The Wealth Effect of Demutualization: Evidence from the U.S. Property-Liability and Life Insurance Industries

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Abstract

This study examines the wealth effect of demutualization IPOs by investigating underpricing and post-conversion long-run stock performance. Our results suggest that there is more "money left on the table" for demutualized insurers than for non-demutualized insurers. We show that higher underpricing for demutualized firms can be explained by greater market demand, market sentiment, and the size of the offering. Further, contrary to previous research reporting an average underperformance of industrial IPOs, we show that demutualized IPOs outperform non-IPO firms with comparable size and book-to-market ratios and non-demutualized insurers. We present evidence that the outperformance in stock returns is mainly attributable to improvement in post-demutualization operating performance and demand at the time of the IPOs. The combined results of underpricing and long-term performance suggest that the wealth of policyholders who choose stock rather than cash or policy credits is not harmed by demutualization. Stockholders who purchase demutualized company shares either during or after the IPO have earned superior returns. Our findings are consistent with the efficiency improvement argument.

JEL *Classification*: G22; G30

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1. Introduction

Demutualization refers to the conversion of a mutual insurer to a stock company. It has become a very timely research topic given the conversions of several large life insurance companies (e.g., Metropolitan Life Insurance Company, John Hancock Financial Services Inc., and Prudential Financial Group) and recent developments in the MetLife policyholders' class action lawsuit.[1] A number of studies have examined demutualization in the U.S. property-liability and life insurance industries.[2] Mayers and Smith (1986) present evidence that mutualization (stock to mutual conversion) is efficiency-enhancing by examining a number of variables around the time of conversion. Jeng, Lai and McNamara (2004) use data envelopment analysis (DEA) to investigate whether demutualized insurers improve operating efficiency after conversion. They do not find evidence that efficiency improves after conversion.[3] Viswanatham and Cummins (2003) focus on the motivation for a mutual company to demutualize. They suggest that the demand for capital and the opportunity to control free cash flow problems are the reasons for demutualization. The focus of previous demutualization studies is mainly on the impact of demutualization on the insurers' efficiency and profitability. Less is known about the wealth effect of demutualization on policyholders who becomes stockholders through the demutualization process and other stakeholders as well.

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[1] In July 2005, a federal judge certified a class in a class action lawsuit against MetLife filed in 2001. The lawsuit alleges that MetLife breached its contracts with policyholders by converting to a public stock company and failing to provide adequate compensation to policyholders during the conversion. See "The MetLife Demutualization Breach of Contract and Securities Fraud", *Business Week*, September 17, 2005.

[2] These studies include McNamara and Rhee (1992); Cole, McNamara, and Wells (1995); Cagle, Lippert and Moore (1996); Carson, Forester, and McNamara (1998) and Viswanathan and Cummins (2003).

[3] Our study examines both property-liability and life insurance demutualizations, while the study by Jeng, Lai, and McNamara (2004) is based on life insurance companies only. We are aware of previous research indicating that efficiency improves after property-liability insurance company demutualization.

This paper examines the wealth effect of demutualization IPOs in the U.S. property-liability and life insurance industries. During the demutualization process, policyholders are given choices among cash, stock, or policy credits in exchange for their ownership rights. It should be noted that many eligible policyholders choose to become stockholders because eligible policyholders who are not required to receive cash or policy credits automatically receive stock unless they elect to receive cash.[4] A careful examination of the wealth effect is important because it directly examines the bottom line (wealth) of policyholders who become stockholders through the demutualization process.[5]

In our analysis, we focus on two questions concerning demutualization IPOs. Ritter and Welch (2002) show that IPO underpricing persists over time and that the average IPO underpricing in the U.S. between 1980 and 2001 was over 18 percent for industrial firms. Rock (1986), Tinic (1988), Hughes and Thakor (1992), and Welch (1992) suggest that the underpricing may be related to information asymmetry while Benveniste and Spindt (1989) and Hanley (1993) suggested that the underpricing is related to the market demand. Therefore our first research question is: Do insurance demutualization IPOs experience the same underpricing (i.e., a significant positive first-day returns) that is widely documented for IPOs of industrial firms; and, if so, why?

The literature, such as Ritter and Welch (2002), shows that investing in an equally-weighted portfolio of industrial firm IPOs over a three-year horizon results in a market-adjusted

[4] For example, when Metropolitan demutualized, eleven million policyholders became eligible to receive trust interests representing shares of common stock held in the Metropolitan Life Policyholder Trust, cash, or an adjustment to their policy values in the form of policy credits. We do not know the exact number of policyholders who opted to receive stock compensation. However, as documented in its prospectus, MetLife issued 493 million shares of common stocks for the benefit of its policyholders in addition to 202 million shares in its IPO.

[5] Demutualization does not necessarily require the firm going public. This study focuses on demutualization IPOs because the compensation to policyholders and stockholders of IPO demutualizations is publicly available. For a discussion of different approaches to demutualization, see Viswanatham and Cummins (2003).

return of -23.4 percent. Our second research question, thus, is: Do insurance demutualization firms underperform comparable firms in their post-IPO long run stock performance; and, if so, why?

Our results reveal that demutualization IPOs are underpriced and the magnitude of underpricing exceeds that of non-demutualization IPOs. Specifically, the average underpricing of demutualization IPOs is 11.8%, while that of non-demutualization IPOs is 6.4%. There is more "money left on the table" for demutualization IPOs. A main finding in our regression analysis is that insurance IPO underpricing is positively related to the revision of the final offer price from the mid-point of the offer range. According to Benveniste and Spindt (1989) and Hanley (1993), this revision reflects investors' demand for IPO shares. Thus we consider demutualization underpricing to be positively correlated with the market demand for the shares.

Further, the results of long-term performance of demutualized insurer IPOs strikingly contrasts the performance of industrial firm IPOs, as previous literature finds that IPOs in general underperform matching firms in the long-run. Demutualized insurers outperform the benchmark firms over the three-year post-conversion horizon, while non-demutualized insurers underperform their benchmarks.[6] We show that the outperformance of demutualized insurers is mainly related to improved operating performance and lower risk-taking.

Our paper improves upon previous insurance IPO studies such as Rahman and Yang (1999) and Yu et al. (2004) where the focus was purely on underpricing of IPOs. A recent independent study by Viswanathan (2005) also examines the pricing of demutualization IPOs. Like our paper, Viswanathan (2005) finds underpricing and that long-term performance of

[6] Demutualized insurers are mutual insurers that "go public" during the demutualization process and become stock insurers. Non-demutualized insurers are insurers that "go public," but are not mutual insurers before their IPOs. We use non-demutualized insurer IPOs as a benchmark in this analysis because they are in the same industry, thus the comparison is meaningful.

demutualization IPOs is superior to the benchmark.[7] She reports that market momentum in the weeks prior to issue appears to be the sole significant determinant of the underpricing of demutualization IPOs. Similarly, we find such underpricing is greater during "hot" market conditions. Unlike Viswanathan (2005), however, we present evidence that the underpricing of demutualization IPOs is also attributable to the demand for IPO shares and the magnitude of information asymmetry. Another major difference between our paper and Viswanathan (2005) is that her study does not examine the reason for positive long-term performance. We present evidence that the outperformance of demutualized insurers is mainly attributable to improved operating performance and lower risk taking. By jointly considering underpricing and long-term stock performance of insurance IPO firms, we are able to examine the wealth effect of demutualization. This analysis provides investors, policyholders, and regulators with a more complete picture of insurance IPOs. Nevertheless, a caveat is that our results do not apply to policyholders who do not become stockholders after demutualization.[8] This study is also silent with respect to managers being rewarded with an inappropriate amount of stock, stock options, or compensation packages.

The remainder of this paper is organized in four sections. Section 2 provides some institutional background on demutualization IPOs and presents our research questions. Section 3 describes the data and methodology. Section 4 presents the empirical results. Section 5 discusses the findings and offers some conclusions.

2. Background and Research Questions

[7] Viswanathan (2005) used raw returns while we use abnormal returns, characteristics-adjusted returns, and factor risk-adjusted returns for the comparison.

[8] For example, our study does not address the possibility that managers expropriate policyholder wealth by reducing the policyholder dividends to benefit stockholders after demutualizations.

In this section we first review the relevant IPO literature. Then we provide some background on demutualization IPOs and develop our research questions.

2. 1 Background on Demutualization IPOs

Viswanathan and Cummins (2003) provide a detailed description of the demutualization process, thus, it will not be repeated here. Rather, a brief description of a recent demutualization IPO is provided. On November 24, 1999, Metropolitan Life Insurance Company (MetLife) stated in its Policyholder Information Booklet that it intended to offer up to 864 million shares of common stock. The price range was set between $14 and $24 per share. On February 29, 2000, MetLife revised the terms of the IPO and indicated that it intended to offer 179 million shares of common stock at a price range between $13 and $15 per share. On April 7, 2000, MetLife made the conversion from a mutual life insurance company to a stock life insurance company. Over eleven million policyholders became eligible to receive shares of common stock, cash, or policy credits in exchange for their ownership rights. Eligible policyholders automatically received shares of stock unless they elected to receive cash. MetLife's IPO ultimately floated 202 million shares at $14.25 per share, raising $2.88 billion. The first day closing price was $15.56, a rate of return of 5.5 percent for the first trading day. In addition, MetLife stock closed at $27.74 on April 7, 2003, the three-year anniversary of its demutualization, which translates into an 85% 3-year post-IPO return before dividends.

2.2 Relevant IPO Studies and Research Questions

Pricing and long-run stock performance are the two important aspects of IPOs, and have attracted substantial attention from both researchers and practitioners. As a part of the "new issues puzzle," IPOs are, on average, underpriced. This finding means that IPO offer prices are, on average, below the first-day trading price. Ritter and Welch (2002) show that IPO

underpricing persists over time and that the average IPO underpricing in the U.S. between 1980 and 2001 was over 18 percent. Motivated by the literature, we are also interested whether demutualization IPOs are underpriced. If we find underpricing in demutualization IPOs, then policyholders are harmed in the absolute sense because there is too much money left on the table. In addition, we are interested in the relative magnitude of underpricing of demutualization IPOs and that of non-demutualization IPOs. We present two hypotheses about these issues:

Hypothesis 1A: IPOs for demutualized insurers are not underpriced.

Hypothesis 1B: The underpricing of IPOs for demutualized insurers is no different from the underpricing of IPOs for non-demutualized insurers.

The literature provides several plausible explanations for this persistent "market anomaly". Rock (1986), Tinic (1988), Hughes and Thakor (1992), and Welch (1992) suggest that IPOs could be purposefully underpriced by investment banks to avoid future legal liabilities. Under this view, the underpricing is unrelated to market demand and greater underpricing is related to a lower offering price which hurts policyholders who opt to receive stock compensation from the insurer. On the other hand, underpricing may be caused by a greater-than-expected demand for IPO shares. Specifically, Benveniste and Spindt (1989), Hanley (1993), and Sherman and Titman (2002) suggest a "partial adjustment" phenomenon where underpricing is associated with positive revisions in the final offer price (the changes in the offer price between the filing of the preliminary prospectus and the offer date). When this practice occurs, underwriters attempt to obtain information on market demand for an IPO from investors. If the final offer price is fully adjusted according to the demand (and subsequently underpricing is independent of market demand), investors' incentive to truthfully reveal their demand diminishes because there is no reward for their honesty. To alleviate this incentive problem, offer prices would only partially adjust to market demand, creating positive correlation between

underpricing and market demand of IPOs. The following hypothesis tests the cause of demutualization IPO underpricing.

Hypothesis 1C: The underpricing of IPOs for demutualized insurers is not related to the market demand for IPO shares.

Another component of the "new issues puzzle" is that industrial firm IPOs, on average, underperform their benchmark firms in the long-run. For example, Ritter and Welch (2002) show that investing in an equally-weighted portfolio of IPOs over a three-year horizon results in a market-adjusted return of -23.4 percent. Based on the finance literature, we address the following two issues. First, are old policyholders harmed in an absolute sense? We examine the long-term stock performance of insurance demutualization IPOs to address this question. Second, are old policyholders harmed in a relative sense? Given that IPO firms under-perform, on average, in the long run, we examine the relative performance of demutualization IPOs. If the long-run abnormal stock returns of demutualized insurers are worse than those of non-demutulized insurers, then the old policyholders are harmed by demutualization in a relative sense. Our second set of null hypotheses is stated below:

Hypothesis 2A: The abnormal long-term stock performance of demutualized insurers is zero.

Hypothesis 2B: The long-term abnormal stock performance of demutualized insurers is no different from the long-term abnormal stock performance of non-demutualized IPO insurers.

To examine the causes of abnormal long-term performance, we examine whether cash flow return on assets is a determinant of long-term performance, among other factors. The positive relationship between long-term performance and cash flow return on assets has been noted in the literature (e.g., Nohel and Tarhan, 1998).

3. Data and Methodology

3.1 Data

We include all of the demutualized insurers in the property-liability and life insurance industries from 1980 to 2002 in our sample. We use the "Name Changes and Retired Companies and Associations" section of *Best's Insurance Report* to identify demutualized insurers. We also compared our sample firms with the sample examined by Viswanatham and Cummins (2003). To be included in the sample, a mutual insurer was required to "go public" through the demutualization process and become a publicly-traded insurer. We identify 22 demutualization IPO insurers, from the life and health insurance and property and liability insurance industries. Table 1 provides the names, IPO dates and PERMNOs (permanent numbers) of these companies. We use the Security Data Corporation (SDC) database to obtain the offer prices, offer amounts and other relevant information for demutualized insurer IPOs. Data for three of the companies in the original sample, Amerus Life Holdings Inc., Empire Insurance Company, and Old Guard Group, Inc., were not included in the database.

[Insert Table 1 about Here]

As the earliest demutualized insurer in the sample went public in 1986, the control sample is limited to non-demutualized insurance IPOs after 1986. The control sample was obtained from the Center for Research in Security Prices (CRSP) database. The CRSP database allows us to trace each insurer back to its IPO date. A firm was included in the control sample if its Standard Industrial Classification (SIC) code matched one of the SIC codes assigned to various categories of insurance companies. The control sample was further restricted to include companies for which initial records appear in the CRSP database between 1986 and 2002. These screens produced a control sample of 173 insurers.

3.2 Measures for Underpricing and Long-Run Stock Performance

We define IPO underpricing as the difference between the closing price in the first trading day and the offer price scaled by the offer price, i.e.,

$$Underprice = (P_I - P_O)/P_O \quad (1)$$

where P_O is final offering price and P_I is the first recorded closing price.

We follow Ritter (1991) to compute the long run performance of IPOs. The benchmark-adjusted return stock *i* in event month *t* is defined as:

$$AR_{it} = r_{it} - r_{bt} \quad (2)$$

$$CAR_{1,i}^{S} = \sum_{j=1}^{S} AR_{j,t} \quad (3)$$

where r_{it} is the monthly return for stock *i* and r_{bt} is the return for the chosen benchmark in month *t*. $CAR_{1,i}^{S}$ is for the cumulative abnormal return for month 1 through S for firm *i*. Also, following Ritter (1991), we define an artificial "month" as successive 21-trading-day periods relative to the IPO date. Month 1 consists of event days 2 through 22, month 2 consists of event days 23 through 43, and so on. We focus on two benchmarks to compute r_{bt}: the value-weighted NYSE/AMEX/NASDAQ index portfolio and the size and book-to-market matching portfolio (details discussed in the results section).

4. Empirical Results

4.1 Univariate Analysis of Short-Run Underpricing

Table 2 presents the results of underpricing, or equivalently the first-day trading returns, of demutualization IPOs and non-demutualization IPOs. Specifically, the mean and median first-

day returns are 11.8% and 8.5% for the demutualized insurer IPOs, significant at the 1 percent level and the 5 percent level, respectively. This finding rejects Hypothesis 1A that IPOs for demutualized insurers are not underpriced. Demutualizations appear to hurt policyholders in an absolute sense because there is "money left on the table". The reason we state that demutualizations hurt policyholders "in an absolute sense" is that there may be no feasible method of taking a mutual company public that involves lower costs.[9] The results in Table 2 rejects Hypothesis 1B asserting that the underpricing of IPOs of demutualized insurers is no different from the underpricing of non-demutualized insurer IPOs. The mean and median first-day returns are 6.4% and 2.7% for the non-demutualized IPOs, lower than the corresponding measures for demutualization IPOs. The differences in means or medians between the returns for demutualized insurer IPOs and non-demutualized insurer IPOs are statistically significant at the 10 percent and 5 percent level, respectively.

[Insert Table 2 about Here]

4.2 Regression Analysis of Short-run Underpricing

We address the question of whether demutualization IPOs are more underpriced than non-demutualization IPOs in the previous section through the univariate analysis. To address this issue, we conduct regression analysis with control variables to address this issue. Regression analysis allows us to explore the factors that explain the degree of underpricing. We pool demutualization IPOs and non-demutualization IPOs together to conduct the regression analysis. To control for the fixed time effect, we include Year Dummies where *YearDummy* is 1 if the IPO (either a demutualization IPO or a non-demutualization IPO) is offered in year *i*, and 0 otherwise. The regression takes the following form:

$$Underprice = a_0 + a_1 \Delta OfferPrice + a_2 DeMutual + a_3 HOT + a_4 RANGE$$

[9] We appreciate a reviewer's insights on this point.

$$+ a_5 LgOffersize + \Sigma a_{6,i} YearDummy_i + \varepsilon \quad (5)$$

Our focus is on the impact of market demand on insurance IPO underpricing (i.e., Hypothesis 1C). It is reasonable to believe that a greater demand for IPO shares creates a higher offer price. As discussed earlier, underwriters obtain demand information in the underwriting process. If the demand is greater than the underwriters' initial expectation, the offer price will be positively revised. Thus the revision in the offer prices may be considered a proxy for investors' demand for such IPOs. Following Hanley (1993), we define the change in offer price (*ΔOfferPrice*) as the percentage difference between the expected offer price and the actual offer price:

$$\Delta OfferPrice = (P_O - P_E)/ P_E, \quad (4)$$

where P_E is the expected offer price and is defined as $(P_H + P_L)/2$. P_H is the highest price in the preliminary filing range, P_L is the lowest price in the preliminary filing price range, and P_O is the final offer price. [10]

Besides *ΔOfferPrice*, we consider several other variables. The first is a dummy variable, *DeMutual*, to indicate the type of IPO for the sample firm. It equals 1 for a demutualized IPO firm and 0 for a non-demutualized IPO firm. Second, to capture the stock market trend in the month prior to the offering, we use the ratio of the value-weighted market index level during the month of an insurer IPO divided by the average of the value-weighted market index levels in the past six months (see Huang and Levich, 2003). We denote this variable as *HOT*. Third, following Hanley (1993), we use *RANGE*, $((P_H - P_L)/P_L)$, the percentage width of the preliminary filing price range, to gauge information asymmetry.[11] The intuition is that when an IPO firm is involved with greater information asymmetry, underwriters are more uncertain of its

[10] We also used the amended high and low prices to construct *ΔOfferPrice* and obtained consistent results.
[11] Similar to our treatment in constructing *ΔOfferPrice*, we alternatively construct *RANGE* using the amended high and low file prices. This change does not alter our regression results.

actual value and provide a wide range of offer price estimates. We expect *RANGE* is positively related to *Underprice*. Finally, *LgOffersize*, the logarithm of offer amount, is used as an alternative measure of information asymmetry (Ritter, 1984).

[Insert Table 3 about Here]

Table 3 reports the results of the regression. In Column A, we include *ΔOfferPrice* and exclude *DeMutual*. The coefficient on *ΔOfferPrice* is positive and significant at the 1% level, suggesting that the first-day return increases with the percentage change in the actual offer price from the expected offer price quoted in the preliminary prospectus. In other words, the higher-than-expected demand for IPO shares is positively related to first-day underpricing. This evidence rejects hypothesis 1C that demutualization IPO underpricing is unrelated to market demand. Mayers and Smith (2002, 2004) find that demutualized insurers have improvement in their operating performance and experience sales growth after conversions, which may favorably affect investors' demand on the IPO shares.

Consistent with the result in Hanley (1993), Column A reports that the coefficient on *RANGE* is positive and significant at the 10% level. Firms with greater asymmetric information experience a wider range of price estimates. Further, consistent with the finding of Ritter (1984), we find that the initial return is negatively and significantly related to the offer amount (*LgOffersize*), indicating smaller issues tend to have higher underpricing. Note that there are only 130 observations in the regression analysis, which limits the power to test our hypotheses.

Column B reports the result when we leave out *ΔOfferPrice* but include *DeMutual* in the regression model. It shows that the coefficient on *DeMutual* is positive and significant at the 5% level, which confirms the result that demutualized IPOs are more underpriced than non-demutualized IPOs reported in Table 2. The coefficient on the market condition index, *Hot*, is

0.04 (t=2.08). This result is consistent with prior studies, e.g., Ibbotson and Jaffe (1975) and Lowry and Schwert (2002), as well as Viswanathan (2005), which document that underpricing of demutualization IPOs is positively related to prior market returns.

Further, Column C reports the regression results with the full set of explanatory variables (jointly considering *ΔOfferPrice* and *DeMutual*). The coefficient of *ΔOfferPrice* is still significantly positive while, interestingly, the coefficient on *DeMutual* becomes insignificant. A close examination of these two variables, *ΔOfferPrice* and *DeMutual*, reveals that the correlation between these two variables is 0.26 (p-value = 0.00). Although we cannot exclude the possibility that the high correlation is coincidental, our results appear to support the idea that there is greater demand by investors for demutualization IPO shares which subsequently leads to greater underpricing.

Taken together, the regression analysis suggests that the greater magnitude of demutualization underpricing is attributable to a greater demand for demutualization IPOs. We also find that the underpricing of demutualization IPOs is greater in "hot" issuance markets and when information asymmetry about the IPO firm is greater. Thus far, we do not have evidence that demutualization directly benefits policyholders, although we find that the greater market demand is a cause of greater underpricing in demutualization IPOs.

4.3 Post-Demutualization Abnormal Long-Run Returns

In this subsection, we present results of the analysis of long-run post-demutualization stock performance. We consider long-run abnormal stock performance as a direct measure of the wealth effect of demutualization. Table 4 presents the long-run cumulative abnormal returns (CARs) for demutualization and non-demutualization IPOs in months 1 through 36, along with the difference in the CARs between these two types of insurance IPOs.

[Insert Table 4 about Here]

In Panel A, we report the results when the equally-weighted NYSE/AMEX/NASDAQ index returns are used as the benchmark return to compute CARs. Our evidence suggests that demutualization IPOs actually outperform the equally-weighted market index. The CARs in months 12, 24, 36 are 28.3% (t=2.604), 36.7% (t=2.756), and 30.3% (t=1.765), respectively. This result contrasts the well-documented stock underperformance in the post-IPO period.[12] For example, Ritter (1991) finds that the average stock return for a sample of 1,526 IPOs between 1975 and 1984 underperforms a control sample by 27.4% in the 3 years after going public. Panel A also reports a negative post-IPO stock performance for non-demutualization IPOs. Demutualized insurers outperform non-demutualized insurers every month, from month 1 through month 36, when abnormal returns are adjusted by insurer characteristics. All the statistics are significant at the 1 percent level.

Several studies, e.g., Brav and Gompers (1997), Brav (2000) and Ritter and Welch, (2002), show that IPOs tend to be small growth firms. Consequently, evaluating CARs using the conventional value- and equally-weighted market index portfolios may lead to biased results in IPO long-run performance. To address this problem, we follow Daniel, Grinblatt, Titman and Wermers (1997) and create characteristics-matching portfolios. In obtaining the benchmark, we focus on the characteristics of IPOs highlighted in the literature: firm size (i.e., market capitalization) and the book-to-market ratio.[13] To be specific, we first sort all CRSP firms into quintiles based on firm size. Then, within each size quintile, we sort firms into quintiles based

[12] We obtain similar, albeit weaker, evidence of post-IPO stock performance for demutualized insurers when using the equally-weighted market index returns as the benchmark.

[13] Daniel et al. (1997) includes size, book to market ratio and stock momentum to construct benchmark portfolios. Fung et al. (2004) do not find evidence that the returns of insurance stocks are positively related to past performance. Thus, we omit momentum factors to increase the number of matching firms for each demutualized insurer.

on their book-to-market value ratio. In this way, we form 5x5 matching portfolio combinations for the non-issuers. We match the IPOs (both demutualized and non-demutualized firms) with non-insurers having the same combination of characteristics. The *CAR* is the difference between the return of the demutualized insurers and the value-weighted averages of the characteristics-matched non-demutualized insurers.

The long-term performance results based on the characteristics-adjusted abnormal returns for demutualized and non-demutualized insurers are reported in Panel B of Table 4. Consistent with our findings in Panel A, we find that (i) demutualization IPOs outperform the characteristics-matching portfolios in each month after they go public; and (ii) demutualization IPOs outperform non-demutualization IPOs. For robustness, in tests not reported here, we consider returns from alternative benchmarks to evaluate the CARs. The alternative benchmarks include the intercept of the CAPM-based one-factor model, the intercept of the Fama-French (1993) three-factor model, and the intercept of the Carhart (1997) four-factor model (i.e., the three-factor plus the momentum factor). We also assess long-run stock performance using buy-and-hold abnormal returns (BHARs), instead of CARs. The outperformance by demutualization IPOs over non-demutualized insurers persisted.

Taken together, the empirical evidence in Table 4 indicates that demutualized insurers have positive long-term abnormal returns. Hypothesis 2A that the abnormal long-term stock performance of demutualized insurers is zero is rejected. In addition, by showing that demutualized insurers outperform non-demutualized insurers in year 1, year 2, and year 3, our results reject Hypothesis 2B.

4.4 Risk Comparison

One possible explanation for the better long-term stock performance of demutualized insurance IPOs is that the demutualized insurers take higher risk than the non-demutualized insurers.[14] To investigate this explanation, we compare systematic risk (*Beta*) and nonsystematic risk (*IdioRisk*) for the demutualized insurers and the regular insurance IPO insurers. -

To estimate *Betas*, we regress the excess returns of the individual stocks, the differences between the returns of individual stocks and one-month T-bill returns, and the market excess returns over the 36-month period since the IPOs. To estimate the nonsystematic risk (*IdioRisk*) of a firm, we calculate the standard deviation of the residuals from the beta estimation regressions. Table 5 reports the equally-weighted mean and median of the two risk measures for both the demutualized insurer IPOs and non-demutualized insurer IPOs.

[Insert Table 5 about Here]

Table 5 shows the mean (median) *Beta* for the demutualized insurer IPOs is 0.67 (0.49) while the mean (median) *Beta* for the non-demutualized IPOs is 0.82 (0.85). The median difference in the beta between the two samples is -0.36 (with a z-statistic of -1.97) which is significant at the 5% level. We also find a significant difference in the idiosyncratic risks between demutualized insurer IPOs and non-demutualized IPOs. The mean (median) *IdioRisk* is 0.086 (0.083) for the demutualized insurer IPOs but 0.114 (0.103) for the non-demutualized IPOs. The difference in means (medians) for *IdioRisk* is –0.028 (-0.020), both significant at the 1% level.

[14] Eckbo, Masulis and Norli (2000) argue that the IPO underperformance phenomenon is partly attributed to the lack of the appropriate control for risk.

Our findings do not support the argument that the superior long-term stock performance of demutualized insurers comes from greater risk taking.[15] Rather, they suggest that demutualized IPO insurers take less risk than non-demutualized IPO insurers in the period after the companies begin to trade publicly. Lamm-Tennant and Starks (1993) show that mutual insurers typically operate in lines and states with relatively lower underwriting risks. Mutual insurers appear to continue their low-risk profile after they convert to public stock companies.

4.5 Regression Analysis of Long-Run Abnormal Stock Performance

Having excluded the possibility that better stock performance of demutualized insurers is attributable to excessive risk taking, we consider the impact of other factors, such as operating performance, leverage, and size of the insurers, on the stock performance of demutualization insurers. We conduct a cross-sectional regression of characteristics-adjusted stock performance on operating performance, beta, unsystematic risk, leverage, size, and year dummy variables. The regression analysis, which includes both demutualization and non-demutualization IPOs, employs the following model:

$$CAR = b_0 + b_1 OPERF + \Delta OfferPrice + b_3 Beta + b_4 IdioRisk + b_5 LEV + b_6 LgOffersize + \Sigma b_{7,i} YearDummy_i + \varepsilon \quad (6)$$

or

$$CAR = b_0 + b_1 OPERFR + \Delta OfferPrice + b_3 Beta + b_4 IdioRisk + b_5 LEV + b_6 LgOffersize + \Sigma b_{7,i} YearDummy_i + \varepsilon \quad (6)'$$

where *CAR*, is the 3-year characteristics-adjusted stock return. *OPERF* (Operating Performance) is defined as operating income before depreciation scaled by assets. *OPERFR* is the residual when we regress operating performance on *ΔOfferPrice*. Note the difference

[15] In unreported tests, we also compare the liquidity of demutualized IPOs and non-demutualized IPO stocks, since the superior performance of demutualized IPOs may come from greater liquidity risk. Our results do not support this argument. In fact, we find that demutualized IPO stocks are more liquid than non-demutualized IPO stocks.

between (6) and (6)' is that (6) uses *OPERF* but (6)' uses *OPERFR* in the regression. We include the residual operating performance, *OPERFR*, in (6)' because *ΔOfferPrice* (measure of market demand at offerings) and *OPERF* may be correlated.[16] Using *OPERFR* helps to separate the impact of demand and non-demand related operating performance on their long-run stock performance. In addition, *ΔOfferPrice* is the percentage change in the actual offer price from the expected offer price quoted in the preliminary prospectus. *Beta* measures the systematic risk of a stock. *IdioRisk* is the standard deviation of the residual from the *Beta* estimation regression. *LEV* is firm leverage in the IPO year and defined as (long term debt + current liabilities)/total assets. *LgOffersize* is the logarithm of the offer amount in the IPO year. *YearDummy i* is 1 if an IPO is offered in year *i*, and 0 otherwise.

Table 6 presents the regression results. In column A, we include all the variables except the demand measure, *ΔOfferPrice*. We find that long-term stock performance is positively related to demutualization firms' operating performance. The coefficient on *OPERF* is 1.39 (t=3.07). In addition, the coefficient on *Beta* is 0.09 (t=1.66), indicating a positive link between high (low) systematic risk and high (low) long-term return. The coefficient on *IdioRisk* is not statistically significant. The coefficient on the size variable is also not statistically significant. This result is expected because we already adjusted for size when the characteristics-adjusted long-term return was calculated.

[Insert Table 6 about Here]

In Column B, we include *ΔOfferPrice* and other explanatory variables but leave out the operating performance measure. Similar to our result in the underpricing regressions, stock performance is positively related to market demand for insurance IPOs. Further, the Column C

[16] The coefficient of correlation between these variables is 0.10, which is significant at the 1 percent level.

regression corresponds to (6)' where demand-adjusted operating performance (*OPERFR*) and the market demand proxy (*ΔOfferPrice*) are simultaneously considered. The results show that the coefficients on both variables are significantly positive. The overall evidence suggests that the long-term stock performance of demutualized IPO insurers comes from their superior operating performance. The old policyholders who elect to take the stock in the converted company are not harmed.

5. Discussion and Conclusion

This study examines whether the wealth of old policyholders of demutualized insurers is adversely impacted by the underpricing of IPOs and/or adverse stock performance during the 3-year period after the company's IPO. Our first main result is that there is "money left on the table" because the mean and median underpricing of demutualization IPOs are 11.8% and 8.5%, respectively. Do these results indicate policyholders are harmed by demutualization? Our answer is "it depends." If we examine the issue using an absolute standard, the answer is "yes." Underpricing by an average of 11.8% harms the old policyholders who become shareholders when the insurers convert. New shareholders who receive an allocation of shares from investment banks pay, on average, 11.8% less than the market price. This discount comes at the expense of old policyholders. It is a common practice that old policyholders are usually not allowed to purchase more shares before the first day of public trading, other than their allotted shares. This restriction may harm a demutualized insurer's policyholders who wish to purchase the company's stock at the offering price, but who are not allowed to do so.[17] Even though we

[17] Management and investment bankers argue that there are problems associated with giving policyholder subscription rights, including that it would be too expensive.

state that demutualizations hurt policyholders "in an absolute sense", it should be noted that there may be no feasible method of taking a mutual company public that involves lower costs.

If we apply a relative standard to examine the question of whether policyholders of insurers that demutualize are harmed by underpricing, then the answer becomes "not necessarily." The average underpricing for the demutualization sample is lower than that for the overall IPO sample, which includes all industries. The regression results suggest that higher underpricing for demutualized insurers can be explained by higher-than-expected demand for the IPOs. If the demand is driven by a better post-offering stock and operating performance, greater underpricing may be viewed as a positive signal of future wealth improvement of policyholders who opt to receive stock compensations in the demutualization process.

Our evidence also suggests that demutualized insurers outperform non-IPOs in the long-run. This result is striking because previous literature finds that IPOs in general underperform their matching firms in the long-run. Another main result is that the demutulized insurers outperform the non-demutualized insurers after the companies go public. The results of the long-term performance analysis are robust under alternative benchmarks, including the value-weighted market indices and the characteristics-matching portfolios (reported in the paper), and the equally-weighted indices, the Fama-French 3-factor model, and the Carhart (1997) 4-factor model. In addition, these superior returns are not attributable to higher risk. We find that long-term stock performance of insurance IPOs can be mainly explained by long-term operating performance and demand at the time of the IPO. The positive link between the demand factor and underpricing/underperformance suggests that investors' demand causes the underpricing rather than managers and investment bankers intentionally setting the price too low to increase demand.

In conclusion, our results of underpricing and long-term performance suggest that policyholder wealth is not harmed by demutualization. Stockholders who purchase demutualized stocks either before or after insurance IPOs have earned superior returns. The overall evidence is consistent with the efficiency improvement argument.

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Table 1
The Sample of Demutualization IPOs

Company	IPO Date	PERMNO*
EMPIRE INSURANCE CO	1/21/1988	11270
UNUM CORP	11/7/1986	71175
MUTUAL ASSURANCE INC	9/5/1991	76838
EQUITABLE COS INC	7/17/1992	77815
ALLMERICA FINANCIAL CORP	10/12/1995	82292
GUARANTEE LIFE COS INC	12/21/1995	82706
FARM FAMILY HOLDINGS INC	7/24/1996	83721
F P I C INSURANCE GROUP INC	8/2/1996	83866
S C P I E HOLDINGS INC	1/31/1997	84395
TRIGON HEALTHCARE INC	2/3/1997	84396
AMERUS LIFE HOLDINGS INC	1/30/1997	84406
OLD GUARD GROUP INC	2/20/1997	84554
MONY GROUP INC	11/12/1998	86411
STANCORP FINANCIAL GROUP INC	4/19/1999	86809
MIIX GROUP INC	8/2/1999	87036
N C R I C GROUP INC	7/30/1999	87079
JOHN HANCOCK FIN. SVCS INC	1/28/2000	87536
METLIFE INC	4/6/2000	87842
PHOENIX COS INC	6/21/2001	89008
PRINCIPAL FINANCIAL GROUP INC	10/24/2001	89195
PRUDENTIAL FINANCIAL INC	12/14/2001	89258
SAFETY INSURANCE GROUP INC	11/25/2002	89575

* PERMNO is the “permanent number” used in the CRSP database.

Table 2
Underpricing of Demutualization IPOs versus Non-Demutualized IPOs

IPO underpricing is computed by subtracting the IPO offer price from the first day closing price (first-day return) and dividing by the offer price. The test statistics for mean and median comparisons are the t-statistic and the z-statistic for the two-sample median score test.

	Mean (%) (t-statistic)	**Median (%) (z-statistic)**	**Number of Observations**
Underpricing of Demutualization IPOs	11.8	8.5	22
	(4.53)***	(3.48)**	
Underpricing of Non-Demutualization IPOs	6.4	2.7	114
	(3.45)***	(2.75)***	
Difference	5.4	5.8	
	(1.92)*	(2.11)**	

* Significant at the 10 percent level
** Significant at the 5 percent level
*** Significant at the 1 percent level

Table 3
Regressions of Insurance IPO Underpricing

Table 3 reports the coefficients of the pooled regression of underpricing of demutualization and non-demutualization IPOs. Independent variables include: (i) *ΔOfferPrice*, the percentage change in the actual offer price from the expected offer price quoted in the preliminary prospectus; (ii) *DeMutual*, a demutualization dummy equal to 1 for a demutualization IPO and 0 otherwise; (iii) *HOT*, a measure of market sentiment, defined as the ratio of the value-weighted market index level in the month of an insurer IPO divided by the averaged value weighted market index level over the six-month period prior to IPOs; (iv) *RANGE*, the percentage width of the preliminary prospectus offer range; (v) *LgOffersize*, the logarithm of the IPO offer amount; and (vi) *Year Dummy*, equal to 1 if an IPO is offered in that year, and 0 otherwise. The coefficients for year dummies are not reported. The t-statistics are in the parentheses.

Independent Variables	**A**	**B**	**C**
Intercept	0.10***	0.09***	0.09***
	(5.01)	(4.21)	(4.77)
ΔOfferPrice	0.31***		0.26***
	(4.89)		(3.49)
Demutual		0.07**	0.03
		(2.35)	(1.41)
HOT	0.03	0.04**	0.04*
	(1.59)	(2.08)	(1.78)
RANGE	-0.05*	-0.09	0.01
	(-1.83)	(-1.25)	(0.10)
LgOffersize	-0.0001**	-0.0001**	-0.0001**
	(-1.72)	(-1.96)	(-2.01)
Number of observations	130	130	130
Adjusted R^2	22%	8%	23%

* Significant at the 10 percent level
** Significant at the 5 percent level
*** Significant at the 1 percent level

Table 4
Characteristics-Adjusted Stock Returns of Demutualization IPOs versus Non-Demutualization IPOs

Table 4 presents cumulative abnormal returns for the demutualization and non-demutualization IPOs from month 1 to month 36 relative to the demutualization month 0. Panel A reports the results when the NYSE/AMEX/NASQAQ equally-weighted index portfolios are used as the benchmark. Panel B reports the results when size and book-to-market ratio matching portfolios are used as the benchmark.

Panel A: Benchmark: NYSE/AMEX/NASQAQ equally-weighted index portfolios

	Demutualized IPOs (1)		Non-Demutualized IPOs (2)		Difference (1) – (2)	
Mor	CAR	t-stat	CAR	t-sta	Differenc	t-stat
1	0.031	1.580	-0.015	-1.62	0.046	4.180
2	0.052	1.810	-0.005	-0.33	0.057	3.519
3	0.028	0.913	-0.014	-0.89	0.041	2.343
4	0.032	0.856	-0.015	-0.80	0.048	2.155
5	0.063	1.233	-0.030	-1.46	0.094	3.577
6	0.110	1.858	-0.034	-1.55	0.144	4.995
7	0.169	2.273	-0.033	-1.37	0.202	5.964
8	0.222	2.433	-0.052	-1.96	0.274	6.858
9	0.232	2.463	-0.054	-1.95	0.286	6.921
10	0.256	2.617	-0.050	-1.62	0.306	6.906
11	0.264	2.573	-0.060	-1.86	0.325	6.973
12	0.283	2.604	-0.064	-1.88	0.347	7.415
13	0.285	2.401	-0.055	-1.59	0.341	6.504
14	0.339	2.519	-0.055	-1.53	0.394	6.846
15	0.373	2.812	-0.075	-1.98	0.448	7.720
16	0.349	2.774	-0.074	-1.86	0.423	7.353
17	0.368	2.891	-0.077	-1.86	0.445	7.538
18	0.336	2.740	-0.079	-1.88	0.415	7.133
19	0.367	2.858	-0.086	-1.95	0.453	7.401
20	0.369	3.084	-0.069	-1.46	0.438	7.170
21	0.355	2.882	-0.075	-1.52	0.430	6.747
22	0.395	3.062	-0.085	-1.61	0.481	7.098
23	0.385	2.873	-0.079	-1.38	0.464	6.458
24	0.367	2.756	-0.121	-2.32	0.488	7.137
25	0.370	3.032	-0.115	-2.13	0.485	7.233
26	0.340	2.790	-0.104	-1.77	0.445	6.278
27	0.298	2.373	-0.109	-1.80	0.406	5.577
28	0.373	2.892	-0.104	-1.54	0.477	6.036
29	0.394	2.882	-0.122	-1.88	0.516	6.542
30	0.380	2.524	-0.124	-1.83	0.504	6.003
31	0.337	2.212	-0.130	-1.96	0.468	5.583
32	0.347	2.239	-0.152	-2.48	0.499	6.175
33	0.337	2.137	-0.149	-2.31	0.486	5.801
34	0.307	1.805	-0.121	-1.71	0.428	4.682
35	0.311	1.743	-0.105	-1.35	0.416	4.231
36	0.303	1.765	-0.097	-1.22	0.400	4.063

Panel B: Benchmark: Size and Book-to-market Ratio Matching Portfolios

	Demutualized IPOs (1)		Non-Demutualized IPOs (2)		Difference (1) – (2)	
Mor	CAR	t-stat	CAR	t-sta	Differenc	t-stat
1	0.057	2.040	0.029	3.861	0.028	1.498
2	0.104	2.124	0.038	4.040	0.066	2.713
3	0.164	2.889	0.003	0.233	0.161	3.484
4	0.168	4.021	0.003	0.189	0.165	4.231
5	0.261	3.684	0.045	1.618	0.216	4.192
6	0.381	4.871	0.104	3.183	0.277	4.424
7	0.451	4.158	0.130	3.958	0.321	4.792
8	0.660	5.658	0.202	5.320	0.458	5.822
9	0.772	5.666	0.270	6.040	0.502	5.391
10	0.739	6.448	0.256	6.004	0.483	4.456
11	0.737	8.083	0.263	6.334	0.474	4.537
12	0.697	8.076	0.275	6.721	0.422	4.587
13	0.659	7.153	0.273	6.636	0.386	4.117
14	0.800	7.115	0.345	7.914	0.455	4.551
15	0.806	7.068	0.356	7.571	0.450	4.258
16	0.789	7.903	0.281	6.393	0.508	5.781
17	0.886	9.887	0.336	7.046	0.550	5.643
18	0.807	8.891	0.318	6.629	0.489	4.599
19	0.830	8.150	0.342	6.539	0.488	4.672
20	0.796	11.007	0.397	6.673	0.399	3.754
21	0.766	10.426	0.496	6.559	0.270	2.847
22	0.797	11.674	0.581	6.699	0.216	3.257
23	0.871	11.670	0.621	6.671	0.250	3.735
24	0.858	11.111	0.359	6.138	0.499	4.963
25	0.862	12.509	0.336	5.209	0.526	5.067
26	0.812	10.963	0.300	4.943	0.512	5.308
27	0.736	10.906	0.238	4.291	0.498	4.721
28	0.732	10.547	0.229	3.831	0.503	5.532
29	0.668	10.174	0.122	2.221	0.546	5.900
30	0.617	8.261	0.079	1.471	0.538	5.995
31	0.683	7.165	0.095	1.602	0.588	5.961
32	0.730	7.322	0.014	0.194	0.716	6.173
33	0.715	7.541	-0.013	-0.184	0.728	6.405
34	0.543	4.463	-0.142	-2.232	0.685	5.449
35	0.511	4.075	-0.214	-3.481	0.725	6.988
36	0.517	4.542	-0.249	-3.930	0.766	6.864

Table 5
Risk Characteristics of Demutualization IPOs versus Non-Demutualization IPOs

Table 5 reports the difference in systematic risk (*Beta*) and nonsystematic risk (*IdioRisk*) of the demutualized IPO insurers and non-demutualized IPO insurers. To estimate firm beta, we run the regression between the excess returns of the individual stock and the market excess returns during the period from month 1 to month 36 after an IPO. To estimate the nonsystematic risk of a firm, we calculate the standard deviation of the residuals from the beta estimation regression. The t-statistics of the mean difference and the two-sample Wilcoxon Z statistics for the median difference are reported in the parentheses.

	Systematic Risk (*Beta*)		**Nonsystematic Risk (*IdioRisk*)**	
	Mean	Median	Mean	Median
Demutualized Insurers	0.67	0.49	0.086	0.083
Non-demutualized Insurers	0.82	0.85	0.114	0.103
Difference	-0.15		-0.028***	
(t-statistic)	(-1.21)		(-3.30)	
Difference		-0.36**		-0.020***
(Z-statistic)		(-1.97)		(-2.69)

* Significant at the 10 percent level
** Significant at the 5 percent level
*** Significant at the 1 percent level

Table 6
Regressions of Characteristics-Adjusted Stock Performance

Table 6 reports the coefficients of the regressions of characteristics-adjusted stock performance The independent variables include: (i) *OPERF*, Operating Performance, the aggregate operating income before depreciation during the 3-year after IPOs; (ii) *OPERFR*, the residual when regressing operating performance (*OPERR*) on *ΔOfferPrice*; (iii) *ΔOfferPrice*, the percentage change in the actual offer price from the expected offer price quoted in the preliminary prospectus, (iv) *Beta*, a systematic risk measure; (v) *IdioRisk*, a measure of unsystematic risk; (vi) *LEV*, leverage in the IPO year and defined as (long term debt + current liabilities)/total assets; (vii) *LgOffersize*, the logarithm of the IPO offer amount; and (viii) Year dummy, equal to 1 if an IPO is offered in that year, and 0 otherwise. The coefficients for year dummies are not reported. The t-statistics are in the parentheses.

Independent Variables	(A)	(B)	(C)
Intercept	0.74**	0.81**	0.70*
	(1.96)	(2.16)	(1.80)
OPERF	1.39***		
	(3.07)		
OPERFR			2.31***
			(3.97)
ΔOfferPrice		0.35***	0.26***
		(4.64)	(2.51)
Beta	0.09*	0.11*	0.14
	(1.66)	(1.76)	(0.94)
IdioRisk	-4.57**	-10.52***	-10.71***
	(-2.39)	(-4.71)	(-4.77)
LEV	1.35	0.64	0.63
	(1.55)	(0.66)	(0.64)
LgOffersize	0.07	0.03	0.01
	(1.11)	(0.51)	(0.03)
Number of observations	157	109	109
Adjusted R^2	36%	44%	44%

* Significant at the 10 percent level
** Significant at the 5 percent level
*** Significant at the 1 percent level