

The Relationship Between Firm Growth, Ownership Structure, and Performance: An analysis of U.S. property-liability insurers

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Abstract

This study investigates the relationship between firm growth and profitability in the U.S. insurance industry, with a focus on differences between stock and mutual insurers. While both forms address stakeholder incentive conflicts, they differ in ownership structure, capital access, and risk preferences. Mutual insurers, owned by policyholders, prioritize long-term stability and operate with limited financial flexibility. In contrast, stock insurers, driven by shareholder interests, have greater access to capital markets and may pursue riskier strategies to boost profitability. Although prior research on profit persistence (POP) in banking and other industries has explored the role of competition, information asymmetry, and firm-specific factors, limited attention has been given to the insurance sector—particularly regarding ownership structure. This study addresses this gap by examining how financial performance and strategic priorities vary between stock and mutual insurers, offering new insights into the determinants of profitability and growth in the insurance industry.

Keywords: Firm Growth, Ownership Structure, Profitability, Insurance Industry, Property-Liability Insurers

JEL Classification: G22, L25, G32

I. Introduction and Literature Review

Organizational forms in the insurance industry, namely mutuals and stock companies, differ in fundamental ways that influence firm behavior, incentives, and ultimately, the persistence of profit (POP). These structural differences, particularly in terms of ownership, access to capital, and managerial incentives, shape how firms generate and sustain profitability over time. Mutual insurers eliminate the conflict between owners and policyholders by merging these roles, but this can increase the agency problem between managers and owners due to weaker monitoring mechanisms (Mayers and Smith, 1988, 1994; Baranoff and Sager, 2003). Stock insurers, by contrast, face a more distinct separation of ownership and policyholder interests, with greater scrutiny from shareholders and more direct incentives to maximize financial performance.

One critical distinction lies in access to capital markets. Stock insurers, with the ability to issue equity, have more flexibility and resources to pursue profit-generating opportunities, potentially reinforcing persistent profit outcomes through reinvestment, expansion, or acquisition strategies (Cummins and Zi, 1998). Mutuals, restricted from issuing stock, often rely more on retained earnings and customer-financed borrowing, which may constrain long-term profitability and limit their ability to adapt rapidly to market opportunities.

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These financial constraints and incentive differences also affect risk-taking behavior. Stock firms, with stronger incentives to enhance shareholder value, may adopt riskier but potentially more profitable strategies. Mutuals, in contrast, often prioritize long-term stability and policyholder interests, which may lead to more conservative behavior and reduced profit volatility, but potentially also less profit persistence over time.

The implications of organizational form extend to firm strategy and performance metrics. Stock companies, driven by shareholder expectations, may place a greater emphasis on sustaining high levels of profitability to maintain market valuation and investor confidence. Mutuals may tolerate fluctuating profits in exchange for long-term solvency and service to policyholders.

Approximately 30% of the U.S. property and liability insurance market is comprised of mutual insurers, despite the predominance of stock companies both domestically and globally. This underscores the relevance of understanding how mutual structures persist in a competitive environment, especially in light of demutualization trends seen in the early 2000s (Viswanathan and Cummins, 2003). These trends reflect market pressures favoring structures with greater capital access and profit potential.

Persistence of profit (POP) has been the subject of robust academic inquiry. Theoretical frameworks diverge: one view asserts that competitive markets erode abnormal profits over time, while another suggests that firm-specific advantages, e.g., proprietary knowledge, reputational capital, or market power, can lead to sustained profitability. Empirical studies in banking support the latter perspective, showing meaningful levels of POP (Berger et al., 2000; Goddard, Molyneux, and Wilson, 2004; Hirsch, 2018).

Berger et al. (2000) found increased POP in the U.S. banking sector, attributing this persistence to market dominance and information asymmetries. Goddard et al. (2004) demonstrated that ownership structure significantly influences short-run profit and growth persistence across different EU nations. These findings support the idea that firm characteristics, including ownership type, play a pivotal role in shaping POP.

Hirsch (2018) further emphasized the methodological nuances affecting POP studies. Variations in testing procedures, sample duration, and industry sectors can all significantly influence results. His work suggests that rigorous, standardized methods tend to show lower POP, highlighting the need for careful empirical design.

In the insurance industry, Choi and Jeong (2022) find that past profits significantly impact future profits, indicating a strong persistence of profitability within the Property and Liability (P-L) insurance industry. This suggests that firms with higher historical profits are likely to maintain superior performance over time. They also find that lagged growth positively affects current profitability. Conversely, previous profitability is positively associated with current growth, highlighting a bidirectional relationship between these two variables.

This study contributes to the literature by examining the relationship between firm growth and profitability in the U.S. insurance industry, with a focus on how organizational form influences profit persistence. Stock and mutual insurers differ significantly in terms of capital access, incentive structures, and risk preferences, which may lead to divergent paths in sustaining profitability. By highlighting these distinctions, the study addresses a gap in existing research and provides insights into the factors that promote or constrain long-term profit persistence in the insurance sector.

Data and Methodology

This study focuses on analyzing the POP in the P-L insurance sector for two ownership structures (mutuals and stocks) and identifying the factors that influence firm growth and firm profits for each group. The use of dynamic panel regressions with Generalized Method of Moments (GMM) estimation techniques allows for controlling for endogeneity and unobserved heterogeneity (Hirsch, 2019). The sample period ranges from 1999 to 2014 and includes only insurers with positive values of surplus, assets, premiums, inputs, or outputs.

The regression models include firm-specific variables such as asset size, investment ratio, leverage, reinsurance utilization, proportion of personal lines, market concentration, business diversification, and geographic diversification, as well as industry cycle variables such as Gross Domestic Product (GDP) changes, annualized Economic Policy Uncertainty, membership in an insurance group, and hard market vs. soft market dummies. The results of the study provide insights into the behavior of mutuals and stocks in terms of profitability and growth, highlighting the differences in their responses to various firm characteristics. GMM dynamic panel regression models are:

$$Profit_{i,t} = \alpha + \beta_{1,1}Growth_{i,t-1} + \beta_{1,2}Profit_{i,t-1} + \beta_{1,3}X_{i,t} + \ln(\varepsilon)_{i,t} \quad (1)$$

$$Growth_{i,t} = \alpha + \beta_{2,1}Profit_{i,t-1} + \beta_{2,2}Size_{i,t-1} + \beta_{2,3}X_{i,t} + \ln(\varepsilon)_{i,t} \quad (2)$$

In the testing model, subscript i represents the i^{th} insurance company, t is a time index, and ε_{it} is a random error term with zero mean and a constant variance (see Fier and Pooser, 2016). In Equation (1), the coefficient, $\beta_{1,1}$, tests the impact of past growth on current profit and $\beta_{1,2}$ reflects the abnormal profits and shows the persistence of profit. In Equation (2), $\beta_{2,1}$, tests the past profit's impact on current growth, while, $\beta_{2,2}$ shows the size-growth relationship.

To measure an insurer's profitability (*Profit*), a form of the underwriting profit margin (Profit Margin) is used in addition to the conventional accounting profit rate of return on equity (ROE). To normalize the profitability of a company in a given year (t), the average profitability of the industry in the same year is deducted, as outlined in previous studies (Goddard et al., 2004; Hirsch, 2018). The Profit Margin is calculated as one less the adjusted loss ratio, which is the excess of premiums collected over losses and loss adjustment costs. This profitability indicator is commonly used in the insurance industry (e.g., Ma and Pope, 2003).

Previous research has shown an inconsistent relationship between profitability and company expansion (e.g., Santomero and Babbel, 1997; Hardwick and Adams, 2002). Both the current and lagged values of *Profit* are used in this study. Growth is measured using changes in the logarithm form of total assets, specifically $\ln(Size)_t - \ln(Size)_{t-1}$. To normalize the Growth variable, the average growth rate of the industry in the same year is deducted, as described in previous research (Goddard et al., 2004; Barth and Eckles, 2009), in order to represent the interactive relationship between growth and profitability.

To measure insurer growth, the annual percentage change in direct written premiums is used. Direct written premiums are the total premiums collected by insurers without taking into account the amount ceded to reinsurers or intermediaries. Growth rate is a commonly used measure of firm performance in the insurance industry (e.g., Cummins et al., 1999 and Jin et al., 2022).

In addition to the primary variables of interest, the study incorporates a set of firm-specific and industry-level control variables ($X_{i,t}$) that have been found to be relevant in the existing literature. Market Share is defined as an insurer's proportion of total direct premiums written in

the market at a given time. This metric is widely used to assess an insurer's relative market position and size.

Advertising Intensity, measured as the ratio of advertising expenses to direct premiums written, captures the strategic role of advertising in influencing profitability and growth. Prior research (e.g., Chen & Waters, 2017; Choi, 2019) indicates that increased advertising can strengthen brand visibility, attract and retain customers, and enhance perceived service quality, thereby affecting market performance.

Investment Ratio reflects net investment income relative to premiums written. Since investment returns contribute significantly to insurers' overall income, this variable serves as a key indicator of financial performance and risk appetite, accounting for differences in asset management strategies across firms.

Leverage, calculated as the ratio of liabilities to assets, indicates the degree of debt financing. While higher leverage may enhance returns, it also raises financial risk. Reinsurance Utilization, the ratio of reinsurance ceded to the sum of reinsurance assumed and direct premiums written, captures how much risk is transferred externally. Greater use of reinsurance can reduce underwriting risk and increase underwriting capacity, but it also affects costs and profit margins.

The model also includes variables related to business lines. Proportion of Personal Lines measures the share of direct written premiums from personal lines (e.g., auto, home) relative to total premiums, indicating specialization in typically higher-risk segments. Market Concentration is captured using the Herfindahl-Hirschman Index (HHI)¹, where higher values suggest less competition and potentially higher profits. Business Diversification is measured as the inverse HHI across lines of business, with lower values indicating broader diversification². Greater diversification may reduce risk and enhance profitability but can also increase operational complexity.

The model also includes a group membership dummy to distinguish between standalone insurers and those affiliated with larger insurance groups, which may benefit from resource sharing and financial backing.

At the macroeconomic level, GDP changes are included to control fluctuations in overall economic conditions during the sample period. Additionally, we incorporate Economic Policy Uncertainty (EPU³), measured using a U.S. time-series index, to examine its impact on insurer profitability and growth. EPU serves as a proxy for external policy-related shocks that may influence firm performance. Given the growing academic and policy interest in the effects of uncertainty on economic behavior, this variable provides valuable insight into its influence on insurer performance and growth dynamics.

II. Results

This study analyzes a balanced panel of 19,924 surviving U.S. property-liability insurers from 1999 to 2014, excluding firms with negative surplus, assets, or premiums. A detailed summary

¹ Stigler (1964) argues that the Herfindahl index is superior to the concentration ratio (e.g., four-firm concentration ratio) for measuring concentration to assess the likelihood of effective collusion.

² We use the data in the NAIC annual statement – Underwriting and Investment Exhibit, Part 1B-Premiums Written.

³ Baker, Bloom, and Davis (2016) construct the U.S. EPU index and demonstrate its predictive power for a range of economic outcomes including investment, employment, and stock market volatility.

statistics are provided in Table 1, and t-tests (Table 2) reveal significant differences between mutual and stock insurers across several dimensions.

The U.S. P-L insurance market is generally competitive and non-concentrated (Market Concentration HHI = 0.0084), with average growth rates of 5.8% for mutuals and 5.9% for stock insurers. Stock companies, however, show higher average ROE (5.05% vs. 2.78%), indicating superior accounting profitability. They also hold larger asset bases, invest more heavily in advertising, and transfer more risk to reinsurers (30.28% on average). Stock insurers tend to be more geographically and operationally diversified and are more likely to belong to a group (83.7% vs. 44.4%) or use an independent agency system (82.8% vs. 67.9%). Of the 15 firm-level variables analyzed, 9 show statistically significant differences at the 1% level.

Table 1: Summary Statistics

Variable	Mean	Median	Lower Quartile	Upper Quartile	Standard Deviation
Growth	0.059	0.039	0	0.106	0.197
Growth (t-1)	0.068	0.043	0	0.114	0.218
Firm Size	18.556	18.491	17.22	19.736	1.901
Firm Size (t-1)	18.497	18.433	17.162	19.689	1.905
ROE	0.044	0.057	0.006	0.111	0.167
ROE (t-1)	0.045	0.056	0.004	0.11	0.162
Profit Margin	0.309	0.687	0.587	0.781	0.244
Profit Margin (t-1)	0.305	0.692	0.59	0.788	0.242
Market Share	0.001	0	0	0	0.002
Advertising Intensity	0.008	0.001	0	0.005	0.036
Investment Ratio	0.034	0.031	0.021	0.04	0.052
Leverage	1.007	0.866	0.475	1.38	0.793
Reinsurance Utilization	0.427	0.383	0.164	0.672	0.303
Proportion of Personal Lines	0.384	0.301	0	0.739	0.374
Market Concentration	0.008	0.008	0.008	0.009	0.001
Business Diversification	0.465	0.374	0.212	0.655	0.297
Geographic Diversification	0.538	0.478	0.141	1	0.385
Group Dummy	0.723	1	0	1	0.448
Agent Dummy	0.785	1	1	1	0.411
GDP Change	0.216	1.019	1.016	1.029	0.016
Economic Policy Uncertainty	1.225	1.29	91	1.48	0.316
Observation	19,924				

Growth is defined as total assets growth from last year.

Profit Margin is defined as 1 minus adjusted loss ratio.

Market Concentration is defined as the sum of the squared market share of each insurer in the US market.

Economic Policy Uncertainty values are annualized and expressed as a percentage by dividing the raw scores by 100.

The empirical models (Equations 1 and 2) assess profit persistence and growth-profit dynamics using GMM to address endogeneity and firm heterogeneity. No multicollinearity issues were found.

Tables 3 and 4 reveal distinct differences between stock and mutual insurers regarding the impact of various firm characteristics. Table 3 confirms profit persistence (positive and significant lagged profit) for both ownership types, consistent with earlier findings (e.g., Berger et al., 2000 and Choi and Jeong, 2020). However, only stock insurers show a positive relationship between lagged growth and current profit. Mutuals exhibit a negative and significant relationship at the 10 percent level. These findings suggest that profit-growth dynamics differ by ownership structure.

Table 2: T-Test: Mutual Company vs. Stock Company

	<u>Mutual Company</u>		<u>Stock Company</u>		T-test
	Mean	Stan. Dev.	Mean	Stan. Dev.	
Growth	0.0581	0.1247	0.0594	0.2198	
Firm Size	18.0668	2.1145	18.7568	1.7681	***
ROE	0.0278	0.1547	0.0505	0.1719	***
Profit Margin	0.6874	0.2211	0.6932	0.2525	
Market Share	0.0006	0.0032	0.0005	0.0016	
Advertising Intensity	0.0053	0.0131	0.0090	0.0414	***
Investment Ratio	0.0296	0.0188	0.0352	0.0611	***
Leverage	0.9947	0.8130	1.0125	0.7844	
Reinsurance Utilization	0.3161	0.2424	0.4726	0.3132	***
Proportion of Personal Lines	0.3772	0.3443	0.3864	0.3851	
Business Diversification	0.4985	0.3000	0.4510	0.2949	***
Geographic Diversification	0.6966	0.3629	0.4731	0.3750	***
Group Dummy	0.4442	0.4969	0.8370	0.3693	***
Agent Dummy	0.6791	0.4668	0.8278	0.3775	***
Observation	5,797		14,127		

Growth is defined as total assets growth from last year.

Profit Margin is defined as 1 minus adjusted loss ratio.

Herfindahl Index is defined as the sum of the squared market share of each insurer in the US market.

In Table 3, we find that mutual insurers with larger market shares tend to generate lower profits, whereas no significant relationship between market share and profitability is observed for stock insurers. While advertising intensity is not a significant determinant of profitability for mutual insurers, it does have a significant positive effect for stock companies. This reflects structural and strategic differences: stock insurers, driven by shareholder value maximization, often compete aggressively in markets, particularly in personal lines, where advertising is crucial for customer acquisition and brand visibility. In contrast, mutual insurers typically prioritize policyholder interests and rely more on relationship-based distribution models, such as agent networks, diminishing the role of advertising in profitability. Furthermore, stock insurers operating in personal lines tend to be less profitable, a relationship not observed among mutual companies. We also find that economic uncertainty, as measured by the Economic Policy Uncertainty index,

which serves as a proxy for policy-related economic uncertainty, is negatively associated with firm profits for both groups.

Table 4 shows that lagged profit significantly drives current growth for both types of firms. However, firm size negatively affects growth only for stock insurers, indicating that smaller stock firms grow faster, whereas this pattern is not observed for mutuals. These differences align with prior literature on firm age and profitability (e.g., Cohen, 2001; D'Arcy & Gorvett, 2004), which posits that firms become more selective and profitable over time.

Table 3: Profit (Profit Margin) Model

Independent Variable	<u>Mutual Company</u>			<u>Stock Company</u>		
	Coeff.	Std. Err.		Coeff.	Std. Err.	
Intercept	-0.4142	0.1725	**	-0.2588	0.1022	***
Lagged Profit Margin	0.6233	0.0265	***	0.8093	0.0156	***
Lagged Growth	-0.0447	0.0258	*	0.0241	0.0083	***
Market Share	-1.4504	0.3253	***	0.1009	0.6932	
Advertising Intensity	-0.1021	0.1562		-0.0558	0.0240	**
Investment Ratio	-1.0509	0.1862	***	-0.0573	0.0209	***
Leverage	-0.0210	0.0037	***	-0.0163	0.0022	***
Reinsurance Utilization	-0.0360	0.0105	***	-0.0377	0.0058	***
Proportion of Personal Lines	0.0039	0.0088		-0.0121	0.0044	***
Market Concentration	-6.0722	4.8643		-4.7286	3.2600	
Business Diversification	0.0151	0.0109		0.0151	0.0075	**
Geographic Diversification	-0.0184	0.0076	**	0.0068	0.0047	
Group Dummy	-0.0232	0.0050	***	-0.0099	0.0045	**
Agent Dummy	0.0107	0.0055	**	0.0005	0.0045	
GDP Growth	0.5701	0.1658	***	0.3627	0.0965	***
Economic Policy Uncertainty	-0.0475	0.0087	***	-0.0411	0.0049	***
Observations	5,797			14,127		
Adjusted R ²	0.3768			0.5191		

Dependent Variable: Profit Margin

*** significant at 1% level, ** significant at 5% level, and * significant at 10% level.

Further analysis reveals ownership-specific effects. For example, stock firms operating in personal lines are less profitable, while this is not the case for mutuals. Market share negatively affects mutual profitability but has no impact on stock insurers.

Geographic diversification enhances profits for mutuals, while group affiliation and agency system usage also positively affect their performance. In contrast, stock insurers benefit more in terms of growth from larger market shares and broader geographic operations. Mutuals, on the other hand, grow more slowly when operating across multiple business lines, and advertising has

no significant growth effect. We also find that mutual insurers are negatively affected by policy-related economic uncertainty, whereas stock insurers show no significant response.

In summary, the results underscore important structural differences between stock and mutual insurers in terms of profitability drivers and growth patterns. These findings contribute to the literature by identifying ownership-specific determinants and reinforcing the significance of organizational form in the performance of insurers.

Table 4: Growth Model with Lagged Profit Margin

Independent Variable	<u>Mutual Company</u>			<u>Stock Company</u>		
	Coeff.	Std. Err.		Coeff.	Std. Err.	
Intercept	-0.7917	0.1790	***	-1.0797	0.2090	***
Lagged Profit Margin	0.0501	0.0087	***	0.0503	0.0082	***
Lagged Firm Size	-0.0003	0.0014		-0.0142	0.0016	***
Market Share	0.6284	0.3759	*	8.5531	1.1899	***
Advertising Intensity	-0.3397	0.1204	***	0.1280	0.0918	
Investment Ratio	-0.8325	0.1482	***	-0.2182	0.0962	**
Leverage	0.0178	0.0040	***	0.0450	0.0038	***
Reinsurance Utilization	-0.0228	0.0088	***	0.0011	0.0093	
Proportion of Personal Lines	-0.0125	0.0062	**	-0.0532	0.0062	***
Market Concentration	33.7281	4.5982	***	37.4317	4.7531	***
Business Diversification	0.0273	0.0075	***	-0.0044	0.0078	
Geographic Diversification	-0.0058	0.0060		-0.0156	0.0057	***
Group Dummy	0.0034	0.0045		-0.0031	0.0058	
Agent Dummy	-0.0075	0.0039	*	-0.0066	0.0048	
GDP Growth	0.6257	0.1717	***	0.9950	0.2011	***
Economic Policy Uncertainty	-0.0760	0.0189	***	0.0233	0.0230	
Observations	5,797			14,127		
Adjusted R ²	0.0903			0.0654		

Dependent Variable: Growth

*** significant at 1% level, ** significant at 5% level, and * significant at 10% level.

III. Conclusions

This study is the first to examine the impact of ownership structure on business growth and profitability in the U.S. insurance industry. The findings reveal that prior profitability significantly influences subsequent profits for both stock and mutual insurers. These results are robust across two alternative profit measures.

However, the effects of growth on profitability appear to differ by ownership type. Specifically, lagged growth positively impacts current profits for stock companies only. In the

growth model, a positive correlation is observed between lagged profit and current growth. While the analysis confirms that smaller stock insurers tend to grow faster, no such relationship is found for mutual companies.

The results also show that both ownership types are affected by investment performance, business risk, reinsurance usage, business concentration, and macroeconomic conditions. However, several firm-specific characteristics have ownership-specific effects. For mutual insurers, market share, geographic diversification, and group and agent distribution systems significantly influence profitability and growth. In contrast, for stock insurers, advertising intensity, the proportion of personal lines, and market concentration are more influential.

In terms of growth determinants, stock insurers with higher market share grow more rapidly, while this relationship does not hold for mutual firms. Evidence of economies of scope is also found among stock insurers, as those with greater geographic diversification tend to grow faster. Conversely, mutual insurers benefit more from advertising intensity, reinsurance usage, and business line concentration, all of which positively affect their growth—effects not observed among stock insurers.

This study contributes to the literature by analyzing profit persistence and identifying key growth and profitability drivers across ownership structures. In a competitive market where, new entrants are growing rapidly, understanding these dynamics is critical. Given that rapid growth is a leading cause of failure among property–liability insurers, and that impairment rates are closely linked to underwriting performance, these findings carry important implications for consumers, insurers, investors, and regulators alike. The choice of ownership structure emerges as a pivotal strategic decision in ensuring sustainable growth and profitability in the insurance industry.

One limitation of this study is its focus on short-term effects, as it relies on a one-year lagged variable. As a result, it does not capture longer-term trends or persistence in the relationship under investigation. To better assess long-term profit persistence, future research should incorporate multi-year lagged variables or employ alternative methodologies capable of capturing extended temporal dynamics.

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