47 states and the District of Columbia allow full demutualization, while 30 states and the District of Columbia permit MHC conversion. There is no conversion statute in the State of Connecticut and conversion is prohibited in Alaska and Hawaii.[5]

The ability of a mutual company to demutualize was further facilitated by Section 312 of the Financial Services Modernization Act of 1999, which allows a mutual insurer that wishes to

[5] A summary of the relevant statutes can be found in *2006 NAIC Compendium of State Laws on Insurance Topics* (NAIC 2006). We reviewed the legislative websites of the individual states to determine the effective dates of each of the conversion acts.

demutualize but is prohibited from doing so under the laws of its domiciliary state to redomesticate to a state that allows demutualization (see Harman, Adney, and Keene 2001). Further, Section 313 of the Act preempts any state law restricting or penalizing companies or policyholders because of such a redomestication. As a result, passage of the Financial Services Modernization Act meant that any mutual life insurance company in the country could chose to demutualize regardless of the state of domicile.

3. RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

3.1. Determinants of Demutualization

The theories posited to explain why a mutual insurer would demutualize can generally be split into two categories: those that suggest mutual insurers converted to the stock organizational form in an attempt to increase firm value and those that suggest the demutualization process allowed the firm's management to extract value for themselves. We discuss both sets of hypotheses and related empirical evidence in this section.

The value maximization hypotheses include the access-to-capital hypothesis, the free-cash-flow hypothesis, the productive-efficiency hypothesis, and, new in this paper, a tax-based hypothesis. The access-to-capital hypothesis predicts that mutual insurers convert to the stock form in order to gain greater access to external financing. In survey data reported by Butler, Cui, and Whitman (2000), access to capital is the most often cited rationale by the managers of converting life insurers. The most thorough analytical analysis of the hypothesis to date is provided by Viswanathan and Cummins (2003) where the authors investigated both property-liability and life-health insurer demutualizations. Viswanathan and Cummins discuss several reasons where mutual insurers might need additional capital and/or to reduce the cost of attracting external capital. For example, the authors predict that converting mutuals are expected

to exhibit higher premium growth rates generally and specifically in more capital-intensive lines of business like riskier group lines of insurance. In addition, given the difficulty of raising capital to support this growth, the authors predict that mutual insurers will have a greater reliance on reinsurance and lower capitalization ratios.

A second reason why some mutual insurers may desire greater access to external capital is when a higher proportion of their business is written as a separate account business. Separate account policies are designed such that policyholders decide how their funds are invested and then bear the financial responsibility of those decisions. Thus, since policyholders bear the investment risk, one could argue that separate account policies require less capital to underwrite and therefore increasing exposure to this line of insurance should reduce the incentive for mutuals to convert. However, although declines in the value of the assets held in separate accounts do not directly jeopardize the solvency position of the insurers, separate account products impose risk on insurers in other ways. For example, separate account products often carry guarantees that do appear in the general account of the insurer, and therefore they do have capital requirements.[6] In addition, separate account products compete with the products of mutual fund companies and banks and consequently require large fixed expenditures in sophisticated information technology and administration systems in order to underwrite successfully (Tuohy 1999). Third, the sale, lapse performance, and asset crediting fees of separate account products are all sensitive to market performance, and the asset portfolios of the insurer's separate accounts are much riskier than the insurer's general account.[7] Finally, for

[6] Allmerica Financial is an example of a life insurer that struggled financially due to performance guarantees on its separate account products as it was eventually bought out by John Hancock Financial after reporting a fourth quarter loss of over $250 million in 2002. At the time of the sale, Allmerica's stock was trading 20 percent below its book value. See Miller (2002) for details.

[7] For example, in 2005, over 80 percent of the industry's separate account assets were invested in equities compared to only 3.4 percent of the industry's general account assets (American Council of Life Insurers 2007).

most of the time period of this study, the growth rates of separate account businesses were over twice as high as the general account businesses of the insurers.[8] Thus, mutual insurers with more separate account businesses are expected to convert to stock form in order to gain access to external capital to support the expected growth of this business and to support the associated short-term capital loss associated with the acquisition of new business.[9]

The free-cash-flow hypothesis (Jensen 1986; Mayers and Smith 1981; Wells, Cox, and Gaver 1995) states that the relative level of free cash flow, hence the corresponding agency costs associated with free cash flow, should be greater for mutual than stock insurers. Wells, Cox, and Gaver (1995) test this hypothesis and find evidence that the relative levels of free cash flow are indeed greater for mutual insurers. In a related paper, Cole, McNamara, and Wells (1995) document a significant reduction in relative free cash flow after demutualization. These results are consistent with the hypothesis that demutualizing insurers were attempting to mitigate the costs of free cash flow.

The efficiency hypothesis is drawn from the production theory and managerial discretion literatures and predicts that different ownership structures lead to different levels of operational efficiency and that competition and survivorship, over time, will produce an efficient utilization of resources (Fama and Jensen 1983; Mayers and Smith 1986; and Smith 1986). Erhemjamts and Leverty (2010) offer the most direct evidence on the efficiency motivation for U.S. life insurer demutualizations. They find that during the 1990s and into the 21st century the productive efficiency of the stock organizational form dominates that of the mutual structure and that the

[8] From 1995 to 2005, the average annual compound growth rate of the separate account assets of the industry was 12.3 percent compared to 6.0 percent for the general account assets (American Council of Life Insurers 2007). In addition, separate account assets as a percentage of admitted assets grew from 10% (11%) in 1986 to 35% (23%) in 2002 for stock (mutual) insurers (A.M. Best 2002).

[9] The industry term for this phenomenon is surplus strain in recognition of the accounting loss that results from acquiring new business where the acquisition costs often exceeds the first-year premiums. The short-term loss is taken from the policyholder surplus (i.e., the capital) position of the insurer.

dominance of the stock technology gradually increases over time. After converting to the stock organizational form, demutualized firms attain levels of efficiency not achieved with the mutual production technology because conversion allows firms to adopt the appropriate production technology for their input and output vectors. In addition, the efficiency gains are observed under both types of demutualization.

A value maximization hypothesis put forward in this paper that does not appear in the prior literature is a tax-based incentive. We hypothesize mutual insurers had an incentive to demutualize to avoid a unique "equity tax" included in a provision enacted by Congress in 1984, Internal Revenue Code (IRC) Section 809.[10] Prior to 1984, at a time when the mutual companies dominated the life insurance industry, mutual insurers were allowed to fully deduct policyholder dividend distributions from their taxable net income. However, the IRS argued that dividends distributed by a mutual insurer not only represented a refund of premiums to policyholders but also a return on capital. Thus, relative to stock insurers that are not allowed to deduct stockholder dividends, the IRS argued that the full deductibility of policyholder dividends by mutuals represented preferential treatment for one segment of the industry.

To address this perceived inequity, Congress restructured the tax rules in 1984 for mutuals based on a stock company model and Section 809 represented an upward adjustment to the tax burden of mutual companies. Section 809 implemented this adjustment by reducing the mutual's dividend deduction by a "differential earnings amount," which was defined as the product of the company's "average equity base" and the difference between the average profitability of the stock and mutual segments of the life insurance industry, the so-called

[10] Collins, Geisler, and Shackelford (1997) are the first to discuss this equity tax in the academic literature although their purpose was to investigate asset portfolio realizations. Note that the "equity tax" is also known in the industry as a "surplus tax."

"differential earnings rate." In this paper, we explore the extent to which this tax law provided incentives to convert from the mutual to the stock form of organization.

In contrast to these value-maximization hypotheses, an alternative hypothesis suggests the primary motivation for the recent demutualizations is the expropriation of wealth from the policyholders by potential shareholders and management (Mayers and Smith 1986). However, the prior empirical evidence regarding the wealth expropriation hypothesis is limited. Carson, Forster, and McNamara (1998) is an exception as they argue the managers of mutual insurers with relatively high free cash flow or excess capital have greater opportunity to compensate themselves of shareholders following demutualization if those funds are not used to grow the underlying business. Based on a sample of 39 life insurer demutualizations that occurred between 1902 and 1994, they find that the surplus-to-asset ratio was significantly higher for demutualizing insurers and that a proxy for free cash flow was positively and significantly related to the probability of demutualization. Carson, Forster, and McNamara interpret this evidence to indicate that demutualization could be motivated by either expropriation or by attempts to control associated agency costs.

While previous papers that examined the determinants of demutualization treated all types of conversions as equal, MHC conversions received the lion's share of the criticism for the potential to expropriate wealth from policyholders. For example, the opponents of MHC conversions contend that the mutual insurer essentially reorganized into a stock firm, similar to full demutualization, but the policyholders were not given compensation for the loss of their ownership interest in the firm. Adkins (1997) argues that although a closed block might be provided as part of the conversion policyholders do not get the financial benefits of the new company, including any potential stock price appreciation. Similarly, Schiff (1998) argues that if

the newly created stock holding company expands into new insurance and noninsurance activities value created by these transactions would only accrue to shareholders and not to policyholders. Therefore, in this paper, we explore whether the motivations were similar across the firms that chose to fully demutualize versus those that chose to adopt the MHC form.

Although there is little discussion in the insurance demutualization literature regarding the differential incentives across full versus MHC conversions, conversions in other sectors of financial services suggest there may be notable differences. For example, Carow, Cox, and Roden (2004) argue that the practice by thrift institutions of paying disparate dividends provides an opportunity for management to transfer wealth from MHC depositor owners to new shareholders. The authors find that thrifts, which converted via an MHC company, pay significantly higher stockholder dividends than fully demutualized thrifts consistent with wealth expropriation. The authors also conduct an event study to investigate the differential impact of the Office of Thrift Supervision rulings involving MHC dividend policy and report evidence consistent with wealth expropriation through dividend policy. In a related paper (Carow, Cox, and Roden, 2007) using a sample of 347 converting thrifts from 1991 to 2004, the same authors find evidence consistent with participating managers enhancing returns at the initial public offer by influencing the size of the offer.

An additional rationale for distinguishing between the two forms of demutualization comes from the IRS Revenue Ruling 99-3. As discussed in Harman, Adney, and Keene (2001), in 1999, the IRS ruled that stock life insurance subsidiaries of MHCs were able to fully deduct policyholder dividends without the reduction that applied to mutual companies per IRC Section 809. Therefore, beginning in 1999, mutual insurers could convert to an MHC structure solely to

access the tax treatment enjoyed by all mutual insurers prior to 1984. This advantage was not available to stock insurers or to mutual insurance companies that did not convert to an MHC.

3.2. Changes in Total Firm Risk Following Conversion

When a mutual life insurer converts to a stock form, the ability of the firm to take risks and the risk taking incentives of management change for at least two primary reasons. First, now that the insurer has access to external capital markets, management may choose to operate in riskier business lines and/or invest in a riskier asset mix because capital markets can be accessed when underwriting or investment performance is unfavorable (Cummins and Danzon 1997).[11] In addition, the stock organizational form allows the insurer to achieve greater transparency with increased reporting requirements and discipline imposed by market participants. The increased transparency may generate more favorable borrowing terms. Hence, they have an increased ability to take risks.

The new organizational form also offers demutualized insurers degrees of freedom to better align their managers' interests with the owners' interests by granting equity-based compensation. An extensive literature on executive compensation shows that managerial risk aversion can be reduced through the increased use of stock-based compensation (Jensen and Meckling 1976; Smith and Stulz 1985; Guay 1999; Core and Guay 1999; Cohen, Hall, and Viceira 2000; Coles, Daniel, and Naveen 2006). This increase would raise the cost to the manager of variance reducing projects and raise the rewards for variance increasing projects. Therefore, the managers of converting mutual companies have incentives to take on more risky projects. Because of the increased ability and incentives to take risk, we hypothesize that the total risk of demutualizing insurers increases after the conversion.

[11] Cummins and Danzon (1997) find that new capital flows are positively related to the growth in liabilities and that firms tended to raise capital following shocks.

While no study directly looks at the changes in risk for demutualizing life insurers, there are several studies on the risk changes of converting savings and loan (S&L) associations. For example, Cordell, McDonald, and Wohar (1993) examine S&L conversions in the 1980s and find that demutualization significantly affects the S&L industry risk. The authors find that following conversion the new stock associations adopt high risk and high return investment strategies, are more leveraged, and grow at a faster rate than S&Ls that retain their mutual organization form. Esty (1997) finds that conversions from mutual to stock ownership are associated with increased investments in risky assets and higher profit variability. Similarly, by examining 134 thrift conversions in the S&L industry that occurred between 1984 and 1988, Schrand and Unal (1998) find that thrifts increase their total risk following conversion consistent with their increased ability and incentives to take risk. In a study related to the choice of organizational form for property-liability insurance companies, Lamm-Tennant and Starks (1993) find that stock insurers have more risk than mutuals where the riskiness of the future cash flows is proxied by the variance of loss ratio.

In terms of the incentive effects, Mayers and Smith (1992) find that total compensation of mutual executives is lower than that of stock executives in the life insurance industry.[12] The authors also find evidence that the stock company CEO compensation is more responsive to firm performance than mutual CEO compensation. Marx, Mayers, and Smith (2001) apply results on complementarities to theories of insurance companies' choices of ownership structure and executive compensation. The empirical implications of their model suggest that stock companies offer higher levels of compensation and make pay more sensitive to firm value. If life insurance managers receive more stock-based compensation after conversion, we can expect that

[12] Similar evidence can be found in Mayers and Smith (2004).

demutualizing life insurers will increase their total risk due to the incentive effects of stock-based compensation.

3.3. Coordinated Risk Management

There is growing empirical evidence that risk is costly for firms to bear in the presence of capital market imperfections and regulatory capital requirements (Smith and Stulz 1985; Froot, Scharfstein, and Stein 1993; DeMarzo and Duffie 1995). As a result, the recent risk management literature focuses not only on the role of risk management to *reduce* the variability of corporate cash flows but also to *reduce* the various costs associated with retaining risk. With this in mind, Stulz (1996) suggests that the corporate risk management function should reduce the expected costs of financial distress while preserving a company's ability to exploit any comparative advantage in risk bearing that it may have. Stulz argues that risk management may enable a firm to take more of the risks that it has a comparative advantage in bearing than it would in the absence of risk management.

Schrand and Unal (1998) build on this idea and argue that firms in any industry can use risk management to allocate a firm's total risk exposure among multiple sources of risk rather than to reduce total risk. The authors develop what they call the *coordinated-risk-management* hypothesis where they suggest that managers can substitute risks that the firm has a comparative advantage in bearing (core risk) for risks that the firm has no advantage in assuming (non-core or homogenous risk). Breeden and Viswanathan (1998) also stress that the goal of hedging should not be the elimination of all risk but the management of risk. In their model, higher ability managers wish to "lock-in" their performance where they have an advantage and eliminate risks not under their control.

In an industry-specific test of their coordinated risk management argument, Schrand and Unal (1998) find that changes in the organizational form of S&L thrifts had a significant impact on the incentive for managers to retain or transfer certain sources of risk. By examining 134 thrift conversions in the S&L industry, they find that thrifts increase their total risk following conversion, and the relative amount of credit risk (core business risk) increases following conversion, while the relative amount of interest rate risk (homogeneous risk) declines. They also provide evidence that this coordination risk taking is not observed by thrifts that do not convert.

Based upon a similar line of reasoning, we expect that demutualizing life insurers can achieve the increase in total risk by hedging homogenous risk and taking on more core business risk. Since fully demutualized firms can issue IPOs soon after their conversion and an MHC is viewed as a partial conversion, we expect that fully demutualizing insurers will have stronger incentives to engage in coordinated risk management.

4. DATA AND METHODOLOGY

In this section, we discuss the empirical strategies that we employed to study the incentives that mutual life insurers had to demutualize and investigate if those incentives differed across firms that chose to fully demutualize versus converting via the MHC process. We begin by describing our data. We next discuss the methods that we used to study the determinants of demutualization using both logistic and multinomial logistic regression techniques. We conclude this section by describing the econometric models that we estimated to study the coordinated risk management hypothesis described earlier. The empirical results of both tests are presented in Section 5.

4.1. The Data

Our data set includes all U.S. life insurers that were organized as a mutual organization in 1986 and that filed their annual regulatory statements with the National Association of Insurance Commissioners (NAIC). The data set contains annual data on all of the companies for each year that they filed statements with the NAIC until 2004. Thus, some of the insurers remain mutual over the entire sample period, while others demutualize and convert to stock organization form sometime between 1986 and 2004. None of the sample firms is domiciled in Alaska or Hawaii where demutualization is prohibited.

The sample period begins in 1986 for two reasons. First, there were very few demutualizations prior to the mid 1980s in the United States—the majority occurred starting in the mid 1990s and into the 21st century.[13] Second, the NAIC data were not widely available in electronic format prior to 1986.

In addition to using the NAIC data to identify the organizational structure of each insurer, the data set also contains the detailed accounting information needed to construct the independent variables used in this study. We use a variety of sources to identify when a mutual insurer converts to a stock firm, including the NAIC data, key word searches in the insurance trade press, and A.M. Best's *Insurance Reports* (A.M. Best, various years). Following the literature (e.g., Mayers and Smith 1994), we considered the stock subsidiaries of mutuals as mutuals and are able to identify 108 life-health insurers that demutualized between January 1, 1986 and December 31, 2004 at the affiliated and unaffiliated individual insurer level.[14] (See Appendix B.)

[13] For the list of life insurer demutualizations prior to 1990, see Carson, Forster, and McNamara (1998).

[14] Recent studies have argued for a different type of treatment for stock subsidiaries of mutuals. Lee, Mayers and Smith (1997) presented evidence indicating that the portfolio composition of mutual-owned stocks responds to the guaranty-fund enactments in ways that are like other stocks but unlike mutuals. More recently, McShane and Cox

Table 1 below provides a summary of the number of stock versus mutual insurers operating in the life insurance industry over the time period of this study as well as the number of conversions that occurred during each year. It is quite easy to see the dramatic change in the organizational structure of the industry over this time period as the percentage of industry assets held by mutuals dropped from almost 50 percent in 1986 to roughly 10 percent in 2004.[15] We also note that the first insurers to convert via MHC did so starting in 1996. Interestingly, the majority of all conversions (80 out of 108) occurred between 1997 and 2001 of which the majority converted via MHC.

Table 1 also foreshadows a result that we will explore in more detail later in the paper. Specifically, the percentage of assets held by both stock and mutual insurers in separate account business was approximately equal at the beginning of our sample period. However, Table 1 shows that over this time period stock insurers aggressively underwrote separate account insurance and grew this portion of their business from 10 percent of their asset base in 1986 to over 33 percent by 2004. The result for mutual insurers was quite different as the relative size of their separate account assets to their total asset base remained relatively flat only growing from 12 to 15 percent over this time period.

4.2. Determinants of Demutualization Models

We first examine the determinants of demutualization by largely replicating the ordinary logistic regression reported in Viswanathan and Cummins (2003). We perform this replication test as Viswanathan and Cummins is the most definitive prior study of the determinants of demutualization and because we want to verify that our data set, which covers a longer time

(2009) classify mutual-owned stocks as a stock insurer following Lee, Mayers, and Smith (1997). Therefore, we update our treatment of stock subsidiaries of mutual insurers based on the recent literature and check the robustness of all our analyses accordingly. We find that most of the results were qualitatively similar when we treat mutual-owned stocks as stocks.

[15] Total assets are inflation adjusted to constant 1982 dollars using the Consumer Price Index.

Table 1

Summary of Life Insurance Industry and Life Insurer Demutualizations: 1986-2004

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Panel A: Total Industry																			
No. of Insurers	2,338	2,176	2,020	1,940	1,873	1,859	1,797	1,775	1,699	1,785	1,599	1,460	1,432	1,321	1,276	1,226	1,171	1,123	1,071
Total Assets ($ bil)	968	1,076	1,203	1,334	1,442	1,530	1,652	1,835	1,979	2,185	2,360	2,622	2,871	3,151	3,224	3,313	3,421	3,857	4,219
Separate Account Assets ($bil)	103	113	126	148	161	205	240	313	351	462	573	741	922	1,142	1,142	1,071	958	1,180	1,342
Industry Separate Acct / TA	10.7%	10.5%	10.5%	11.1%	11.2%	13.4%	14.5%	17.0%	17.7%	21.1%	24.3%	28.3%	32.1%	36.2%	35.4%	32.3%	28.0%	30.6%	31.8%
Premiums ($bil)	151	168	176	182	194	196	206	221	232	240	247	255	270	269	302	480	508	498	529
First Year Premiums ($bil)	43	54	58	58	63	56	60	69	68	69	67	78	85	84	100	209	241	232	247
Panel B: Mutual Insurers																			
No. of Insurers	179	181	179	179	179	188	179	177	180	178	174	154	137	125	108	84	74	73	70
Total Assets (%)	49.2%	47.9%	46.7%	45.5%	44.4%	45.3%	40.7%	39.8%	38.9%	37.7%	36.5%	34.2%	28.9%	27.0%	17.7%	10.5%	10.2%	10.1%	10.2%
Separate Account Assets (%)	55.9%	54.1%	54.4%	53.9%	53.2%	52.3%	44.0%	42.7%	39.2%	36.9%	34.5%	30.9%	23.7%	20.6%	12.2%	4.6%	4.3%	4.6%	4.8%
Mutual Separate Acct / TA	12.1%	11.9%	12.2%	13.2%	13.4%	15.5%	15.7%	18.3%	17.9%	20.7%	23.0%	25.6%	26.4%	27.7%	24.5%	14.3%	11.9%	13.9%	15.0%
Premiums (%)	37.5%	37.1%	36.6%	36.6%	37.1%	40.0%	38.3%	38.3%	37.1%	35.7%	37.5%	33.3%	28.3%	27.5%	19.3%	12.3%	11.6%	12.6%	12.1%
First Year Premiums (%)	27.6%	27.8%	26.6%	24.7%	25.1%	28.5%	26.5%	26.5%	24.5%	21.0%	25.3%	21.9%	20.8%	20.8%	14.1%	6.9%	6.1%	6.7%	6.6%
Panel C: Stock Insurers																			
No. of Insurers	1,400	1,433	1,421	1,474	1,525	1,666	1,613	1,580	1,499	1,451	1,414	1,299	1,288	1,186	1,159	1,129	1,084	1,031	986
Total Assets (%)	42.9%	44.9%	46.1%	48.6%	50.3%	54.6%	59.3%	60.1%	61.0%	62.0%	63.4%	65.7%	71.0%	73.0%	82.2%	89.0%	89.5%	89.3%	89.7%
Separate Account Assets (%)	40.3%	42.8%	42.5%	45.2%	46.0%	47.7%	56.0%	57.3%	60.7%	63.0%	65.4%	69.1%	76.2%	79.3%	87.7%	93.9%	95.1%	95.3%	95.1%
Stock Separate Acct / TA	10.0%	10.1%	9.7%	10.3%	10.2%	11.7%	13.7%	16.3%	17.6%	21.5%	25.1%	29.7%	34.5%	39.4%	37.8%	34.1%	29.8%	32.6%	33.7%
Premiums (%)	54.2%	55.2%	56.0%	57.8%	56.6%	58.6%	60.2%	62.6%	61.8%	63.4%	62.5%	66.6%	71.7%	72.4%	80.7%	87.2%	88.2%	86.7%	87.9%
First Year Premiums (%)	62.5%	63.8%	66.9%	69.6%	67.5%	71.5%	73.5%	73.5%	75.5%	78.8%	74.7%	78.0%	79.2%	79.1%	85.9%	92.0%	93.7%	91.9%	93.4%
Total Conversions	2	0	1	3	0	1	3	0	1	5	4	14	16	11	21	18	5	2	1
MHC Conversions	0	0	0	0	0	0	0	0	0	0	3	13	13	10	10	1	1	2	1
Full Conversions	2	0	1	3	0	1	3	0	1	5	1	1	3	1	11	17	4	0	0
% MHC Conversions	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	75.0%	92.9%	81.3%	90.9%	47.6%	5.6%	20.0%	100.0%	100.0%

Source: The data source is the annual statements compiled by the National Association of Insurance Commission (NAIC).

Notes: Following Mayers and Smith (1994), we consider stock subsidiaries of mutuals as mutuals. We utilize A.M. Best's Insurance Reports to identify life insurers that convert from the mutual organizational structure to the stock charter between 1986 and 2004. The units of observation are unaffiliated and affiliated single insurers. In Panels B and C, all variables displayed with "(%)" show the percentage of the industry assets (or premiums) written by mutual or stock insurers, respectively. The variable in Panels A, B, and C labeled "Separate Acct/TA" shows the percentage of total assets held in separate accounts for either the entire industry, for mutual insurers or for stock insurers, respecitvely.

period and contains twice as many demutualization observations, leads to similar conclusions regarding the primary rationale that life insurers choose to covert to the stock form.

To replicate Viswanathan and Cummins' study, the dependent variable in the logistic regression is a binary variable set equal to zero while the insurer remains a mutual and then equals one whenever the insurer is organized as a stock company. After replicating the logistic regression, we relax the assumption that a mutual life insurer could transition to the stock form using only one form of demutualization and estimate a multinomial logistic regression that allows us to compare simultaneously the incentives for the insurer to fully demutualize versus convert via an MHC. The dependent variable in the multinomial regression takes on the value zero when the insurer remains a mutual, a value of 1 for all years after the insurer converts via mutual holding company conversion, or a value of 2 after the insurer fully demutualizes[16].

We include an overall capitalization variable equal to the insurer's surplus-to-assets ratio to test the access-to-capital hypothesis. We expect a negative relationship between the likelihood that the insurer converts to the stock form of ownership and the overall capitalization of the firm consistent with the hypothesis that more leveraged mutuals have a stronger incentive to seek access to external capital markets. Similarly, we include a variable equal to the net cash from operations scaled by the assets of the insurers to test the hypothesis that mutuals with lower amounts of internal capital will convert to the stock form to help finance their future growth opportunities.

[16] Some insurers choose to fully demutualize several years after their MHC conversion. Specifically, after converting to MHC structure in 1996, AmerUs fully demutualized in 2000. General American converted to MHC structure in 1997, but fully demutualized in 2000 and was subsequently acquired by MetLife. Principal Mutual also converted to MHC structure in 1998, and fully demutualized in 2001. For these insurers, the dependent variable in the logistic regression is equal to zero while the insurer remains a mutual and then equal to one starting from the year of MHC conversion. The dependent variable in the multinomial regression takes on the value of zero when the insurer remains a mutual, a value of 1 for years the insurer remains a mutual holding company, and a value of 2 for years the insurer remains a fully demutualized stock company.

To test the hypothesis that mutual insurers with less liquid assets may have a greater demand for access to capital markets, we compute a liquidity ratio as the sum of NAIC class 1 and class 2 bonds, common and preferred stock, and cash and short-term investments scaled by total assets, as in Viswanathan and Cummins (2003). We expect a negative relationship between the likelihood of conversion and liquidity.

We include two variables to control for the riskiness of the insurer's business lines. First, we have a variable equal to the percentage of business written in group lines of insurance.[17] We expect a positive relationship between the percentage of group premiums and the likelihood of conversion to stock form consistent with the hypothesis that group lines of business are more efficiently underwritten by insurers organized as stocks. We include a line of business Herfindahl index to control for the amount of diversification the insurer enjoys because the earnings of different lines of insurance are not perfectly correlated with one another. We expect less diversified insurers are more risky, on average, as the firm is not taking advantage of opportunities to diversify some of its risk by participating in multiple lines of business. Under this rationale, we expect a positive relationship between the line of business concentration and the likelihood of conversion. We note here, however, that consistent with Mayers and Smith's (1981) managerial discretion hypothesis we might expect a negative relationship between the insurer's line of business concentration and the likelihood of converting to a stock insurer as more diverse firms, all else equal, are presumably more complex and therefore require a higher degree of sophistication and discretion to manage profitably.

[17] Baranoff and Sager (2003) provide evidence that group lines of business are riskier than the average line of life insurance. Pottier and Sommer (1997) suggest one reason group lines may be more risky is because they require significantly more managerial discretion to successfully underwrite. Cummins, Tennyson, and Weiss (1999) also suggest that group lines are more competitive than individual lines. The proportion of group insurance premiums represents the group life, group annuity, and group accident and health business lines as a percentage of total premiums.

We include the proportion of premiums from rural states in an effort to capture differing business environments in urban versus rural areas.[18] On one hand, intense competition in urban areas might make it more likely for firms in urban areas to demutualize. On the other hand, competition in rural areas may have been higher during this time period after the Office of the Comptroller of the Currency (OCC) ruling in 1986 that allowed banks in rural areas (5,000 or less population) to sell insurance to customers.

The final variable we include in the logistic regression is designed to investigate the tax incentives for a mutual to convert following adoption of IRC Section 809. Recall, Section 809 reduced the amount that a mutual could claim as a deduction for policyholder dividends by a "differential earnings amount," which is defined as the product of the company's "average equity base" and a "differential earnings rate." The IRS defined the differential earnings rate as the difference in the average profitability of the top fifty stock-organized firms in the life insurance industry versus the average of all mutual insurers; therefore, it is a constant for all firms in a given year. The average equity base for an insurer is the arithmetic average of the insurer's equity base for the current and preceding taxable years. The equity base is defined as the surplus and capital of the insurer adjusted for several amounts including the nonadmitted financial assets of the firm, the amount that statutory reserves exceed the tax reserves, an adjustment for certain other reserves (such as any mandatory securities valuation reserve), and 50 percent of the amount of any provision for policyholder dividends payable in the following taxable year. Since this variable differs across firms, mutual insurers with larger average equity bases, all else being equal, lost a greater proportion of their deduction for policyholder dividends and therefore paid a higher equity tax. Given these definitions, we include the average equity base relative to assets

[18] In classifying states as urban and rural, we used the U.S. Census Bureau's decennial report on urban and rural populations.

for each insurer in our regressions. We expect that the estimated coefficient on this variable to be positive consistent with the hypothesis that the IRS equity tax fell most heavily on large equity-based firms and therefore provided these insurers greater incentives to demutualize.

Table 2 summarizes the set of hypotheses and their predictions for the determinants of demutualization.

Table 2
Hypotheses and Predictions on the Likelihood of Demutualization

Hypothesis	Relevant studies on demutualization	Variable	Prediction
Access to Capital	Cummins and Viswanathan (2003)	Premium growth	+
		Separate accounts	+
		Reinsurance	+
		Surplus-to-assets ratio	-
		Net cash from operations	-
		Proportion of liquid assets	-
		Proportion of group lines of insurance	+
		Lines of business Herfindahl	+, -
		Proportion of premiums from rural states	+, -
Tax Savings		Average equity base	+
Free Cash Flow	Carson, Forster, and McNamara (1998)	Net cash from operations	+
Wealth Expropriation	Carson, Forster, and McNamara (1998)	Surplus-to-assets ratio	+
		Net cash from operations	+

Source: NAIC annual statements data. U.S. Census Bureau's decennial report on urban and rural populations was used to classify states as rural or urban.

Notes: All variables except the average equity base and the proportion of premiums from rural states are constructed as in Viswanathan and Cummins (2003). The premium growth variable represents the one-year growth rate in net premiums written. Separate accounts, surplus, and net cash from operations are scaled by total assets. Reinsurance ceded to nonaffiliates is given as a percentage of total premiums. The proportion of liquid assets is computed as sum of NAIC class 1 and class 2 bonds, common and preferred stocks, and cash and short-term investments divided by total assets. The percentage of group premiums equals the sum of the group life, group annuity, and group accident and health line premiums as a percentage of total premiums. The average equity base is the arithmetic average of the following amounts for the current and preceding taxable years: nonadmitted financial assets, reserves such as mandatory securities valuation reserve, interest maintenance reserve, and 50 percent of the amount of any provision for policyholder dividends payable in the following taxable year.

4.3. Coordination of Risk Tests

Similar to Minton and Schrand (1999) and Dionne and Triki (2004),[19] the dependent variable we use to test the hypothesis that demutualizing insurers have increased abilities and incentives to take more risk is the volatility of operating cash flow over the previous five years (*Volatility of Net Cash from Operations*).[20,] To test the coordinated risk management hypothesis in the U.S. life insurance industry, we must separate the total risk of the insurer into those risks that should be considered core business risks for an insurer versus homogenous risks. For their study on the S&L industry, Schrand and Unal (2004) assume interest rate risk is a homogenous risk and core business risk is proxied by the proportion of the thrift's loan portfolio in commercial loans ("high-information" loans) relative to the size of its total loan portfolio (HIGH/TL). However, since we are looking at a life insurance industry and not an S&L industry, the core business and homogenous risks must be redefined.

We define two alternative proxies for core business risk. *Corerisk1* equals the amount that the insurer invests in privately placed bonds, lower grade (NAIC classes 4–6) publicly traded bonds, plus common and preferred stocks relative to the total assets of the insurer.[21] Although life insurers invest the majority of their funds in high-grade, publicly traded bonds, *Corerisk1* is designed to measure the extent to which insurers invest in assets with higher default risk, higher return volatilities, and lower liquidity. Privately placed bonds are less liquid and marketable than publicly placed bonds and therefore impose more risk to insurers. Likewise,

[19] Similar to Minton and Schrand (1999), we use the coefficient of variation of operating cash flow as a measure of firm risk. Note that Dionne and Triki (2004) use the standard deviation of the percentage change in operating income.

[20] An alternative proxy for total firm risk is the standard deviation of weekly stock returns. By definition, however, we do not observe stock returns for nonconverting mutuals, and, for converting life insurers, we can only observe post-conversion stock returns for mutuals that fully demutualize and not for mutuals that choose MHC conversions.

[21] Privately placed bonds are not separately reported for years 1986 through 1990. Therefore, the credit risk in those years is measured as percentage of invested assets in all lower grade bonds (which include lower grade privately placed bonds and lower grade publicly traded bonds).

lower credit quality bonds increase the possibility that an obligor will default on its obligation, and there is less secondary market liquidity in bonds more likely to default.

Our second proxy for core risk, *Corerisk2*, equals the amount invested in privately placed bonds, lower grade (NAIC classes 4–6) publicly traded bonds, common and preferred stocks, plus the amount of mortgage loans that are overdue, in the process of foreclosure, and foreclosed relative to the total assets of the insurer.[22] This latter proxy for core risk is designed to take into account subprime and/or higher default exposure that insurers took on in their mortgage portfolios.

Like Schrand and Unal (1998), we define interest rate risk as a homogenous risk for the life insurance industry. We consider interest rate risk to be homogenous in part because industry participants suggest that they are satisfied with the tools available to manage their exposure to changes in interest rates. For example, respondents to Towers Perrin Tillinghast's 2004 survey of risk and capital management practices among global insurers rated their tools and techniques to manage interest rate risk highest among methods to manage various risks that life insurers typically face (Towers Perrin Tillinghast, 2005).[23] Likewise, an earlier survey by Santomero and Babbel (1997) suggests that life insurers are comfortable knowing that interest rate risk can be hedged or transferred through interest rate products such as swaps, caps, floors, futures, or other derivative products; while some other risks, including credit risk, should be absorbed and managed at the insurance firm level. We proxy for the amount of interest rate exposure (*Interest Rate Risk*) by estimating a duration gap calculated as the difference between the weighted

[22] The book values of mortgage loans that are overdue, in the process of foreclosure, and foreclosed are reported in Schedule B, Part 2 of the annual statements for the years 1986–1997 and in the Asset Valuation Reserve page for years 1998 onwards.

[23] For example, 48 percent of the respondents are very satisfied with the tools and techniques to manage interest rate risk, giving this capability a mean score of 3.84, which makes it the highest rated set of tools and techniques. In comparison, the second highest rated set of tools are for managing currency risk, and the third highest rated set of tools are for managing liquidity risk.

average maturity of insurer assets and liabilities,[24] as in Cummins, Phillips, and Smith (2001).[25] We use maturity as our proxy for duration because the regulatory annual statements do not provide enough information to calculate duration using a market model.

Due to the extensive literature on the importance of taking credit risk into account when computing duration measures, we adjust our interest rate risk measure for credit risk following Babbel, Merrill, and Panning (1997). Since credit risk shortens duration, we would be overestimating interest rate risk for firms with greater credit risk if we do not adjust for credit risk. We use Datastream to construct yield spreads on AAA through CCD grade corporate bonds. Mapping between Standard and Poor's (S&P's) rating on corporate bonds and NAIC bond classes is obtained from the Securities Valuation Office at the NAIC. More specifically, NAIC bond rating class of 1 translates to S&P credit ratings of AAA through A, class 2 translates to BBB, class 3 translates to BB, class 4 translates to B, class 5 translates to CCC, and class 6 translates to S&P credit ratings of CC or below.

To explore the time-series changes in total risk, interest rate risk, and core business risk following conversion for demutualizing life insurers, we estimate two-way fixed effect regressions that relate these risks (collectively, *RISK*) to indicator variables marking the position of the observation year relative to the conversion year. The *RISK* proxies for each firm *j* for each year *t* are regressed on time indicator variables as follows:

[24] The average maturity of insurer bond portfolios is calculated from information reported by insurers in Schedule D of the regulatory annual statements. The information provided is the book value of bonds in five maturity categories: 1 year or less until maturity, 1 through 5 years from maturity, 5 through 10 years, 10 through 20 years, and over 20 years. The bond holdings of the insurer from each category are assumed to mature uniformly over the time period to calculate the average maturity of the portfolio. Average liability maturity measures are the numbers suggested by experts in the field. The maturity measures by major line of business groupings are as follows: two (three) years for individual annuity reserves for stock (mutual) insurers; three (two) years for group annuity reserves for stock (mutual) insurers; seven (five) years for ordinary life insurance reserves for stock (mutual) insurers; and one year for group life and accident and health reserves for both stock and mutual life insurers.

[25] Schrand and Unal's empirical proxy for interest rate risk is an institution's one-year maturity gap (GAP) net of the impact of off-balance-sheet hedging activities scaled by total loans. GAP is the difference between the book values of an institution's on-balance-sheet assets and its on-balance-sheet liabilities that mature in one year.

$$RISK_{jt} = a_{j} + \gamma_{t} + \sum_{k=-4}^{4} \beta_{k} Time(t+k) + \delta Size_{jt} + \varepsilon_{jt} \quad (1)$$

where *Time(t+k)* is an indicator variable equal to one if year *t* is *k* years from the conversion year and size equals the natural logarithm of the total assets of the firm. Since firms that demutualized prior to 1990 (following 2000) would not have four years of data prior to (following) their conversions, we only included converting mutuals that demutualized between 1990 and 2000 in the regressions. Consistent with our hypotheses, we expect that the year indicator variables after conversion will be positive and increasing when the dependent variable is the volatility of the insurer's cash flows or one of the core risk variables. Likewise, we expect that the post-conversion indicators will be negative and decreasing in the time-series regression for interest rate risk.

Although equation (1) documents time-series trends in our risk variables, it does not indicate whether the insurer coordinated strategies across these two risks. To explicitly test the hypothesis that interest rate risk decreases are associated with increases in core risk following conversion within each firm, the following two-way fixed effects regressions are estimated:

$$INTRISK_{jt} = \alpha_{j} + \gamma_{t} + \beta_{1} CORERISK_{jt} + \delta\ Size_{jt} + \varepsilon_{jt} \quad (2)$$

$$INTRISK_{jt} = \alpha_{j} + \gamma_{t} + \beta_{2} CORERISK \times Pre_{jt} + \beta_{3} CORERISK \times Post_{jt} + \delta\ Size_{jt} + \varepsilon_{jt} \quad (3)$$

$$INTRISK_{jt} = \alpha_{j} + \gamma_{t} + \beta_{4} CORERISK \times MHC_{jt} + \beta_{5} CORERISK \times Full_{jt} + \delta\ Size_{jt} + \varepsilon_{jt} \quad (4)$$

$$\begin{aligned} INTRISK_{jt} = {} & \alpha_{j} + \gamma_{t} + \beta_{6} CORERISK \times PreMHC_{jt} + \beta_{7} CORERISK \times PreFull_{jt} + \\ & + \beta_{8} CORERISK \times PostMHC_{jt} + \beta_{9} CORERISK \times PostFull_{jt} + \delta\ Size_{jt} + \varepsilon_{jt} \end{aligned} \quad (5)$$

The data used to estimate models (2) through (5) include all nonconverting firm-year observations and all firm-year observations for converting insurers that demutualized between 1990 and 2000.[26] We include the nonconverting mutuals because they serve as a benchmark relative to the firms that chose to convert. The first specification tests whether all mutual insurers coordinate their choice of interest rate and core risk exposure. We expect the estimated coefficient β_1 will be negative.

The second specification, equation (3), allows us to test if the incentive to engage in coordinated risk management changes before and after firms demutualize relative to nonconverting mutuals. We expect both β_2 and β_3 to be negative consistent with the hypothesis that converting mutuals have stronger incentives to engage in coordinated risk management. In addition, we expect β_3 to be significantly more negative than β_2 consistent with our hypothesis that the incentive to coordinate increases following conversion.

Specification (4) is designed to see if the incentive for insurers to coordinate risk differed across insurers that did not convert relative to those that converted via MHC versus full demutualization. Our prior hypothesis is that the estimated coefficients on both core risk interacted variables (core risk interacted with the MHC indicator variable β_4 and core risk interacted with the full demutualization indicator variable β_5) will be negative and that *CORERISKxFull* will be significantly more negative than *CORERISKxMHC* consistent with the hypothesis that fully demutualizing insurers had greater profit incentives than insurers that converted via MHC.

Finally, our most fully specified regression, equation (5), interacts the core risk variable with the *PreMHC* and *PreFull* dummy variables that take on the value one in the four years prior

[26] Note - both the Pre- and Post-Conversion dummy variables always take on the value of zero for nonconverting firms.

to conversion for firms that converted via MHC and full demutualizations, respectively. The *PostMHC* and *PostFull* dummies are similar but take the value of one after conversion for firms that converted via MHC and full demutualization, respectively. We expected to find the following. First, we expected a negative estimated relation between any of the interacted variables. Second, the estimated coefficients on the "Post" core risk variables (*PostFull* and *PostMHC*) should be more negative than the corresponding "Pre" event variables. Finally, the estimated coefficients on the "Full" core risk variables (*PreFull* and *PostFull*) should be more negative than the corresponding "MHC" estimated coefficients.

5. EMPIRICAL RESULTS AND DISCUSSION

5.1. Descriptive Statistics

Table 3 presents the results of t-tests on all of our variables for the converting mutuals and the control group of nonconverting mutuals over the 1986 to 2004 period. We begin by discussing the results regardless of the type of demutualization to get a sense of the difference between converting and nonconverting mutuals. We then highlight any differences when we consider the types of demutualization (full demutualization vs. MHC).

Table 3 shows that converting mutuals are significantly larger than nonconverting mutuals and the converting life insurers are more active in the separate accounts product market than the nonconverting insurers. The latter result is consistent with the access-to-capital hypothesis that mutuals with larger separate accounts desire access to external capital to invest in to grow this business and the sophisticated information technology tools needed in order to better compete with mutual funds and banks. Furthermore, it is interesting to note that converting mutuals increase their separate accounts activity significantly after conversion indicating the

Table 3
Univariate Tests (the results of t-tests on various subsamples)

	Nonconverting Mutuals	*MHC Conversions*				*Full Demutualizations*			
		Pre-conversion	Post-conversion	Pre vs. Post	Pre vs. Nonconverting	Pre-conversion	Post-conversion	Pre vs. Post	Pre vs. Nonconverting
Size (Log of TA)	18.3326	19.2285	19.8116	***	***	20.2207	21.0951	***	***
Separate Accounts / TA	0.0261	0.0638	0.1891	***	***	0.1498	0.2465	***	***
Surplus / TA	0.2351	0.1866	0.1810		***	0.1427	0.1347		***
Net Cash from Oper. / TA	0.0377	0.0642	0.0332	***	***	0.0493	0.0172	***	**
Liquid Assets / TA	0.7884	0.7483	0.6667	***	***	0.6255	0.5135	***	***
% Group Ins Premiums	0.3192	0.2693	0.2981		***	0.2769	0.2835		*
Premium Growth	0.0553	0.0981	0.0887		**	0.0825	0.0718		
Reinsurance / NPW	0.0820	0.0553	0.1456	***	***	0.0766	0.2961	***	
Line of Business Herfindahl	0.6422	0.6547	0.6879	*		0.6942	0.6862		***
% Premiums from Rural States	0.2004	0.1048	0.0643	**	***	0.0276	0.0110	***	***
Average Equity Base	0.0371	0.0721	0.0538	**	***	0.0416	0.0333		
Interest Rate Risk	7.2669	6.9948	5.6427	***		6.0000	4.6905	***	***
Interest Rate Risk Adj.	6.2288	6.2433	5.0152	***		5.6566	4.1878	***	*
Corerisk1	0.1241	0.1053	0.1391	***	***	0.1048	0.1227		***
Corerisk2	0.1257	0.1075	0.1392	***	***	0.1111	0.1251		**
Volatility of Net Cash from Oper.	0.0510	0.0718	0.0854		***	0.0640	0.0583		

Source: NAIC annual statements data. Datastream was used to construct yield spreads on AAA through CCD grade corporate bonds. The mapping between S&P's rating on corporate bonds and NAIC bond classes were obtained from the Securities Valuation Office at the NAIC.

Notes: Pre- and post-conversion periods do not include the conversion year. All variables except the average equity base and the proportion of premiums from rural states are constructed as in Viswanathan and Cummins (2003), and descriptions for these variables are included in Table 2 for space considerations. Total assets used for size variable are inflation adjusted to constant 1982 dollars using the Consumer Price Index. The proxy for duration gap, Interest Rate Risk, is the difference between weighted average maturity of insurer assets and liabilities as in Cummins, Phillips, and Smith (2001). Interest Rate Risk Adj. is the Interest Rate Risk variable adjusted for credit risk following Babbel, Merrill, and Panning (1997). Corerisk1 is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4–6) publicly traded bonds, and equities. Corerisk2 is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4-6) publicly traded bonds, equities, and mortgage loans that are overdue, in process of foreclosure, and foreclosed. Volatility of the net cash from operations is the standard deviation of net cash from operations over the previous five years scaled by the average net cash from operations over the previous five years. ***, **, and * represent the significance of two-tailed tests at the 0.01, 0.05, and 0.10 levels.

possibility that they are able to expand their separate accounts business once they have access to capital markets.

Table 3 also shows that converting mutuals have lower surplus-to-assets ratios, invest a lower proportion of their assets in liquid asset classes, and have higher premium growth compared to the nonconverting mutuals. All of these results support the access-to-capital hypothesis. However, net cash from operations variable is significantly larger for converting mutuals compared to nonconverting mutuals, and it significantly decreases post-conversion for converting mutuals (both MHC conversions and full demutualizations), which supports both the free cash flow and wealth expropriation hypotheses.

In addition, converting mutuals have significantly lower percentages of their premiums coming from rural states consistent with converting mutuals competing in urban areas where competition from other insurance companies as well as other financial services companies is likely to be greater.

The average equity base for nonconverting mutuals was 0.037 versus 0.070 for MHC firms prior to conversion and 0.042 for fully demutualizing firms prior to conversion. The difference in means is statistically significant for MHC versus nonconverting firms and is consistent with our hypothesis that firms with larger than average equity bases had incentives to demutualize in order to avoid the equity tax. The equity base was larger for the average fully demutualizing insurer versus the average nonconverting mutual but is not statistically significant suggesting that taxes may not have been a motivating factor for these firms to demutualize.

Firms that fully demutualize have significantly less interest rate risk preconversion than do nonconverting mutuals, and there is a significant decrease in the interest rate risk post-conversion. In terms of core business risk, demutualizing firms invest more heavily in low credit

quality bonds, privately placed bonds, and equities than do nonconverting mutuals and, furthermore, significantly increase their exposure to these riskier assets post-conversion.

Table 4 presents the correlations matrix of the variables used in the paper. Of particular note, the liquid assets variable is highly correlated with three other variables: size, the proportion of the insurer's total assets held in separate accounts, and the surplus-to-assets ratio. As we will show shortly, these high correlations appear to create multicollinearity problems in our categorical regressions. The interest rate risk measure adjusted for credit risk (variable 13 in the table) is highly correlated to the unadjusted interest rate risk measure (variable 12), however, due to the availability of non-investment grade bond yields in Datastream from 1991 and onwards, the number of observations is smaller.

5.2. Results from the Logistic Regressions

Table 5 presents the results of the ordinary logistic regressions where the dependent variable takes the value of zero while the insurer remains a mutual and one for all years after the insurer converts to a stock charter. The first two columns report the estimated coefficients from the logistic regressions and the last two columns report the marginal effects of each independent variable on the probability of demutualization.

All variables in model (1) were used by Viswanathan and Cummins (2003) except the percent of premiums from rural states and our average equity base tax variable. Consistent with the previous authors' results, we find that the probability of conversion is positively related to firm size, negatively related to the proportion of the firm's assets held in liquid asset classes, and positively related to the amount of reinsurance used by the firm, all of which provides support for the access-to-capital hypothesis. In addition, we find that the probability of conversion is

Table 4
Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Size (Log of TA)	1.00															
2	Separate Accounts / TA	***0.37***	1.00														
3	Surplus / TA	***-0.58***	***-0.28***	1.00													
4	Net Cash from Oper / TA	***0.11***	***-0.11***	***-0.15***	1.00												
5	Liquid Assets / TA	***-0.58***	***-0.62***	***0.55***	0.03	1.00											
6	% Group Ins Premiums	0.02	***-0.05***	***0.25***	***0.05***	***0.11***	1.00										
7	Premium Growth	***0.06***	***0.09***	***-0.08***	***0.32***	***-0.07***	***0.05***	1.00									
8	Reinsurance / NPW	***0.04***	0.03	***-0.10***	***-0.12***	***-0.11***	***-0.10***	***-0.10***	1.00								
9	Line of Business Herfindahl	***-0.34***	0.02	***0.29***	***-0.06***	***0.19***	***-0.20***	-0.02	***0.06***	1.00							
10	% Premiums from Rural States	***-0.37***	***-0.17***	***0.22***	-0.04	***0.24***	***-0.05***	***-0.07***	0.03	***0.11***	1.00						
11	Equity Base	***-0.39***	***-0.15***	***0.41***	***-0.07***	***0.33***	-0.01	-0.03	-0.03	***0.15***	***0.31***	1.00					
12	Interest Rate Risk	***0.13***	-0.03	***-0.25***	***0.13***	***-0.12***	-0.03	0.03	***-0.15***	***-0.11***	0.02	***-0.13***	1.00				
13	Interest Rate Risk Adj.	***0.12***	0.02	***-0.22***	***0.09***	***-0.10***	-0.03	0.00	***-0.15***	***-0.09***	***0.08***	***-0.11***	***0.97***	1.00			
14	Corerisk1	***0.32***	***-0.09***	***0.10***	***-0.09***	0.02	***0.06***	***-0.07***	***0.06***	***-0.13***	***-0.06***	***-0.07***	***-0.07***	-0.04	1.00		
15	Corerisk2	***0.32***	***-0.09***	***0.08***	***-0.09***	0.01	***0.06***	***-0.07***	***0.06***	***-0.14***	***-0.06***	***-0.07***	***-0.07***	-0.04	***1.00***	1.00	
16	Volatility of Net Cash from Oper.	***-0.21***	***-0.10***	***0.14***	0.01	***0.16***	***0.14***	0.01	***0.07***	***0.19***	***0.06***	***0.05***	***-0.09***	***-0.10***	***-0.13***	***-0.13***	1.00
	Minimum	12.12	0.00	0.02	-0.45	0.09	0.00	-0.87	0.00	0.20	0.00	0.00	-1.59	-1.62	0.00	0.00	0.00
	Maximum	25.59	0.86	0.85	0.35	1.47	1.00	1.00	1.00	1.00	1.00	0.46	18.14	16.59	0.53	0.53	0.62
	Mean	19.06	0.08	0.20	0.04	0.73	0.30	0.07	0.10	0.66	0.14	0.05	6.72	5.83	0.12	0.12	0.06
	Standard Deviation	2.72	0.18	0.20	0.10	0.25	0.35	0.31	0.21	0.23	0.29	0.08	4.07	3.60	0.12	0.12	0.10

Source: NAIC annual statements data. U.S. Census Bureau's decennial report on urban and rural populations was used to classify states as rural or urban. Datastream was used to construct yield spreads on AAA through CCD grade corporate bonds. The mapping between S&P's rating on corporate bonds and NAIC bond classes is obtained from the Securities Valuation Office at the NAIC.

Notes: Definitions for variables 1 through 9 are provided in Table 2 and are constructed as in Viswanathan and Cummins (2003). The average equity base is the arithmetic average of the following amounts for the current and preceding taxable year: nonadmitted financial assets, reserves such as mandatory securities valuation reserve, interest maintenance reserve, and 50 percent of the amount of any provision for policyholder dividends payable in the following taxable year. The proxy for duration gap, Interest Rate Risk, is the difference between weighted average maturity of insurer assets and liabilities as in Cummins, Phillips, and Smith (2001). Interest Rate Risk Adj. is the Interest Rate Risk variable adjusted for credit risk following Babbel, Merrill, and Panning (1997). Corerisk1 is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4–6) publicly traded bonds, and equities. Corerisk2 is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4–6) publicly traded bonds, equities, and mortgage loans that are overdue, in process of foreclosure, and foreclosed. Volatility of the net cash from operations is the standard deviation of net cash from operations over the previous five years scaled by the average net cash from operations over the previous five years. All correlations that are significantly different than zero at the .05 level are bolded and italicized.

more competition forego some diversification benefits by adopting more concentrated business models. The average equity base variable is positive and significant, which is consistent with the hypothesis that mutual insurers with larger average equity had greater incentives to demutualize in an effort to avoid losing the deductibility of policyholder dividend distributions. It is interesting to note note that the estimated marginal effect of an increase in the average equity base was the most significant determinant for interesting to note that the estimated marginal effect of an increase in the average equity base was the most significant determinant for life insurer demutualizations.

We make one caveat in interpreting the results from model (1). Recall that the correlations matrix in Table 4 shows that the proportion of the liquid assets variable is significantly correlated with three other variables in the regression: size, surplus-to-assets ratio, and the proportion of separate accounts. Therefore, we conduct multicollinearity diagnostics and find that the liquid assets variable has the lowest tolerance (0.36) and the highest variance inflation factor (2.74). Other variables have acceptable levels of tolerance and variance inflation factors. Consequently, we drop the liquid assets variable in model (2) to avoid the multicollinearity problem. Consistent with the access-to-capital hypothesis, we find that mutuals with bigger separate accounts business and with lower levels of surplus are more likely to demutualize[27]. Since the liquid assets variable is highly negatively correlated with the separate accounts variable, we can also interpret this evidence as being consistent with the Viswanathan and Cummins (2003) result that converting mutuals have a lower proportion of liquid assets in their asset portfolios.

[27] Three insurers in our sample fully demutualized shortly after their MHC conversion (AmerUs, General American, Principal Mutual). To check the robustness of our results, we artificially set the dependent variable for these three insurers equal to 2 starting from the year of their initial conversion. The results are substantially similar to those already reported in the Table 6.

Table 5
Logistic Regressions

	Coefficient Estimates		*Marginal Effects*	
	(1)	(2)	(1)	(2)
Size (Log of TA)	0.155 ***	0.212 ***	0.013 ***	0.019 ***
	(3.36)	*(4.86)*	*(3.53)*	*(4.93)*
Separate Accounts / TA	1.179 *	2.507 ***	0.101 *	0.222 ***
	(1.90)	*(6.92)*	*(1.93)*	*(6.12)*
Surplus / TA	-0.844	-1.554 ***	-0.072	-0.138 **
	(-1.50)	*(-2.73)*	*(-1.47)*	*(-2.58)*
Net Cash from Oper / TA	1.083	0.785	0.093	0.069
	(0.98)	*(0.72)*	*(0.98)*	*(0.72)*
Liquid Assets / TA	-2.014 ***		-0.173 ***	
	(-2.96)		*(-2.75)*	
% Group Ins Premiums	0.182	0.118	0.016	0.010
	(0.79)	*(0.53)*	*(0.77)*	*(0.52)*
Premium Growth	0.059	0.126	0.005	0.011
	(0.23)	*(0.51)*	*(0.23)*	*(0.51)*
Line of Business Herfindahl	1.619 ***	1.651 ***	0.139 ***	0.146 ***
	(4.25)	*(4.41)*	*(4.31)*	*(4.45)*
% Premiums in Rural States	-2.245 ***	-2.076 ***	-0.193 ***	-0.183 ***
	(-5.06)	*(-4.56)*	*(-4.63)*	*(-4.29)*
Reinsurance / NPW	1.753 ***	1.930 ***	0.150 ***	0.170 ***
	(5.17)	*(6.04)*	*(4.87)*	*(5.36)*
Average Equity Base	7.346 ***	7.013 ***	0.630 ***	0.621 ***
	(5.73)	*(5.33)*	*(5.07)*	*(4.87)*
Prob (Y=1) at Mean Vector			0.095	0.098
Observations	2,332	2,332		
p-value for χ-square	<0.01	<0.01		
Pseudo R-square	0.40	0.40		

Source: NAIC annual statements data.

Notes: Size is natural log of total assets. Dollar values are inflation adjusted to constant 1982 dollars using the Consumer Price Index. Separate accounts, surplus, and net cash from operations are scaled by total assets. Percentage of group premiums equals the sum of the group life, group annuity, and group accident and health line premiums as a percentage of total premiums. Reinsurance ceded to nonaffiliates is given as percentage of total premiums. Equity base adjustment is approximated as nonadmitted financial assets, asset valuation reserves, interest maintenance reserves, plus 50 percent of the provision for policyholder dividends payable next year, scaled by total assets (for years prior to 1992, securities valuation reserves was used instead of asset valuation reserves and interest maintenance reserves). Year dummies are included in the regressions but not reported. t-statistics (in parenthesis) are based on heteroskedasticity-robust standard errors. ***, **, * represents statistical significance at the 1 percent, 5 percent, and 10 percent levels.

Table 6 presents estimates from multinomial logistic regressions where different types of demutualization are taken into account; that is, Table 6 presents regression results where we relax the assumption that a mutual insurer could only chose one form of demutualization and instead estimate a multinomial logistic regression in which the method of conversion is taken into account. The coefficient estimates are reported in the first three columns, and the marginal effects are reported in the last three columns. Due to the multicollinearity problem described above, we only presents results of where we exclude the proportion of liquid assets variable. The only change between the multinomial regression in Table 6 and the logistic regression results shown in Table 5 is our inclusion of a time-varying dummy variable for each state (labeled as *MHC State*) in an effort to capture the state-specific regulatory environment regarding the decision to demutualize. The *MHC State* dummy takes a value of zero if the state does not allow any type of conversion, and it takes a value of one after the state adopts an MHC conversion act based on the effective dates from Appendix A.

Our first observation is that the evidence supporting the access-to-capital hypothesis is stronger for firms that chose to fully demutualize than it is for the MHC conversions. Fully demutualizing firms are significantly larger in size. They also have bigger separate accounts business, a lower level of surplus, a higher proportion of group insurance premiums, a higher concentration across business lines, a lower percentage of premiums from rural states, and a higher amount of reinsurance compared to the nonconverting mutuals; all of which highlights the need for additional capital. As for the mutuals that chose MHC conversions, fewer of the access-to-capital variables are significant including the level of surplus variable, which is not statistically significant for MHC conversions. No support is found for the wealth expropriation

Table 6
Multinomial Logistic Regressions

	Coefficient Estimates				*Marginal Effects*		
	MHC vs. Non converting	Full vs. Non converting	MHC vs. Full	LR test	MHC Conversions	Full Conversions	Non Converting
Size (Log of TA)	0.088 **	0.304 ***	-0.220 ***	†††	0.004 *	0.009 ***	-0.012 ***
	(1.99)	*(5.10)*	*(-3.42)*		*(1.80)*	*(4.68)*	*(-4.35)*
Separate Accounts / TA	2.246 ***	3.205 ***	-1.000 **	†††	0.099 ***	0.093 ***	-0.192 ***
	(5.02)	*(7.81)*	*(-2.09)*		*(4.38)*	*(5.57)*	*(-6.53)*
Surplus / TA	-0.256	-2.623 **	2.816 **	†††	-0.007	-0.091 **	0.098 **
	(-0.42)	*(-2.10)*	*(2.19)*		*(-0.26)*	*(-2.55)*	*(2.05)*
Net Cash from Oper / TA	0.777	-0.427	1.142		0.036	-0.012	-0.024
	(0.59)	*(-0.39)*	*(0.71)*		*(0.60)*	*(-0.37)*	*(-0.34)*
% Group Ins Premiums	0.034	0.891 ***	-0.883 ***	†††	0.000	0.027 ***	-0.027 *
	(0.13)	*(3.27)*	*(-2.73)*		*(0.02)*	*(3.31)*	*(-1.73)*
Premium Growth	0.295	0.095	0.230		0.014	0.002	-0.015
	(1.10)	*(0.35)*	*(0.70)*		*(1.09)*	*(0.19)*	*(-0.96)*
Line of Business Herfindahl	1.007 **	2.399 ***	-1.588 ***	†††	0.043 **	0.075 ***	-0.117 ***
	(2.52)	*(5.79)*	*(-3.13)*		*(2.33)*	*(5.27)*	*(-4.87)*
% Premiums in Rural States	-2.863 ***	-1.703 **	-1.170	†††	-0.129 ***	-0.046 **	0.175 ***
	(-5.55)	*(-2.16)*	*(-1.23)*		*(-5.18)*	*(-2.07)*	*(5.57)*
Reinsurance / NPW	1.753 ***	3.460 ***	-1.776 ***	†††	0.076 ***	0.102 ***	-0.178 ***
	(4.56)	*(10.17)*	*(-4.20)*		*(4.18)*	*(7.23)*	*(-7.31)*
Average Equity Base	6.598 ***	1.601	4.463 **	†††	0.301 ***	0.054	-0.354 ***
	(5.45)	*(0.69)*	*(2.01)*		*(5.45)*	*(0.77)*	*(-3.65)*
MHC State Dummy	2.846 ***	1.245 ***	1.460 ***	†††	0.250 ***	0.039 ***	-0.289 ***
	(15.68)	*(6.42)*	*(6.36)*		*(12.82)*	*(4.32)*	*(-13.87)*
Probability at Mean Vector					0.048	0.031	0.921
Observations	2,332						
p-value for χ-square	<0.01						
Pseudo R-square	0.31						

Source: NAIC annual statements data.

Notes: The dependent variable takes the value of zero while the insurer remains a mutual (label: Nonconverting) and one for all years after the insurer converts via MHC conversion (label: MHC Conversions) or two for all years after the insurer fully demutualizes (label: Full Conversions). Size is natural log of total assets. Dollar values are inflation adjusted using the Consumer Price Index. Separate accounts, surplus, and net cash from operations are scaled by total assets. Percentage of group premiums equals the sum of the group life, group annuity, and group accident and health line premiums as a percentage of total premiums. In calculating the proportion of premiums from rural states, we classified states urban and rural. Reinsurance ceded to nonaffiliates is given as percentage of total premiums. Equity base adjustment is approximated as nonadmitted financial assets, asset valuation reserves, interest maintenance reserves, plus 50 percent of the provision for policyholder dividends payable next year, scaled by total assets (for years prior to 1992, securities valuation reserves was used instead of asset valuation reserves and interest maintenance reserves). MHC state dummy takes value of zero for a state that does not allow MHC conversions, and one after a state passes MHC act. t-statistics (in parenthesis) are based on heteroskedasticity-robust standard errors. ***, **, * and †††, ††, † represents statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

hypothesis where higher levels of net cash from operations were predicted for converting mutuals (especially for MHC conversions).

In addition, it is interesting to note that the coefficient on the average equity base is positive and significant only for the MHC conversions and not for full demutualizations. Combined with the fact that the largest estimated marginal effect for MHC conversions is on the equity base variable, this suggests that the tax savings is more important for these mutuals relative to insurers that fully converted to the stock form. These differences highlight the importance of taking different forms of demutualization into account. Finally, we note that the state-specific MHC acts have a significant impact on the likelihood of demutualizations—perhaps not surprisingly especially for MHC conversions.

In the fourth column in Table 6, we report the results of likelihood-ratio tests on the joint significance of all the variables in the model. For example, the null hypothesis for the variable firm size is that all of the coefficients associated with firm size are simultaneously equal to zero (i.e., the variable firm size has no effect on the choice between nonconverting, converting via MHC form, and converting via full demutualization). We repeat the likelihood-ratio test for all the independent variables. Results indicate that the effects of all the independent variables on the choice between nonconverting, converting via MHC form, or converting via full demutualization are significant at the .01 level with the exceptions of net cash from operations and premium growth variables.

The estimated marginal effects reported in the last three columns allow us to directly compare the magnitude of the relationship between the exogenous variables in the model and the likelihood that a firm chose to demutualize using a particular method. In terms of magnitudes, the average equity base was the most important determinant for MHC conversions (35 percent),

followed by the MHC State dummy (26 percent). As for full demutualizations, variables supporting access-to-capital hypothesis (i.e., separate accounts, surplus, line of business concentration, and reinsurance) were the most important determinants.

Lastly, we conduct a Wald test of the null hypothesis that the two categories, full demutualization and MHC conversion, can be combined and treated as a single category. Failure to reject the null hypothesis would suggest it is reasonable to investigate the determinants of life insurer demutualization using a binary logit regression. The result (χ^2 = 109.89, *df* = 11, *p*< 0.01) indicates that we can reject the hypothesis that outcomes MHC and Full conversion are indistinguishable and thus confirm the importance of taking different forms of demutualization into account in analyzing the determinants of life insurer demutualizations.

5.3. Time Series Results

Table 7 presents the results of fixed effects regressions of the risk variables on indicator variables marking the position of the observation year relative to the conversion year for the 76 demutualizing life insurers that demutualized between 1990 and 2000. Panel A reports the results for all converting mutuals; Panel B reports the results where we ran the regressions using the data on full demutualizations only, and Panel C reports the results on MHC conversions.

The results shown in Panel A of Table 7 suggest that all converting insurers appear to increase their total business risk slightly following conversion, which is consistent with our expectations (see Figure 1). The estimated coefficients on the year from conversion indicators in the interest rate risk regressions trend significantly downward, and all but two of the coefficients on the time indicator variables are significant at the 1 percent level. Adjusting the interest rate risk measure for credit risk does not affect the results. The time trends on both core risk variables appear weak suggesting no significant trend.

Table 7
Risk Regressions on Event-time Variables

	Volatility of Earnings	Interest Rate Risk	Interest Rate Risk Adj.	Corerisk1	Corerisk2
			Panel A: All conversions		
t = -3	0.0024	-0.3419	-0.5006	-0.0011	-0.0008
t = -2	0.003	-0.6669	-0.6681*	0.0016	0.0029
t = -1	0.0063*	-1.2854***	-1.3985***	-0.0042	-0.0024
t = 0	0.0127***	-1.6965***	-1.7984***	0.0007	0.0024
t = 1	0.015***	-1.5976***	-1.6417***	-0.0017	-0.0003
t = 2	0.0144***	-1.8677***	-1.9743***	-0.0004	0.0009
t = 3	0.0144***	-2.1295***	-2.1775***	-0.0096	-0.0091
t ≥ 4	0.0185***	-2.5322***	-2.7005***	-0.0324*	-0.0319*
Size (Log of TA)	-0.0128***	0.5788***	0.9324***	0.0051*	0.0058**
Obs.	1,018	1,323	981	1,321	1,321
R-squared	0.184	0.092	0.165	0.284	0.275
			Panel B: Full demutualizations		
t = -3	0.0040	-0.1444	-0.4551	0.0099	0.0088
t = -2	0.0103**	-0.2574	0.0321	0.0166	0.0175
t = -1	0.0177***	-0.2560	-0.2499	-0.0123	-0.0102
t = 0	0.0271***	-0.8926	-0.8590	0.0064	0.0081
t = 1	0.0319***	-1.1951	-0.7724	0.0019	0.0025
t = 2	0.0339***	-1.2818	-1.0840	0.0233	0.0239
t = 3	0.0299***	-1.7239	-1.3775	0.0331	0.0319
t ≥ 4	0.0432***	-2.0089*	-1.7973*	-0.0089	-0.0094
Size (Log of TA)	-0.0083***	0.2893	0.4103*	0.0028	0.0039
Obs.	351	458	329	456	456
R-squared	0.196	0.051	0.113	0.174	0.175

	Volatility of Earnings	Interest Rate Risk	Interest Rate Risk Adj.	Corerisk1	Corerisk2
			Panel C: MHC conversions		
t = -3	-0.0006	-0.4608	-0.4263	-0.0124	-0.0127
t = -2	-0.0033	-0.9988 *	-0.9044 *	-0.0130	-0.0134
t = -1	-0.0045	-2.0483 ***	-1.9647 ***	-0.0174	-0.0181
t = 0	-0.0029	-2.3338 ***	-2.2723 ***	-0.0225	-0.0233
t = 1	-0.0054	-2.2703 **	-2.2508 **	-0.0342 *	-0.0351 *
t = 2	-0.0108	-2.7660 ***	-2.6968 **	-0.0494 **	-0.0504 **
t = 3	-0.0122	-2.9192 **	-2.8248 **	-0.0755 ***	-0.0767 ***
t ≥ 4	-0.0138	-3.2850 ***	-3.2085 **	-0.0996 ***	-0.1010 ***
Size (Log of TA)	-0.0138 ***	0.7393 ***	1.2066 ***	0.0043	0.0048 *
Obs.	667	865	652	865	865
R-squared	0.233	0.142	0.218	0.412	0.403

Source: NAIC annual statements data. Datastream was used to construct yield spreads on AAA through CCD grade corporate bonds. The mapping between S&P's rating on corporate bonds and NAIC bond classes were obtained from the Securities Valuation Office at the NAIC.

Notes: Time (*t*+*k*)=1 if year *t* is *k* years from the conversion year; otherwise, Time (*t*+*k*)=0. An additional indicator Time (*t*+4) is equal to one if time *t* is four or more year after conversion. Dependent variables for the fixed effects regressions are defined as follows. Volatility of earnings is the standard deviation of earnings before dividends and taxes over the previous five years scaled by the average earnings before dividends and taxes over the previous five years. The proxy for duration gap, Interest Rate Risk, is the difference between weighted average maturity of insurer assets and liabilities as in Cummins, Phillips, and Smith (2001). Interest Rate Risk Adj. is the Interest Rate Risk variable adjusted for credit risk following Babbel, Merrill, and Panning (1997). Corerisk1 is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4-6) publicly traded bonds, and common and preferred stocks. Corerisk2 is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4-6) publicly traded bonds, common and preferred stocks, and mortgage loans that are overdue, in process of foreclosure, and foreclosed. Year dummies are included in the regressions, but not reported. ***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels.

The time trends for fully demutualizing insurers are shown in Panel B. The results suggest that fully demutualizing insurers increased the total risk of the firm's cash flows risk following conversion consistent with our hypotheses. The estimated coefficients on the time indicators in the interest rate regressions are generally decreasing but are not statistically different than zero. There is no obvious trend on the time indicators in the core risk regressions.

As for Panel C, results reported here suggest that the mutuals that chose MHC conversions decreased their interest rate risk and core business risk significantly over time.

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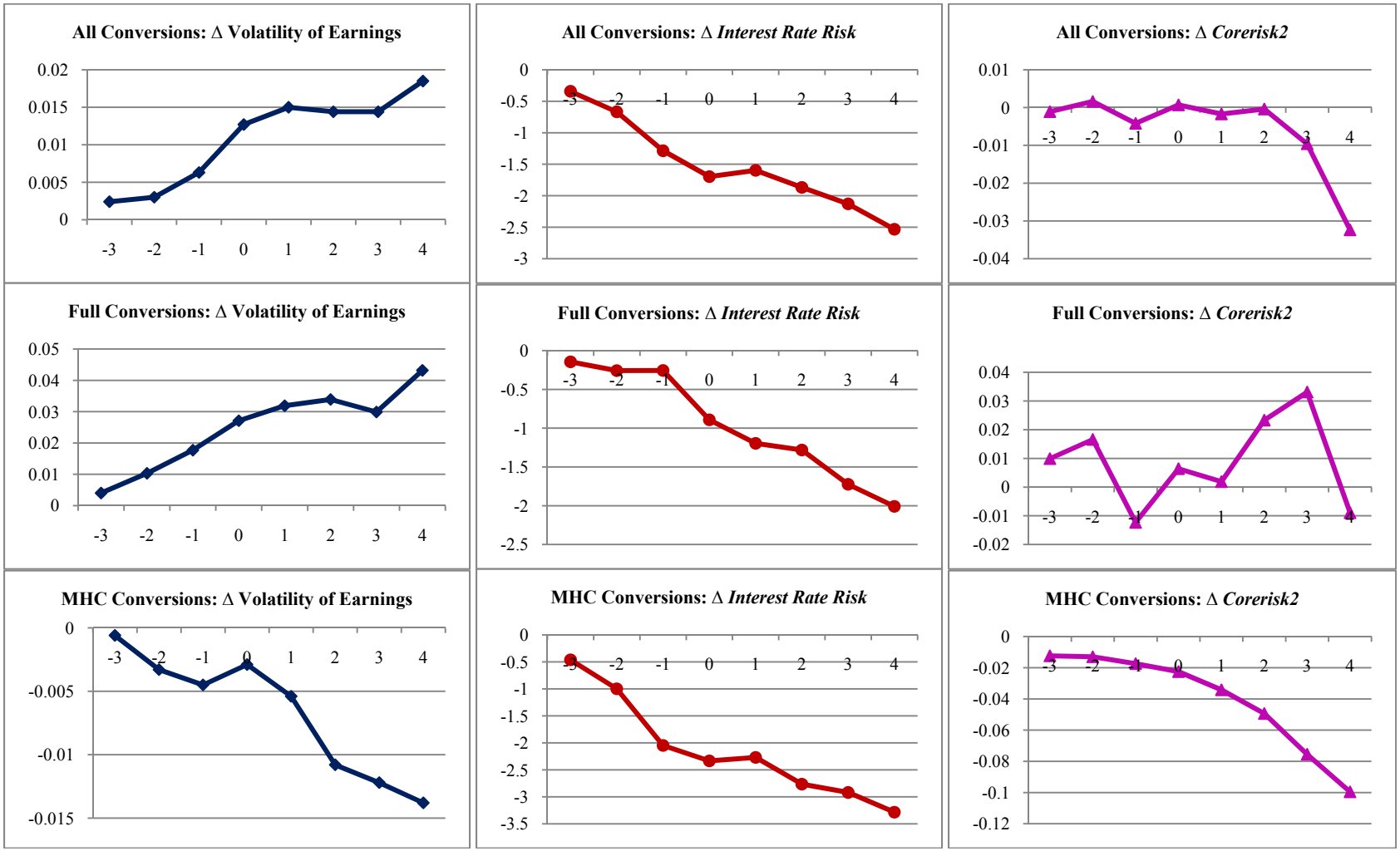
Figure 1. Risk Changes Around Life Insurer Demutualizations



The behavior of the average total risk, interest rate risk, and core business risk of converting mutuals around demutualization is presented here by event time measured in years relative to the conversion year. *Volatility of Earnings* is the standard deviation of earnings before dividends and taxes over the previous five years scaled by the average earnings before dividends and taxes over the five years. *Interest Rate Risk* is the difference between weighted average maturity of insurer assets and liabilities. *Corerisk2* is measured by the percentage of total assets in privately placed bonds, lower grade publicly traded bonds, common and preferred stocks, and mortgage loans that are overdue, in process of foreclosure, and foreclosed. To ensure that each of the converting mutuals would have at least four years of pre- and post-conversion data, 76 conversions that occurred between 1990 and 2000 were included in the two-way fixed effects regressions specified in regression equation (1).

The decline in interest rate risk over time is consistent with our prior hypothesis, while the decline in core risk is inconsistent with increased incentives for profitability. Like the multinomial regression results, there is a striking difference in the regression results across full versus MHC conversions with the fully demutualizing insurers appearing to have the strongest profitability incentives post conversion. Overall, the difference in results on the time-series trends for the total risk and core business risk variables for full and MHC conversions confirm the importance of taking the two types of demutualization into account when analyzing the incentive effects of the life insurer demutualizations

5.4. Results from the Tests for Coordinated Risk Management

Table 8 presents the results from the tests for coordination between interest rate risk and core business risk for converting and nonconverting mutuals. We run the regressions specified in equations (2) through (5) including both firm and year fixed effects using the interest rate risk variable as a dependent variable and the core business risk variable and its interactions with pre- and post-conversion dummy variables as the independent variables.[28] All models reported in Table 8 are shown adjusting the standard errors for heteroskedasticity using the White adjustment.

Panel A reports the estimated coefficients from the regressions while Panel B reports test statistics on various restriction tests (described later). In column 1, the estimated coefficient on the core risk variable is negative suggesting that all insurers in the data set offset the amount of interest rate risk they undertook with the amount they invested in illiquid asset classes. In column 2, we report negative and significant coefficients on the interactions between core risk variables

[28] Since the results from the regressions with adjusted interest rate risk as a dependent variable are qualitatively similar, we only report the results from the regressions with unadjusted interest rate risk as a dependent variable.

Table 8
Coordination between Interest Rate Risk and Core-Business Risk

Panel A:	(1)		(2)		(3)		(4)	
Corerisk b_1	-4.726	***	-2.559	**	-2.473	**	-2.420	**
Corerisk * Pre-Conv Dummy b_2			-4.287	**				
Corerisk * Post-Conv Dummy b_3			-4.050	**				
Corerisk * MHC Conv Dummy b_4					-1.570			
Corerisk * Full Conv Dummy b_5					-7.765	***		
Corerisk * Pre-MHC Dummy b_6							-0.394	
Corerisk * Pre-Full Dummy b_7							-9.367	***
Corerisk * Post-MHC Dummy b_8							-2.286	
Corerisk * Post-Full Dummy b_9							-4.925	*
Size	0.501	***	0.526	***	0.502	***	0.519	***
Obs.	2,671		2,671		2,671		2,671	
R-squared	0.114		0.116		0.119		0.122	

Panel B:	(1)		(2)		(3)		(4)	
Pre-Conv (H_0: $b_1 + b_2 = 0$)			-6.846	***				
Post-Conv (H_0: $b_1 + b_3 = 0$)			-6.609	***				
Pre = Post (H: $b_2 - b_3 = 0$)			-0.237					
MHC Conv (H_0: $b_1 + b_4 = 0$)					-4.043	***		
Full Conv (H_0: $b_1 + b_5 = 0$)					-10.238	***		
MHC = Full (H_0: $b_4 - b_5 = 0$)					6.195	**		
Pre-MHC (H_0: $b_1 + b_6 = 0$)							-2.814	*
Pre-Full (H_0: $b_1 + b_7 = 0$)							-11.787	***
Post-MHC (H_0: $b_1 + b_8 = 0$)							-4.706	***
Post-Full (H_0: $b_1 + b_9 = 0$)							-7.345	***
Pre-Full = Pre-MHC (H_0: $b_7 - b_6 = 0$)							-8.973	***
Post-Full = Post-MHC (H_0: $b_9 - b_8 = 0$)							-2.639	
Pre-MHC = Post-MHC (H_0: $b_6 - b_8 = 0$)							1.892	
Pre-Full = Post-Full (H_0: $b_7 - b_9 = 0$)							-4.442	***

Notes: The dependent variable, Interest Rate Risk, is the difference between the weighted average maturity of insurer assets and liabilities, as in Cummins, Phillips, and Smith (2001). Panel A reports the results for regression equations (2) and (3), and Panel B reports the results from restriction tests. As for the dependent variables, Pre-Conv dummy takes the value of one preconversion and zero otherwise. Post-Conv dummy takes the value of one post conversion and zero otherwise. Pre-MHC and Pre-Full dummies are similar to the Pre-Conv dummy, but the Pre-MHC dummy takes the value of one preconversion only in cases of MHC conversions and the Pre-Full dummy takes value of one pre-conversion only in cases of full demutualizations. Post-MHC and Post-Full dummies are similar to the Post-Conv dummy, but Post-MHC dummy takes value of one post-conversion only in cases of MHC conversions and the Post-Full dummy takes value of one post-conversion only in cases of full demutualizations. Corerisk is measured by the percentage of total assets in privately placed bonds, lower grade (NAIC class 4–6) publicly traded bonds, common and preferred stocks, and mortgage loans that are overdue, in process of foreclosure, and foreclosed. Year dummies are included in the regressions, but not reported. ***, **, * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels.

and *PreConv* and *PostConv* dummies (β_2 and β_3), which indicate the incentive for converting insurers to coordinate between core risk and interest rate risk was stronger both pre- and post-conversion compared to that of nonconverting mutuals. These results support our hypothesis that in order to achieve an increase in total risk converting insurers coordinate their homogenous risk (interest rate risk) and core business risk. Consistent with our prior findings, we do not find a statistically different difference between the preconversion indicator variable and the post-conversion indicator (see column 2 in Panel B).

We take different forms of demutualization into account in the third model (reported in column 3) by interacting the core risk variable with the MHC and Full dummies variables, respectively. Consistent with our prior hypotheses, both estimated coefficients are negative, although only the coefficient for the fully demutualizing insurers is statistically significant. These results are consistent with our prior hypotheses.

The results of our most fully specified model where we utilize the *PreMHC, PreFull, PostMHC,* and *PostFull* dummies are shown in column 4 of Table 8. We find a negative and significant coefficient on the interaction between core risk and the *PreFull* dummy (β_7), and an insignificant coefficient on the interaction between core risk and *PreMHC* dummy (β_6). These results suggest that preconversion fully demutualizing firms coordinate their core risk with their interest rate risk more aggressively than nonconverting insurers, while firms that convert to MHC form do not. Similar observation can be made for the post-conversion coordination, but the statistical significance is weaker.

In Panel B, the first two restriction tests confirm that all converting insurers coordinate their interest rate risk with core business risk in both pre- and post-conversion periods (i.e., we reject the hypotheses $\beta_1 + \beta_2 = 0$ and $\beta_1 + \beta_3 = 0$). However, when we take different forms of demutualization

into account, we find that fully demutualizing insurers coordinate their interest rate risk and core business risk significantly better than mutuals that choose MHC conversions (we reject the hypothesis that $\beta_4 - \beta_5=0$). Moreover, restriction tests concerning preconversion and post-conversion coordinations by demutualization type reveal that fully demutualizing firms start coordinating their interest rate risk and core business risk in the years prior to their conversion and that this coordination is stronger than that of the mutuals who convert via MHC form (i.e., we reject the hypothesis that $\beta_7 - \beta_6 = 0$).

Overall, the results from multinomial logistic regressions together with our coordinated risk management tests suggest that converting mutuals exhibit a greater need for access to capital, sought to take advantage of the tax savings associated with converting, and they more aggressively coordinate their interest rate risk and core business risk relative to nonconverting mutuals. Once we consider the types of demutualization commonly observed in the life insurance industry, the tax savings hypothesis appears to be the dominate rationale to explain the MHC conversions. However, the access-to-capital hypothesis dominates for firms that chose full demutualization. This latter conclusion is reinforced given the stronger incentives to coordinate between homogenous and core business risk that we report for firms that fully demutualize.

6. SUMMARY AND CONCLUSIONS

In this paper, we investigate differential incentives mutual life insurers had to convert to the stock organization form during the 1990s between the two dominant forms of demutualization—full demutualization versus MHC company conversion. We do so in two ways. First, we improve on the prior literature by relaxing the assumption that a mutual life insurer could transition to the stock form using only one form of demutualization and instead use multinomial logistic regression techniques that allow us to simultaneously investigate the incentives for the insurer to fully

demutualize versus convert via an MHC. Second, we conduct a series of tests to investigate the risk management decisions of the converting insurers relative to the insurers that chose to remain organized as mutuals. Specifically, we test the hypotheses that converting insurers had incentives to increase the amount of total risk they took on their balance sheets and would do so by increasing their exposure to risks for which they have a comparative advantage (core business risks) and reducing their exposure to risks that are likely to provide zero economic profits (homogenous risks).

The results of the multinomial logistic regression largely support and confirm the prior literature (e.g., Viswanathan and Cummins, 2003) that the access-to-capital hypothesis is the dominant rationale to explain life insurer demutualizations. However, our analysis suggests that, although the access-to-capital hypothesis is the dominant theory for explaining the incentives for firms that fully demutualized, it is not a completely satisfactory explanation for understanding the motivations of firms that demutualized via MHC conversions. In this paper, we find that the industry's so called surplus tax was a significant motivation for MHC conversions. More specifically, differences in the tax treatments of insurance companies and the relative dominance of mutuals over stocks led Congress to structure the life insurance company tax rules in 1984 to increase the tax burden of mutual companies. The MHC statutes provided a mechanism for mutual firms to reduce the tax burden without needing to fundamentally alter the organizational structure of the firm and fully demutualize.

We also investigate the risk management practices for all converting firms and explore differences in these practices across nonconverting mutuals as opposed to firms that demutualize via the MHC conversion method versus those that chose to fully demutualize. Consistent with the existing evidence on S&L conversions, we observe that demutualizing life insurers aggressively reduce their exposure to interest rate risk and increase their core business risk relative to

nonconverting life insurers. We find stronger support for the coordination of risk hypothesis for firms that fully demutualize than for firms that converted to the MHC form. The results are consistent with fully demutualizing insurers taking advantage of their greater abilities and incentives to take risk given their newfound access to external capital markets.

Overall, our results suggest that mutual life insurers converted to the stock form in an attempt to acquire greater access to external capital or to reduce the tax burden that was incurred by the 1984 Act by Congress. Thus, from the perspective of social welfare, the mutual insurers that converted to the stock organizational form appear to have done so in ways that are largely consistent with hypotheses related to firm value maximization.

Appendix A: Conversion Statutes by State

This appendix reports conversion statutes by state based on NAIC Compendium of State Laws on Insurance Topics (May 2006). Year of the effective date for the Mutual Holding Company Act is obtained from state legislature websites and given in parenthesis.

Full demutualization and MHC Conversion allowed:		
Arkansas (2001)	Maine (2000)	Ohio (1997)
California (1998)	Maryland (2000)	Oregon (1997)
District of Columbia (1996)	Massachusetts (1998)	Pennsylvania (1996)
Florida (1997)	Michigan (2000)	Rhode Island (1996)
Idaho (1998)	Minnesota (1996)	South Carolina (1998)
Illinois (1999)	Mississippi (1998)	Texas (2003)
Indiana (1997)	Missouri (1996)	Vermont (1996)
Iowa (1995)	Nebraska (1997)	Virginia (2001)
Kansas (1997)	Nevada (2001)	Wisconsin (1998)
Kentucky (1998)	New Hampshire (2000)	
Louisiana (1997)	North Dakota (1997)	
Only full demutualization allowed:		
Alabama	New Jersey	Tennessee
Arizona	New Mexico	Utah
Colorado	New York	Washington
Delaware	North Carolina	West Virginia
Georgia	Oklahoma	Wyoming
Montana	South Dakota	
No conversion statutes:		
Connecticut		
Conversion prohibited:		
Alaska	Hawaii	

Appendix B: Life-Health Insurer Demutualizations from 1986 to 2004

No	Year	AMB#	Type	State of Domicile	Lead Company	Company Name at Conversion	Group Name at Conversion
1	1986	06256	Full	ME	Yes	Union Mutual Life Ins Co	Union Mutual Life Group
2	1986	68102	Full	MI	Yes	IBA Mutual Ins Co	
3	1988	06499	Full	IA	Yes	Grinnell Mutual Life Ins Co	Grinnell Mutual
4	1989	06846	Full	MN	Yes	Northwestern National Life Ins Co	Northwestern National
5	1989	06676	Full	MI	Yes	Maccabees Mutual Life Ins Co.	Royal Insurance
6	1989	07014	Full	SD	Yes	Rushmore Mutual Life Ins Co	
7	1991	06216	Full	IL	Yes	Chicago Metropolitan Mutual Assur Co	
8	1992	06341	Full	NY	Yes	Equitable Life Asr Soc of the US	Equitable Group
9	1992	09516	Full	CO	No	Equitable of Colorado Inc	Equitable Group
10	1992	08398	Full	NY	No	Equitable Variable Life Ins Co	Equitable Group
11	1994	06710	Full	OH	Yes	Midland Mutual Life Insurance Co	Midland Mutual Group
12	1995	07086	Full	MA	Yes	State Mutual Life Assur Co of America	Allmerica Financial Group
13	1995	08491	Full	DE	No	SMA Life Assurance Co	Allmerica Financial Group
14	1995	09478	Full	CT	Yes	Connecticut American Life Ins Co	Blue Cross & Blue Shield of CT
15	1995	06501	Full	NE	Yes	Guarantee Mutual Life Co	Guarantee Mutual Group
16	1995	06726	Full	NE	No	Guarantee Protective Life Co	Guarantee Mutual Group
17	1996	06199	MHC	IA	Yes	AmerUs Life Insurance Company	AmerUs Life Group
18	1996	09113	MHC	IA	No	American Vanguard Life Ins Co	AmerUs Life Group
19	1996	68016	MHC	IA	No	CLA Assurance Company	AmerUs Life Group
20	1996	06219	Full	NH	Yes	Christian Mutual Life Ins Co	
21	1997	06002	MHC	DC	Yes	Acacia Mutual Life Ins Co	Acacia Group
22	1997	08607	MHC	VA	No	Acacia National Life Ins Co	Acacia Group
23	1997	06439	MHC	MO	Yes	General American Life Ins Co	General American Life Grp
24	1997	08402	MHC	CA	No	COVA Financial Life Ins. Co.	General American Life Grp
25	1997	09075	MHC	MO	No	COVA Financial Services Life Ins. Co	General American Life Grp
26	1997	06119	MHC	NY	No	First Cova Life Ins. Co	General American Life Grp
27	1997	08653	MHC	TX	No	General Life Ins Co	General American Life Grp
28	1997	60066	MHC	IL	No	General Life Ins Co of America	General American Life Grp
29	1997	09079	MHC	MO	No	Paragon Life Ins Co	General American Life Grp
30	1997	09080	MHC	MO	No	RGA Reinsurance Co	General American Life Grp
31	1997	09410	MHC	NY	No	Security Equity Life Ins Co	General American Life Grp
32	1997	06885	MHC	CA	Yes	Pacific Mutual Life Ins Co	Pacific Mutual Life Group
33	1997	09156	MHC	AZ	No	PM Group Life Ins Co	Pacific Mutual Life Group
34	1997	68315	Full	VA	Yes	Trigon Insurance Company	
35	1998	06152	MHC	NE	Yes	Ameritas Life Insurance Corp.	Ameritas Group
36	1998	09364	MHC	NE	No	Ameritas Variable Life Ins Co	Ameritas Group
37	1998	68545	MHC	NY	No	First Ameritas Life of NY	Ameritas Group
38	1998	09167	MHC	NE	No	Pathmark Assurance Co.	Ameritas Group

No	Year	AMB#	Type	State of Domicile	Lead Company	Company Name at Conversion	Group Name at Conversion
39	1998	06724	MHC	MN	Yes	Minnesota Mutual Life Insurance Co	Minnesota Mutual Group
40	1998	09522	MHC	AZ	No	MIMLIC Life Ins Co	Minnesota Mutual Group
41	1998	09064	MHC	MN	No	Ministers Life Ins Co	Minnesota Mutual Group
42	1998	68158	MHC	NY	No	Northstar Life Ins Co	Minnesota Mutual Group
43	1998	06751	Full	NY	Yes	Mutual Life Ins Co of NY	MONY Group
44	1998	08091	Full	AZ	No	MONY Life Ins Co of America	MONY Group
45	1998	08492	Full	OH	No	U.S. Financial Life Insurance Co.	
46	1998	06852	MHC	OH	Yes	Ohio National Life Insurance Co	Ohio National Life Group
47	1998	08930	MHC	OH	No	Ohio National Life Assurance Corp	Ohio National Life Group
48	1998	06150	MHC	IA	Yes	Principal Mutual Life Insurance Co	
49	1998	07025	MHC	KS	Yes	Security Benefit Life Insurance Co	Security Benefit Group
50	1998	60104	MHC	NY	No	First Security Benefit Life Ins & Ann Co	Security Benefit Group
51	1999	06096	MHC	IA	Yes	American Republic Insurance Company	
52	1999	06790	MHC	VT	Yes	National Life Ins Co	National Life Group
53	1999	08406	MHC	TX	No	Insurance Investors Life Ins Co	National Life Group
54	1999	06647	MHC	TX	No	Life Insurance Co of Southwest	National Life Group
55	1999	06806	MHC	IA	Yes	National Travelers Life Company	National Travelers Group
56	1999	09374	MHC	IA	No	American Travelers Assurance Co	National Travelers Group
57	1999	07069	Full	OR	Yes	Standard Insurance Company	
58	1999	07257	MHC	NE	Yes	Woodmen Accident and Life Co	Woodmen Accident Group
59	1999	07374	MHC	NE	No	Assurity Life Ins Co	Woodmen Accident Group
60	1999	06756	MHC	IL	Yes	Mutual Trust Life Insurance Company	
61	1999	07033	MHC	NE	Yes	Security Mutual Life Ins Co	
62	2000	06109	MHC	IN	Yes	American United Life Insurance Co	
63	2000	06143	MHC	MD	Yes	Baltimore Life Ins Co	Baltimore Life Group
64	2000	09056	MHC	MD	No	Life of Maryland, Inc.	Baltimore Life Group
65	2000	06601	Full	MA	Yes	John Hancock Life Insurance Company	John Hancock Fin'l Services Grp
66	2000	08958	Full	MA	No	John Hancock Variable Life Insurance Co	John Hancock Fin'l Services Grp
67	2000	09074	Full	DE	No	Investors Partner Life Insurance Co	John Hancock Fin'l Services Grp
68	2000	06663	MHC	NE	Yes	Lincoln Mutual Life Ins Co	
69	2000	06704	Full	NY	Yes	Metropolitan Life Insurance Company	Metropolitan Life & Affiliated Cos
70	2000	06125	Full	DE	No	Security First Life Insurance Co	Metropolitan Life & Affiliated Cos
71	2000	06670	Full	LA	No	Metlife Security Ins Co of Louisiana	Metropolitan Life & Affiliated Cos
72	2000	08689	Full	DE	No	Metropolitan Ins & Annuity Company	Metropolitan Life & Affiliated Cos
73	2000	09165	Full	DE	No	Metropolitan Tower Life Ins Co	Metropolitan Life & Affiliated Cos
74	2000	09043	Full	MA	No	New England Life Ins Co	Metropolitan Life & Affiliated Cos
75	2000	09042	Full	DE	No	New England Pension & Annuity Co	Metropolitan Life & Affiliated Cos
76	2000	07118	Full	TX	No	Texas Life Ins Co	Metropolitan Life & Affiliated Cos
77	2000	06165	MHC	IL	Yes	Trustmark Insurance Company	Trustmark Group

No	Year	AMB#	Type	State of Domicile	Lead Company	Company Name at Conversion	Group Name at Conversion
78	2000	06335	MHC	IL	No	Trustmark Life Insurance Co	Trustmark Group
79	2000	06617	MHC	IN	Yes	Lafayette Life Insurance Co	
80	2000	07243	MHC	OH	Yes	Western and Southern Life Insurance Co	Western & Southern Group
81	2000	06244	MHC	OH	No	Columbus Life Insurance Company	Western & Southern Group
82	2000	09071	MHC	OH	No	Western-Southern Life Assurance Co	Western & Southern Group
83	2001	06552	Full	IN	Yes	Indianapolis Life Insurance Company	AmerUs Group
84	2001	06467	Full	NY	No	Bankers Life Insurance Company of NY	AmerUs Group
85	2001	07407	Full	KS	No	IL Annuity and Insurance Company	AmerUs Group
86	2001	06126	Full	IN	Yes*	Anthem Life Insurance Company	Anthem Group
87	2001	08665	Full	TX	No	Anthem Alliance Health Ins Co	Anthem Group
88	2001	68598	Full	NY	No	Anthem Health & Life Ins of NY	Anthem Group
89	2001	06922	Full	NY	Yes	Phoenix Home Life Mutual Insurance Co	Phoenix Home Group
90	2001	09332	Full	CT	No	PHL Variable Insurance Company	Phoenix Home Group
91	2001	09072	Full	CT	No	Phoenix Life and Annuity Company	Phoenix Home Group
92	2001	68237	Full	NY	No	Phoenix Life and Reassurance Co of NY	Phoenix Home Group
93	2001	07144	Full	OH	No	Phoenix National Insurance Company	Phoenix Home Group
94	2001	07142	Full	PA	No	AGL Life Assurance Company	Phoenix Home Group
95	2001	68152	Full	CT	No	American Phoenix Life and Reassur Co	Phoenix Home Group
96	2001	06974	Full	NJ	Yes	Prudential Insurance Co of America	Prudential of America Group
97	2001	09371	Full	NJ	No	Pruco Life Insurance Co of NJ	Prudential of America Group
98	2001	08240	Full	AZ	No	Pruco Life Insurance Company	Prudential of America Group
99	2001	06721	Full	MN	No	Prudential Select Life Ins Co of America	Prudential of America Group
100	2001	06472	MHC	ID	Yes	United Heritage Mutual Life Ins Co	
101	2002	06933	MHC	ND	Yes	Pioneer Mutual Life Ins Co	American United Life Group
102	2002	06686	Full	NY	Yes	Manhattan Life Insurance Company	Central United Group
103	2002	06971	Full	PA	Yes	Provident Mutual Life Insurance Co	Provident Mutual Life Group
104	2002	60048	Full	DE	No	Provident Mutual Int'l Life Ins Co	Provident Mutual Life Group
105	2002	07275	Full	DE	No	Providentmutual Life & Ann of America	Provident Mutual Life Group
106	2003	07262	MHC	NE	Yes	World Insurance Company	World Insurance Co
107	2003	08350	MHC	NE	No	Mid-South Insurance Company	World Insurance Co
108	2004	07082	MHC	IN	Yes	State Life Insurance Co	

Notes:

*Since there is no clear lead company, we chose Anthem Life Insurance Company as the lead company because it is domiciled in the same state as the Anthem Life Insurance Companies (Anthem Group).

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