© The Journal of Risk and Insurance, 1990 Vol. LVII, No. 3, 499-518

# Agency Theory and Alternative Predictions for Life Insurers: An Empirical Test

Mary Ann Boose, PhD


## Abstract

Agency theory predicts higher expenses in firms organized as mutuals than in stock companies. Other theories predict advantages for mutual life insurers. Using regression analysis on data from 41 companies through 19 years, this study finds significant differences in general insurance expenses between mutual and stock life insurers, but cannot refute the possibility that the differences are due to sales force expenses. Both higher commissions and higher expenses are found in companies operating outside New York's jurisdiction.


## Introduction

This study tests the predictions of agency theory and its alternatives concerning systematic differences in operating expenses between mutual and stock life insurers. Although the life insurance industry offers an ideal opportunity to test these predictions, they have not previously been thoroughly examined. This topic is important to participants in the industry, to regulators, and to consumers because it deals with the efficiency with which life insurance products are delivered to consumers.

Agency theory predicts that, all else equal, expenses incurred by less-monitored agents will exceed those incurred by their more-monitored counterparts. This is because managers are proposed to maximize their own utility rather than firm profits. The idea is not new. Smith (1776, p. 700) stated that the manager of a joint stock company is apt to give himself a dispensation from paying the same "anxious vigilance" to the details of the business that he would pay if it were entirely his own. The theory is used by Alchian and Demsetz (1972), Jensen and Meckling (1976), and others to

---

Mary Ann Boose is Assistant Professor of Economics and Finance at the University of Mississippi.

The author gratefully acknowledges the assistance and encouragement of Arthur Denzau, Travis Pritchett, and two anonymous referees.

predict that because managers of stock firms are more closely monitored than managers of firms organized on a mutual basis they will incur lower expenses. In answer to the free rider problem that would reduce monitoring when stock is held by many individuals, Manne (1965) proposes that monitoring is accomplished by the market for corporate control. No such market exists for mutual firms, the ownership of which is vested in the customers. This, again, would yield predictions that the managers of mutual firms incur greater expenses than do the managers of stock firms. Tests of these predictions of agency theory have been performed using data from savings and loan associations (Nicols, 1967; O'Hara, 1981), from medicare claims processing firms (Frech, 1976, 1979), and from banks (Rasmusen, 1988). Each of these studies finds significant differences between stock and mutual firms.

Agency theory (although not by that name) is supported by Fletcher (1966) in the explanations she finds for the life insurer changes from stock organization to mutual. Of those given, the only enduring reason was "to protect entrenched managerial interests" (p. 32). In a survey of life insurers Greene and Johnson (1980) found greater levels of monitoring in stock companies, but indicate that officers of mutuals felt they had less control. Spiller (1972) attributes the higher growth rate among New York stock life insurers (as compared to their mutual counterparts) to the management which is more highly monitored. He does not discuss the difference in the availability of capital which is an important factor in the growth of any company.

The continued existence of mutual firms, however, indicates that there must be some advantage(s) allowing them to compete, or even to dominate. The advantages proposed for some mutual firms include: the non-specificity of firm assets in financial firms which allows customers of mutuals to control management by withdrawing assets (deposits) from firms with managers whose actions are not in accord with the goals of the customers (Fama and Jensen, 1983), and the fact that mutuals have fewer interest groups between which conflicts must be resolved (Mayers and Smith, 1981; Hansmann, 1985). Fama and Jensen's discussion may be difficult to apply to life insurers because the cost of withdrawing assets is significantly higher for most owners of all types of cash value life insurance policies than it is for owners of certificates of deposit. Mayers and Smith, and Hansmann offer a more plausible explanation for life insurers. The implications of each are tested in our study.

Mayers and Smith (1986) and Smith (1986) propose that companies with different organizational structures specialize in different products. In order to control for this, the companies chosen for this study are those having a similar product mix. Further allowance has been made for differences in product mix by including variables in the regression for the different types of insurance.

In contrast to the theories proposing advantages for either of the organizational forms, Demsetz and Lehn (1985) predict that the organizational form of the firm is not relevant in the presence of regulators who act as surrogate monitors. This theory is important to insurers. Its predictions are tested in this study by comparing companies within the control of a more strict regulator, New York, to those outside New York's jurisdiction.

If companies compete over time in the same output and input markets, competitive market theory says there cannot be a difference in total expenses between stock and mutual companies, nor between those under different regulatory regimes. Belth (1968, 1969) and Cherin and Hutchins (1987) each give evidence of considerable variation in product quality and price. The analysis by Pritchett and Wilder (1986) concludes that there are aspects of the industry that "fall short of the workable competition norms", that "questions remain about productive efficiency, price competition for individual (as opposed to group) products, (and) growth as a managerial objective". These studies would suggest that the market for life insurance is less than perfectly competitive. The life insurance industry offers an ideal opportunity to test these conflicting theories because it includes both mutual and stock firms, and because of the difference in regulators between those of New York and those of most other states.

Although studies such as Pritchett (1971) and Colenutt (1977) have found considerable variation in expenses among life insurers, no systematic difference was found to be attributable to the form of organization of the firm. In their studies of economies of scale for life insurers, Houston and Simon (1970), Colenutt (1977), and Geehan (1977) specifically include terms for the form of organization. None of these studies found the form of organization to be a significant explanatory variable. However, each of these studies used only a single year's expenses, and it is possible that the multicollinearity found in the data would make it difficult to isolate the effects of organizational structure. This study overcomes the multicollinearity problem by pooling cross-sectional data through 19 years.

In order to test the conflicting predictions concerning life insurers, a regression model to explain general insurance expenses as a function of output, form of organization, and regulator is used. Commissions and the sum of expenses plus commissions will be similarly examined later in this study. If the expenses are greater in mutuals, or if the regulatory regime affects expenses, then the appropriate dichotomous variable should show the difference. The basic model is:

$$\text{EXPENSES} = f(\text{FORM, REGULATOR, OUTPUT}).$$

If FORM has a value of one for firms that are mutual, and REGULATOR has a value of one if the firm is outside the jurisdiction of New York (it is neither domiciled in New York nor does business there), then the theories would predict the following signs on the coefficients:

| Theory | Form | Regulator | Output |
|---|---|---|---|
| Agency | + | na | + |
| Mutual-has-Advantage | − | na | + |
| Regulator-as-Monitor | 0 | +/− | + |
| Competitive Market | 0 | 0 | + |

If the managers of mutuals are able to impose greater costs upon their firms, then the coefficient of FORM will be positive. On the contrary, if mutuals have the advantage, then the coefficient will be negative. The sign of the coefficient of FORM, if significantly different from zero, will discern between the Agency and Mutual-has-Advantage theories.

If FORM is not a significant variable, the sign of the coefficient of REGULATOR will indicate any difference that is attributable to the regulator. If the more strict regulator is an effective surrogate monitor and is able to enforce more diligence among agent-managers concerning operating expenses, then the sign will be positive. Companies outside New York's jurisdiction will have higher expenses. There is the possibility, empirically supported by Harrington (1982), that the primary difference made by the regulator is higher expenses due to constraints or to the increased cost of compliance. In that case the sign will be negative. If the signs of both FORM and REGULATOR are positive and significantly different from zero, then agency theory has been supported: even though the more strict regulator is effective when compared to his peers he is unable to fully counteract the agency differential.

Many of the variables used to indicate OUTPUT are measures of the quantity of the various products issued or in force. The greater the amounts of insurance, the greater expenses should be. Other indicators of OUTPUT measure the average size of policies, average premium on ordinary business, and the ordinary lapse rate. All of these are discussed below.

## Data

All data were obtained from the 19 annual editions from 1966 through 1984 of *Best's Insurance Reports, Life and Health Edition*. In order to restrict the study to companies that should be comparable, only the 80 largest companies, as measured by assets on January 1, 1984, were used. It was decided, based on natural breakpoints in the data, to exclude from these the 16 companies with the highest percentages of annuity premiums in 1984, and the 11 companies with the highest percentages of accident and health premiums in 1984. An additional three companies were not used because they received a large percentage of their premiums during the early years of this study from accident and health insurance. Three companies that are organized on a fraternal basis were excluded because there were not enough large fraternals to be analyzed as a separate group. The two companies that specialize in industrial insurance were excluded as were companies that specialize in reinsurance or pension business. Canadian companies selling life insurance in the United States were included, but those operating only in Canada, or restricting their US business to reinsurance, were not included. Of the 80 original companies, 41 are included in the study:

| | FORM | | |
|---|---|---|---|
| REGULATOR | Mutual | Stock | Total |
| Outside NY | 7 | 13 | 20 |
| New York | 20 | 1 | 21 |
| Total | 27 | 14 | 41 |

**The General Expenses Model**

In order to overcome multicollinearity problems, Chow tests were performed to test the appropriateness of pooling, then the cross-sectional data in this study were pooled through 19 years. Pooling, however, entails difficulties of its own including heteroskedasticity across years. In addition to expected differences in variances through time, there is no reason for the variances to be hypothesized as equal between mutual and stock firms or between New York regulated firms and those that are not so regulated. Bartlett tests were conducted to test for equality of variances through time when the companies were separated by FORM and again when separated by REGULATOR. When heteroskedasticity is diagnosed, weighted least squares is used. Heteroskedasticity is also expected in the continuous variables that are correlated with the size of the firm (as the size of the firm increases, so does the expected error variance). This is one reason that the model has been specified in double log form:

$$\ln(Y_{it}) = B_i * \ln(X_{it}) + U_{it} \text{ where } i = 1,2, \ldots ,41 \text{ companies and } t = 1,2, \ldots ,19 \text{ years.}$$

Log transformation of the data also solves another problem: if there is a difference in expenses between mutual and stock firms, or between those that are regulated by New York and those that are not so regulated, it is not logical to expect the difference to be a specific sum regardless of the size of the firm. By using a log specification, the difference is no longer a simple parallel shift of a straight line but instead represents a percentage change in the dependent variable resulting from a percentage change in the independent variable. The log model, therefore, is more in keeping with theorized relationships between the dichotomous regressors and the dependent variable.

The following model is used to test the various theories concerning the expenses of life insurers operating with different organizational forms and under different regulatory regimes:

$$\begin{aligned}\ln(GIE) = {} & a + b\,(FORM) + c(REGULATOR) + d*\ln(OLR) + f*\ln(APO) + \\ & g*\ln(FACEI) + h*\ln(GRCRI) + i*\ln(ISSU) + j*\ln(WLAIF) + \\ & k*\ln(GCFIF) + l*\ln(INDIF) + m*\ln(TIF) + n*\ln(BENEAH) + u\end{aligned}$$

where GIE is general insurance expenses; FORM equals one for mutuals and zero for stock companies; REGULATOR is one if outside New York's jurisdiction and zero inside; OLR is the ordinary lapse ratio; APO is the average premium on ordinary policies; FACEI is the face value of ordinary insurance issued; GRCRI is the face amount of group and credit insurance issued; ISSU is the average face amount for ordinary policies issued; WLAIF, TIF, and INDIF are the amounts of whole life, term and industrial in force; GCFIF is the amount of group, credit and federal government insurance in force; and BENEAH is the total of accident and health benefits paid.

*Discussion of Variables*

General insurance expenses (GIE) include the allocation of the following expenses to insurance operations: rent; salaries and wages; employee and agent benefit plans; legal, accounting, and actuarial fees; medical examination and inspection report fees; travel; advertising; postage, printing and stationery; depreciation of furniture and equipment; books; dues; and insurance. Expenses of operation that are not included in GIE include benefits to policyholders, allocations to reserves, commissions to agents, premium taxes and income taxes.

FORM is a dichotomous variable that takes on a value of one if the company is a mutual, and a value of zero if the company is organized as a stock company. Agency theory proposes that the expenses of a firm with a mutual structure will be higher than those of a stock firm because the agent-manager of the stock firm is more strictly monitored, and therefore more constrained concerning the costs he may impose upon the firm. If this is true, the coefficient of FORM will be positive. Mayers and Smith (1981, 1986), and Fama and Jensen (1983) maintain that mutual companies enjoy advantages over their stock competitors. The predicted advantages involve the ability of mutual owner/customers to discipline management by withdrawing company assets or the lesser contracting expenses among conflicting interest groups when the customers are also the owners. If this is true, the coefficient of FORM will be negative.

REGULATOR is also a dichotomous variable. It takes on a value of one if the company is outside New York's jurisdiction. Demsetz and Lehn (1985) propose that the regulator can substitute for the owner(s) of a firm in the monitoring and constraining of agent-managers. If this is true, then there should be no difference between the mutual and stock companies, but companies that are not regulated by New York should have higher expenses than those that are within New York's jurisdiction. If, however, the only difference is similar to Harrington's (1982) findings of higher expenses due to regulatory constraints, then the coefficient of REGULATOR will be negative.

Because the companies participate in the same output and input markets and neither the stock nor the mutual firms shows signs of languishing, competitive market theory says there must be no difference between the total expenses of stock and mutual companies, or between those regulated by any particular state and those that are not so regulated. This would predict that the coefficients of both FORM and REGULATOR would not be significantly different from zero.

Ordinary lapse ratio (OLR) is the ratio of insurance voluntarily terminated (as opposed to death claims or maturing endowments) after the first policy year to insurance in force in the company at the beginning of the year. This ratio concerns only ordinary, not group, insurance. This variable is important in any model of expenses because it is generally believed that the greater the lapse ratio, the greater GIE are expected to be. It is possible, however, that the expenses made in the conservation effort do reduce the lapse ratio and that,

therefore, a lower OLR is associated with increased expenses. The question can be answered empirically.

Average premium on ordinary policies (APO) is the total premiums collected by the company during the year on ordinary policies divided by the amount of ordinary insurance in force at the end of the year. A.M. Best Company predicts that expenses are positively related to the average premium paid on ordinary policies.

Face issued (FACEI) is the amount of individual life insurance issued by the company during the year. It is the sum of the face amounts of whole life, term life, and industrial life insurance policies. The data for whole life as reported by Best's include the value of dividend additions made to policies during the years from 1969 to 1983. Prior to that time, additions were reported separately. In this study the value of additions is added to the amount of whole life so that the variable is consistent throughout the period. This category includes revivals of terminated policies and increases in policies in force. All individual insurance issued has been summed because when the model was estimated using each type of policy separately no greater explanatory value was gained. To the extent that GIE includes the variable costs of underwriting and policy issue it is predicted that the face amount of insurance issued is positively related to the GIE. Within the underwriting and policy issue functions, there are also fixed expenses that do not vary with the amount of insurance issued. To the extent that GIE allocable to new policy issue is dominated by these fixed costs we can expect an indirect relationship between GIE and the amount of insurance issued, indicating economies of scale. If this is the case, then the relationship between FACEI and the average policy size, ISSU (see below), is that ISSU picks up the variable costs of policy issue leaving the body of fixed costs to be explained by FACEI.

Group and credit issued (GRCRI) is the face amount of group or credit life insurance issued by the company during the year. It should also be positively related to GIE. It is included in the model as a separate variable because it is expected to involve lower expenses per thousand of face value than individual policies entail.

Average policy issued (ISSU) is the average face amount for ordinary policies issued by the company during the year. The larger the policy, the more demanding underwriting will be. All else equal, a company that issues larger policies will have higher expenses per policy issued. The relationship between FACEI and ISSU may be that ISSU picks up the variable policy underwriting and issue expenses and that FACEI picks up economies of scale in policy issue.

Whole life in force (WLAIF) is the face value of whole life and endowment insurance policies and dividend additions in force in the company at the end of the year. It should be directly related to GIE because of the services provided.

Group, credit, and federal government group in force (GCFIF) is the sum of the in force face value of group, credit and Federal Employees' Group Life Insurance added to Servicemen's Group Life Insurance. It should be positively

related to GIE, again due to policyholder records and service. It is separated because these policyholders are expected to have a different relationship to the company, and therefore different service needs and expenses.

Industrial in force (INDIF) is the face value of industrial policies in force at the end of the year. It should also be positively related to GIE, but again because of the different relationship of the insured to the company it is separated from WLAIF.

Term in force (TIF) is the face value of term insurance policies in force at the end of the year. It is also expected to be positively related to GIE, and is also separated out because service needs and expenses are expected to differ from those of the other types of policies.

Accident and health benefits (BENEAH), the dollar amount of benefits paid, is expected to be positively related to GIE because the greater amount of such benefits paid, the greater the expenses should be for policyholder service and claims handling.

The stochastic error term, u, is assumed to have all the properties normally required for multiple regression analysis. As explained earlier, specification of the model in log form and the use of cross sectional data through time have been used to overcome problems caused by violations of these assumptions.

The predictions of the various theories concerning the signs of the coefficients in the model of general insurance expenses are summarized in Table 1.

**Table 1**

Predictions of Coefficient Signs:
Expenses Model

| | Agency Model | Mutual-has-Advantage | Regulator-as-Monitor | Competitive Market |
|---|---|---|---|---|
| FORM | + | − | 0 | 0 |
| REGULATOR | na | na | +/− | 0 |
| OLR | ? | ? | ? | ? |
| APO | + | + | + | + |
| FACEI | ? | ? | ? | ? |
| GRCRI | + | + | + | + |
| ISSU | + | + | + | + |
| WLAIF | + | + | + | + |
| GCFIF | + | + | + | + |
| INDIF | + | + | + | + |
| TIF | + | + | + | + |
| BENEAH | + | + | + | + |

*Empirical Results of the General Expenses Model*

The pooled weighted regression was estimated, with the result that all independent variables were found significant at the 1% level. In order to test for interactions among the dichotomous variables and between them and the continuous variables of the model, interaction terms were added to the model. F-tests were conducted to test for the significance of any added interaction term or set of terms. None was significant. In order to test for changes in the importance of FORM or REGULATOR through time, interaction terms between these dichotomous variables and a set of annual dichotomous variables were added. Of these, the interactions between REGULATOR and the annual dummys were the most important, being significant at the.01 level in six of the 18 years and at the.05 level in 11 years. The results of the regression of GIE on the basic independent variables and REGULATOR-YEAR interaction terms are found in Table 2.

As expected, the general insurance expenses of an insurer are directly related to the ordinary lapse ratio, to the average premium paid on ordinary insurance, to the amount of group insurance issued, to the average size of the policies issued, to the output variables representing the amounts of the various insurances in force in the company, and to the amount of accident and health insurance benefits. Although LGIE is positively related to the average size of the policies issued, it is negatively related to the amount of ordinary insurance issued, indicating economies of scale in underwriting and policy issue. In support of agency theory, and in direct contrast to the proposals that mutuals have the advantage over stock companies, was the finding that, all else equal, the general insurance expenses of a mutual insurer are over.1253 percent higher than for its stock counterpart.

The general insurance expenses of non-New York regulated insurers are higher than for their New York-regulated equals, supporting Demsetz and Lehn's (1985) contention that strong regulators make a difference. It is interesting that the difference between New York regulated companies and those not so regulated changes through time, and is significant at the.05 level, or less, almost every year from 1972 through 1983. The size of the difference between the two regulatory regimes increases almost monotonically throughout the period, abating only slightly in 1974 and in the 1980's. Although the difference between New York regulated companies and their counterparts outside New York's jurisdiction is significant, the existence of the difference between stock and mutual companies contradicts the hypothesis that the regulator is able to perfectly substitute for stockholders in the monitoring and controlling of agent-managers.

The data for expenses of the life insurers includes expenses of the sales departments of the companies. Sales department expenses include expenditures for training, sales promotion, and employee benefits payable to sales representatives. It is possible, therefore, that the difference in expenses could be attributable to sales force expenditures and not to agency theory costs. One way to test for this difference is to test for differences in the commissions

**Table 2**

Results of Pooled Weighted Regression:
Expenses Model

| Variable | Coefficient | t | Prob>\|t\| |
|---|---|---|---|
| Intercept | -8.40760420 | -14.478 | 0.0001 |
| FORM | 0.12531439 | 5.195 | 0.0001 |
| REGULATOR | 0.02252203 | 0.507 | 0.6121 |
| LOLR | 0.38920003 | 9.987 | 0.0001 |
| LAPO | 0.42793611 | 5.803 | 0.0001 |
| LFACEI | -0.14066696 | -4.056 | 0.0001 |
| LGRCRI | 0.01575880 | 4.205 | 0.0001 |
| LISSU | 0.09118942 | 4.359 | 0.0001 |
| LWLAIF | 0.74284348 | 21.720 | 0.0001 |
| LGCFIF | 0.02458448 | 6.237 | 0.0001 |
| LINDIF | 0.01360371 | 5.930 | 0.0001 |
| LTIF | 0.23915492 | 11.541 | 0.0001 |
| LBENEAH | 0.03752257 | 10.202 | 0.0001 |
| REG66 | 0.01797356 | 0.360 | 0.7186 |
| REG67 | 0.04483716 | 0.886 | 0.3756 |
| REG68 | 0.07693350 | 1.420 | 0.1560 |
| REG69 | 0.06188245 | 1.156 | 0.2479 |
| REG70 | 0.08039601 | 1.393 | 0.1639 |
| REG71 | 0.08981166 | 1.586 | 0.1132 |
| REG72 | 0.11774782 | 1.996 | 0.0463 |
| REG73 | 0.12440693 | 2.082 | 0.0377 |
| REG74 | 0.11881077 | 1.930 | 0.0540 |
| REG75 | 0.16610911 | 2.512 | 0.0122 |
| REG76 | 0.19452292 | 2.748 | 0.0061 |
| REG77 | 0.21775315 | 2.920 | 0.0036 |
| REG78 | 0.22120995 | 2.945 | 0.0033 |
| REG79 | 0.22549513 | 3.106 | 0.0020 |
| REG80 | 0.23304387 | 3.061 | 0.0023 |
| REG81 | 0.21378840 | 2.730 | 0.0065 |
| REG82 | 0.19584338 | 2.187 | 0.0290 |
| REG83 | 0.20214296 | 2.198 | 0.0283 |

paid. The total of commissions and other benefits (such as the sales representatives' benefits included in GIE) should not differ systematically across subgroups of companies if the labor market is in equilibrium. If commissions across subgroups of companies do differ, and the difference is in

the opposite direction from that of the difference in expenses, then commissions should be added to the GIE to see if the total of the sales force labor expenses plus the company expenses differs systematically between mutual and stock companies, or between New York regulated companies and those not so regulated. If the difference in the GIEs of the different subgroups of companies is exactly offset by the difference in commissions, this would indicate that the difference in GIE is attributable to differences in sales force benefits. Agency theory will only continue to be supported if, after this adjustment, mutual companies still experience higher expenses than do stock companies. If there is no significant difference between mutual and stock company expenses, then the coefficient of REGULATOR will enable us to discern between the neoclassical, competitive market theory and Demsetz and Lehn's (1985) proposal that the regulator substitutes for the stockholder/monitor, and Harrington's (19 ) finding of increased expenses.

**The Commissions Model**

Each variable in the Expenses model also has a theoretical relationship to the commissions paid by a life insurer. The continuous variables are, again, specified in log form to overcome the heteroskedasticity problem.

In order to test for differences in commissions paid by companies operating with different organizational structures and under different regulatory regimes, the following model is used:

$$\ln(\text{COMMISS}) = a + b(\text{FORM}) + c(\text{REGULATOR}) + d^*\ln(\text{OLR}) + f^*\ln(\text{APO}) + g^*\ln(\text{FACEI}) + h^*\ln(\text{GRCRI}) + i^*\ln(\text{ISSU}) + j^*\ln(\text{WLAIF}) + k^*\ln(\text{GCFIF}) + l^*\ln(\text{INDIF}) + m^*\ln(\text{TIF}) + n^*\ln(\text{BENEAH}) + u$$

where COMMISS is the total dollar commissions paid by the company during the year, and the other variables maintain the definitions given for the GIE model.

*Discussion of Variables*

FORM is a dichotomous variable that equals one if the company is a mutual. If the expenses of the mutual companies are greater because of benefits provided to the sales force, then, in order for the labor market to be in equilibrium, the commissions paid by mutual companies should be lower and the coefficient of FORM will be negative.

REGULATOR is a dichotomous variable that equals one if the company is outside New York's jurisdiction. If New York's Section 213 restrictions on commissions are binding, then companies outside New York's jurisdiction pay more in commissions and the coefficient of REGULATOR will be positive. As seen above, of the 27 mutual insurers in this study, seven are outside the jurisdiction of New York: they are neither domiciled within the state nor do they operate in the state. New York's extraterritorial regulation does not apply to them.

It is expected that as the ordinary lapse ratio, OLR, increases, because there is less insurance in force, the commissions paid should decrease. However, since a higher lapse ratio should mean less "old business on the books", given the amount of total insurance in force, the company with a higher lapse ratio

would have a newer policy mix, and this newer policy mix would mean that the company is paying a higher average commission percentage. Since each coefficient in a multiple regression calculation is done holding "all else equal", it must be assumed that the amount of insurance in force is held constant despite any increase in lapse ratio. This, then, would predict a positive relationship between the lapse ratio and the commissions paid: as the lapse ratio increases, so do the commissions because of the change in the age mix of the policies in force. The direction of the relationship between commissions and lapse ratios can, therefore, only be determined empirically.

For any given face amount of insurance, as the average premium on policies, APO, increases, since the agents' commission is a percentage of the premium, commissions should increase. The average size of policy issued, ISSU, should pick up any difference in commissions due to the average size of ordinary policies.

The variables measuring the volume issued and in-force, FACEI, GRCRI, WLAIF, GCFIF, TIF, AND INDIF, should all be directly related to commissions because both first year and renewal commissions are a function of premiums on the policies, and premiums are directly related to the amount of insurance in force.

Commissions are expected to be positively related to accident and health benefits, BENEAH, because agents are paid commissions based on the premiums paid each year that the policy is in force, and the total benefits are expected to be highly correlated with premiums paid.

**Table 3**

Predictions of Coefficient Signs:
Commissions Model

| | Agency Model | Mutual-has-Advantage | Regulator-as-Monitor | Competitive Market |
|---|---|---|---|---|
| FORM | na | na | 0 | 0 |
| REGULATOR | na | na | + | 0 |
| OLR | na | na | +/− | +/− |
| APO | na | na | + | + |
| FACEI | na | na | + | + |
| GRCRI | na | na | + | + |
| ISSU | na | na | + | + |
| WLAIF | na | na | + | + |
| GCFIF | na | na | + | + |
| INDIF | na | na | + | + |
| TIF | na | na | + | + |
| BENEAH | na | na | + | + |

*Empirical Results of the Commissions Model*

The pooled weighted regression of commissions was estimated. Also estimated were the same regression with the annual dichotomous variables and their interaction terms. Using F-tests the interaction between the years and REGULATOR was again significant. The results of the weighted regression of commissions are found in Table 4.

As expected, the commissions paid by a life-health insurer are directly related to the ordinary lapse ratio, to the average premium paid on ordinary insurance, to the amount of ordinary insurance issued, to the amounts of whole life and industrial insurance in force, and to the amount of health insurance benefits. Commissions are negatively related to term insurance in force. The continuous variables that represent group insurance issued and in force, LGRCRI, and LGCFIF, were not individually important in explaining commissions.

In support of the possibility that the difference between the expenses of mutuals and those of stock companies is due to the sales force expenses, and not to agency theory costs imposed by agent-managers, we have found that mutuals pay.175 percent less commissions than do stock companies. It is possible that sales representatives of mutual companies receive less of their total compensation in commissions and more of it in other benefits: better training, employee benefits, or assistance on their expenses of operation (such as rent subsidies, computer or phone links to the home office, or more sales materials for use in their presentations). This, however, does not deny the possibility of differential agency theory expenses. With these differences in sales force expenses, there still could be some difference in agency theory costs. To test for the existence of any difference in expenses between stock companies and mutuals after allowance for the difference in commissions, it is necessary to combine expenses and commissions into a single value and to use that value as the dependent variable in yet another regression. This is done in the next section.

In further support of the Demsetz and Lehn (1985) contention that regulatory differences can substitute for monitoring by stockholders, we find that non-New York companies pay more in commissions than their New York counterparts. The difference was statistically important at the.05 level or less in the years 1972 to 1979. This is evidence that the New York regulator is effective in constraining the direct compensation paid to agents of New York regulated companies. This is in addition to the difference in expenses which also were constrained by the New York regulatory regime.

## The Expenses Plus Commissions Model

The expenses model showed that mutual companies incur higher general insurance expenses than do stock companies. This difference is at least partially offset by the lesser commissions as found in the commissions model. This offset does not deny the possibility of differential agency theory expenses. Even with the differences in commissions, there could still be some remaining systematic difference. To test for the existence of any difference in

**Table 4**

Results of Pooled Weighted Regression:
Commissions Model

| Variable | Coefficient | t | Prob>\|t\| |
|---|---|---|---|
| Intercept | -9.78007478 | -14.868 | 0.0001 |
| FORM | -0.17522031 | -6.492 | 0.0001 |
| REGULATOR | 0.04868205 | 0.821 | 0.4121 |
| LOLR | 0.11165890 | 2.318 | 0.0207 |
| LAPO | 0.72665036 | 9.101 | 0.0001 |
| LFACEI | 0.73528501 | 18.364 | 0.0001 |
| LGRCRI | 0.00244641 | 0.522 | 0.6019 |
| LISSU | 0.08377009 | 3.270 | 0.0011 |
| LWLAIF | 0.26583485 | 7.084 | 0.0001 |
| LGCFIF | -0.00917293 | -1.825 | 0.0684 |
| LINDIF | 0.02707397 | 9.063 | 0.0001 |
| LTIF | -0.09276824 | -3.502 | 0.0005 |
| LBENEAH | 0.02152671 | 5.124 | 0.0001 |
| REG66 | 0.02909047 | 0.428 | 0.6691 |
| REG67 | 0.04002054 | 0.587 | 0.5572 |
| REG68 | 0.06618449 | 0.969 | 0.3327 |
| REG69 | 0.09803193 | 1.428 | 0.1536 |
| REG70 | 0.10604102 | 1.541 | 0.1238 |
| REG71 | 0.13217154 | 1.916 | 0.0558 |
| REG72 | 0.15930722 | 2.303 | 0.0216 |
| REG73 | 0.16779356 | 2.413 | 0.0161 |
| REG74 | 0.16047536 | 2.303 | 0.0215 |
| REG75 | 0.18777387 | 2.683 | 0.0075 |
| REG76 | 0.19597726 | 2.781 | 0.0056 |
| REG77 | 0.18411129 | 2.588 | 0.0098 |
| REG78 | 0.17712779 | 2.459 | 0.0141 |
| REG79 | 0.16062636 | 2.200 | 0.0281 |
| REG80 | 0.12849743 | 1.723 | 0.0853 |
| REG81 | 0.12337749 | 1.616 | 0.1065 |
| REG82 | 0.01795548 | 0.224 | 0.8228 |
| REG83 | -0.08257500 | -1.002 | 0.3167 |

expenses between stock and mutual companies after the difference in commissions has been accounted for, it is necessary to combine expenses and commissions into a single value and to use that value as the dependent variable in yet another regression. This is done in this section.

All the independent variables used in this model are from the expenses (and the commissions) model. In order to test the theories the following model is used:

$$\ln(GIE + COMMISS) = a + b(FORM) + c(REGULATOR) + d*\ln(OLR) + f*\ln(APO) + g*\ln(FACEI) + h*\ln(GRCRI) + i*\ln(ISSU) + j*\ln(WLAIF) + k*\ln(GCFIF) + l*\ln(INDIF) + m*\ln(TIF) + n*\ln(BENEAH) + u$$

where GIE + COMMISS is the sum of general insurance expenses and commissions as used in the first two models.

As in the expenses model, there are conflicting predictions concerning the relationship between FORM and the dependent variable. Agency theory would predict a positive relationship; mutual-has-advantage would predict a negative relationship; and regulator-as-monitor theory and competitive market theory would predict no difference between mutual and stock companies. The regulator-as-monitor theory predicts a positive relationship between GIE + COMMISS and REGULATOR.

The signs of the relationship between ordinary lapse ratio, face issued and GIE were not able to be predicted. It is, therefore, not possible to predict the relationship of these variables to GIE + COMMISS.

The rest of the continuous variables in the model all are predicted to have a positive relationship to GIE and also to COMMISS. It is, therefore, only an extension of the logic of the previous sections to predict a positive relationship between the regressors and GIE + COMMISS. The predictions of the various theories concerning the signs of the expenses plus commissions model are summarized in table 5.

**Table 5**

Predictions of Theories:
Expenses plus Commissions Model

| | Agency Model | Mutual-has-Advantage | Regulator-as-Monitor | Competitive Market |
|---|---|---|---|---|
| FORM | + | − | 0 | 0 |
| REGULATOR | na | na | + | 0 |
| OLR | ? | ? | ? | ? |
| APO | + | + | + | + |
| FACEI | ? | ? | ? | ? |
| GRCRI | + | + | + | + |
| ISSU | + | + | + | + |
| WLAIF | + | + | + | + |
| GCFIF | + | + | + | + |
| INDIF | + | + | + | + |
| TIF | + | + | + | + |
| BENEAH | + | + | + | + |

*Empirical Results of the Expenses plus Commissions Model*

The pooled weighted regression was estimated, as was the same regression with the annual dichotomous variables and their interaction terms. F-tests were conducted to test for the significance of any added interaction terms, and again found the interaction between the regulator and the year to be important.

The results of the pooled weighted regression of general insurance expenses plus commissions are found in Table 6. The total of expenses plus commission is directly related to all of the output variables. This has been found to be true at a significance level of.01 for all variables.

The coefficient of FORM, which was positive in the expenses model at a significance level of.0001 and negative in the commissions model at the same significance level, is no longer significant. It's p-value is now.4518. This, then, is evidence that the difference found in expenses was due only to differences in the sales department expenses, and not to agency theory costs. The differences in general expenses between mutual and stock companies are exactly offset by differences in commissions between the types of companies. This would indicate that the sales departments of mutual companies offer sales representatives lower commission schedules, but higher benefits. Any other possibility (such as agency theory expenses are offset by commissions) would depend on a persistent, systematic difference in compensation to sales representatives: persistent disequilibrium in a labor market.

Unlike the effects of ownership form, which acted in different directions in the expenses and commissions models, the effect of the New York regulatory regime was always to reduce costs. This appears, again, in the importance of the interaction variables which are significant, at the.05 level or less, from 1968 through 1982. This supports the Demsetz and Lehn (1985) proposal that the strong regulator is effective in constraining both expenses of operation and the labor costs of the sales force.

## Summary and Conclusions

Agency theory yields predictions that are in direct conflict with theories proposing that the mutual form of organization has advantages. All of these conflict with competitive markets theory which proposes that firms of each form must attain at least some minimum level of productive efficiency, or they cannot compete. The life insurance industry offers an ideal opportunity to test the predictions. Further, it allows testing of the alternative proposed by Demsetz and Lehn (1985) that the form of organization is not important in the presence of regulators who act as surrogate monitors. Empirical information that sheds light on this conflict is important to participants in the industry, to regulators, and to consumers and investors since the expenses of operation ultimately affect the cost of the product and the profitability of the company.

This study uses regression models to test the predictions of agency theory and alternative explanations concerning differences in expenses of life insurers organized as mutuals and those organized as stock companies. It finds

**Table 6**

Results of Pooled, Weighted Regression:
Expenses plus Commissions Model

| Variable | Coefficient | t | Prob>\|t\| |
|---|---|---|---|
| Intercept | -9.25260214 | -21.942 | 0.0001 |
| FORM | 0.01315679 | 0.753 | 0.4518 |
| REGULATOR | 0.04471636 | 1.375 | 0.1694 |
| LOLR | 0.27216427 | 9.526 | 0.0001 |
| LAPO | 0.67073165 | 12.479 | 0.0001 |
| LFACEI | 0.24040968 | 9.541 | 0.0001 |
| LGRCRI | 0.00885290 | 3.282 | 0.0011 |
| LISSU | 0.09188064 | 6.001 | 0.0001 |
| LWLAIF | 0.52196028 | 20.898 | 0.0001 |
| LGCFIF | 0.00760390 | 2.652 | 0.0082 |
| LINDIF | 0.02070358 | 12.398 | 0.0001 |
| LTIF | 0.11431177 | 7.522 | 0.0001 |
| LBENEAH | 0.03178764 | 11.947 | 0.0001 |
| REG66 | 0.02543092 | 0.685 | 0.4938 |
| REG67 | 0.04682369 | 1.237 | 0.2165 |
| REG68 | 0.08168966 | 2.034 | 0.0423 |
| REG69 | 0.08673545 | 2.155 | 0.0315 |
| REG70 | 0.10518588 | 2.483 | 0.0132 |
| REG71 | 0.11696289 | 2.834 | 0.0047 |
| REG72 | 0.14242538 | 3.404 | 0.0007 |
| REG73 | 0.14945650 | 3.601 | 0.0003 |
| REG74 | 0.14735429 | 3.432 | 0.0006 |
| REG75 | 1.18674043 | 4.097 | 0.0001 |
| REG76 | 0.20492673 | 4.130 | 0.0001 |
| REG77 | 0.21725415 | 4.232 | 0.0001 |
| REG78 | 0.21749704 | 4.236 | 0.0001 |
| REG79 | 0.21814027 | 4.335 | 0.0001 |
| REG80 | 0.21194337 | 3.897 | 0.0001 |
| REG81 | 0.20283484 | 3.265 | 0.0011 |
| REG82 | 0.16275782 | 2.417 | 0.0159 |
| REG83 | 0.13165545 | 1.952 | 0.0513 |

differences in general insurance expenses between mutual and stock life insurers, but cannot refute the possibility that the differences are due to sales force expenses rather than to differences in the management of the companies. These results suggest that the long-term co-existence of the two organizational

forms can be at least partly explained by the absence of any systematic difference in agency theory expenses between the two. In support of Demsetz and Lehn (1985), however, significant differences are found in costs under the different regulatory regimes: both higher commissions and higher expenses are found in companies operating outside the more strict regulator's jurisdiction. This difference in expenses plus commissions between regulatory regimes is important to the discussion of competition within the industry.

Pritchett and Wilder (1986) propose an emphasis on growth within the industry, possibly at the expense of productive efficiency. They suggest that insurers offer higher commissions in order to encourage rapid growth. The results of this study find higher commissions among stock insurers (the form of organization experiencing the most rapid growth during the period of the study) but these higher commissions are offset by higher general expenses in the mutuals. Since general expenses include the employee benefits paid to the sales force, there are two possible explanations. The first is that the labor market pays the same commissions and benefits total to agents, and that agents select among companies with different commissions/benefits mixes. If this is the case, then agency theory costs are no greater in one form of organization than in another. The other possibility is that stock companies pay higher commissions in pursuit of rapid growth and that the mutuals experience agency theory costs equal to the difference. If this is the case, then both forms of organization tolerate general expenses plus commissions that are significantly higher than would be experienced given productive efficiency. Since this study finds that New York-regulated firms operate with lower general expenses and lower commissions, there is evidence to support the second case: it is possible to operate at a lower cost and commission level. Demsetz and Lehn's (1985) proposition that the regulator acts as a monitor has been supported. Agency theory costs exist in the absence of the more strict regulator, and the agency theory costs (possibly in the self-aggrandizing sense) in the mutuals are approximately equal to the costs of excessively rapid growth by the stock insurers.

Although this study does not find any systematic difference between the stock and mutual forms of organization, it does find a strong significant difference between the regulatory regimes. The remaining question must be how the firms with the higher expenses and the higher commissions can compete effectively over time with the lower cost firms: how non-New York regulated companies are able to compete with those that are regulated by New York. It would appear that any significant difference in costs that persists through time would cause the higher-cost organizational form to languish and ultimately to fail. This does not appear to be the case. Areas in which better performance would offset higher expenses plus commissions include mortality experience, lapse rates, and investment returns. It is difficult to propose systematic differences between the mortality or lapse experiences of stock and mutual firms. The investment performances of the two sets of firms, however, might vary systematically due to differences in regulation or to differences in

agency theory costs imposed by investment department management. This is an area for future research.

## References


1. Alchian, Armen A., and Harold Demsetz, 1972, Production, Information Costs, and Economic Organization, *American Economic Review*, 57: 777–95.
2. Altman, Edward I., and Marti G. Subrahmanyam, 1985, *Recent Advances in Corporate Finance* (Homewood, Illinois: Richard D. Irwin).
3. Belth, Joseph M., 1968, The Rate of Return on the Savings Element in Cash-Value Life Insurance, *Journal of Risk and Insurance*, 35: 569–81.
4. _____, 1969, The Relationship Between Benefits and Premiums in Life Insurance, *Journal of Risk and Insurance*, 36: 19–39.
5. Best, A.M. Co., 1961 to 1987, *Insurance Reports, Life and Health Edition*, (Oldwick, New Jersey: A.M. Best Co.).
6. Cherin, Antony C., and Robert C. Hutchins, 1987, The Rate of Return on Universal Life Insurance, *Journal of Risk and Insurance*, 54: 691–711.
7. Chow, G.C., 1960, Tests of Equality between Sets of Coefficients in Two Linear Regressions, *Econometrica*, 28: 591–605.
8. Colenutt, D. W., 1977, Determinants of Expense Ratios in United Kingdom Life Assurers, *Journal of Risk and Insurance*, 44: 77–85.
9. Datta, Prabir, and James R. Garven, 1988, Agency Costs, Organizational Form, and Capital Structure Policy: The Case of the Property-Casualty Insurance Industry, Unpublished Manuscript.
10. DeAlessi, Louis, 1973, Private Property and Dispersion of Ownership in Large Corporations, *Journal of Finance*, 28: 839–51.
11. Demsetz, Harold, and Ken Lehn, 1985, The Structure of Corporate Ownership: Causes and Consequences, *Journal of Political Economy*, 93: 1155–77.
12. Fama, Eugene F., and Michael C. Jensen, 1983, Agency Problems and Residual Claims, *Journal of Law and Economics*, 26: 327–49.
13. Fletcher, Linda P., 1966, Motivations Underlying the Mutualization of Stock Life Insurance Companies, *Journal of Risk and Insurance*, 33: 19–32.
14. Frech, Harry E., III, 1976, The Property Rights Theory of the Firm: Empirical Results from a Natural Experiment, *Journal of Political Economy*, 84: 143–52.
15. _____, 1979, Health Insurance: Private, Mutuals, or Government, in: Clarkson and Martin, eds., *The Economics of Nonproprietary Organizations*, Supplement to Vol. 1, *Research in Law and Economics*, 61–73.
16. Geehan, Randall, 1977, Returns to Scale in the Life Insurance Industry, *Bell Journal of Economics*, 8: 497–514.
17. Greene, Mark R., and Richard Johnson, 1980, Stocks vs. Mutuals: Who Controls?, *Journal of Risk and Insurance*, 47: 165–74.
18. Gujerati, D., 1978, *Basic Econometrics* (New York, NY: McGraw-Hill).

19. Hansmann, Henry, 1985, The Organization of Insurance Companies: Mutual versus Stock, *Journal of Law, Economics and Organization*, 1: 125–53.
20. Harrington, Scott E., 1982, New York Regulation of General Agency Expense Allowances, *Journal of Risk and Insurance*, 49: 564–82.
21. Houston, David, and Richard Simon, 1970, Economies of Scale in Financial Institutions: A Study in Life Insurance, *Econometrica*, 38: 856–64.
22. Jensen, Michael C., and William Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure, *Journal of Financial Economics*, 3: 305–60.
23. _____, and Clifford W. Smith, Jr., 1985, Stockholder, Manager, and Creditor Interests: Applications of Agency Theory," in Altman, Edward I., and Subrahmanyam, Marti G., eds., *Recent Advances in Corporate Finance* (Homewood, Illinois: Richard D. Irwin) 93–132.
24. Johnston, J., 1984, *Econometric Methods*, (New York, NY: McGraw-Hill).
25. Kreider, Gary P., 1972, Who Owns the Mutuals? Proposals for Reform of Membership Rights in Mutual Insurance and Banking Companies, *Cincinnati Law Review*, 41: 275–311.
26. Manne, Henry G., 1965, Mergers and the Market for Corporate Control, *Journal of Political Economy*, 73: 110–20.
27. Mayers, David, and Clifford W. Smith, Jr., 1981, Contractual Provisions, Organizational Structure, and Conflict Control in Insurance Markets, *Journal of Business*, 54: 407–34.
28. _____, and _____, 1986, Ownership Structure and Control: The Mutualization of Stock Life Insurance Companies, *Journal of Financial Economics*, 16: 73–99.
29. Nicols, Alfred, 1967, Stock versus Mutual Savings and Loan Associations: Some Evidence of Differences in Behavior, *American Economic Review*, 57: 337–46.
30. O'Hara, Maureen, 1981, Property Rights and the Financial Firm, *Journal of Law and Economics*, 24: 317–32.
31. Pritchett, S. Travis, 1971, An Intercompany Expense Comparison for Thirty Life Insurers, *Journal of Risk and Insurance*, 38: 553–62.
32. _____, and Ronald P. Wilder, *Stock Life Insurance Company Profitability and Workable Competition*, S.S. Huebner Foundation Monograph No. 14, (Homewood, Illinois: Richard D. Irwin).
33. Rasmusen, Eric, 1988, Mutual Banks and Stock Banks, *Journal of Law and Economics*, 31: 395–421.
34. Smith, Adam, 1776, *The Wealth of Nations*, Cannan Edition, (New York, NY: Modern Library), 1937.
35. Smith, Clifford W., Jr., 1986, On the Convergence of Insurance and Finance Research, *Journal of Risk and Insurance*, 53: 693–717.
36. Spiller, Richard, 1972, Ownership and Performance: Stock and Mutual Life Insurance Companies, *Journal of Risk and Insurance*, 34: 17–25.