working paper
department
of economics

CARTELS, COMPETITION AND REGULATION IN THE PROPERTY AND LIABILITY INSURANCE INDUSTRY*

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Number 111

May 1973

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*This research has been partially supported by the Ford Foundation Urban Grant to M.I.T. The views expressed here are the author's sole responsibility and do not reflect those of the Department of Economics, the Massachusetts Institute of Technology, or of the Ford Foundation.

CARTELS, COMPETITION AND REGULATION IN THE PROPERTY AND LIABILITY INSURANCE INDUSTRY [1]

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I. INTRODUCTION

The property and liability insurance industry had assets of $68 billion and premiums of $35 billion in 1971. The products sold by this industry, in the form of contingent claims against accidental property loss and liability judgments, are purchased in one form or another by virtually all economic agents in the U.S. economy. Recent work in economic theory indicates in addition, that the availability of such contingent claims is an important prerequisite for the efficient operation of a market economy in the presence of uncertainty. Despite the size and importance of the property insurance industry in the U.S. economy, the literature in the area of industrial organization has all but ignored it. A leading text in the area mentions the insurance industry in passing, but only to note that it will not be a subject of discussion in the book.[2] Scherer's relegation of the industry to the "money and banking" field may be justified in the context of past research work available, but it seems somewhat unfortunate that such an important private sector of the U.S. economy has not undergone more intensive study and analysis in the context of the structure - behavior-performance rubrick of industrial organization.

The property insurance industry is also a regulated industry. Virtually every state has an insurance commission charged with supervising the rates, financial organization and quality of service provided by the

insurance companies operating within the state. The way insurance rates are set in most states, as well as the basic structure of the regulatory process, appears to be quite different from that which has evolved in the regulated industries which are traditionally studied. A recent text dealing with the economics of regulation does little more than note the Supreme Court opinion which affirmed the power of the states to regulate insurance rates.[3/] How the insurance industry is regulated, why it is regulated and what the effects of regulation might be are not discussed.

For a number of reasons the time appears right for an analysis of the structure, behavior, and performance of the property and liability insurance industry operating within prevailing regulatory institutions. The recent performance of the industry has come under increasing criticism. Among other things observers point to the shortages of fire and theft insurance in many of the nation's cities, which eventually required intervention by the federal government. Similarly there has been dissatisfaction with the availability of automobile insurance at desired coverage levels and reasonable rates through the voluntary insurance market. In addition, people have been concerned that the structure of insurance rates in many lines of insurance lead to levels of self-protection and self-insurance which are far from optimal. Finally, proposals for the implementation of no-fault auto insurance are intimately related to the structure and regulation of the insurance industry.

While unsatisfactory performance inevitably leads us to ask questions about industry structure and behavior, the presence of pervasive regulation necessitates an analysis of the regulatory environment in which this industry operates and what the effects of regulation might be on industry performance (as well as on industry structure and behavior). This appears

to be a propitious time for an analysis of this regulatory process because after nearly 20 years of stability, many states are in the process of changing the way in which regulation of this industry proceeds. While some states are moving toward open competition and de-regulation (New York for example), other states are moving toward adopting more traditional forms of rate of return regulation for the property insurance industry (New Jersey). Useful insights into the effects of regulation may be of help in aiding public policy makers in deciding which direction to move in.

An additional reason for performing such a study revolves around recent theoretical research in the economics of uncertainty. Much of this research makes certain assumptions about the availability of insurance as well as the prices of insurance. Elucidation of the institutional arrangements for the provision and pricing of property insurance may provide useful insights into the kinds of constraints which might be introduced into such models, and may therefore yield more useful results concerning the performance of markets in the context of uncertainty.

This study pursues a basically traditional methodology familiar in studies of industrial organization and public utility regularion. The general lack of analyses and familiarity with the property insurance industry justifies an initial attempt to lay out certain structural and institutional realities. The study therefore begins with an analysis of the structure of the property insurance industry. This section deals with such questions as market concentration, entry, economies of scale, as well as production and sales organization.

The second section examines the pricing behavior of property insurance industry in the context of the institutional arrangements which affect pricing and the provision of property insurance. The effects of antitrust

law, government regulation and formal and informal cartel arrangements on the pricing behavior of property insurance firms are presented. Section three examines the performance of the property insurance industry in the context of a number of performance criteria, including supply shortages, profitability, and the efficiency of the product distribution system.

The major conclusions of the first three sections are that: (i) the property insurance industry has all of the structural characteristics of a competitive market; (ii) the prior approval regulatory process employs meaningless profitability criterion which does not necessarily "protect" consumers; (iii) the insurance regulatory process has been the primary cause of supply shortages; (iv) supply shortages exist at the same time that there is excess capacity; (v) the prevalent form of sales distribution system -- the American agency system -- is extremely inefficient, costing consumers hundreds of millions of dollars per year; (vi) available profitability studies indicate that rates of return for the industry as a whole are not excessive. Basic methodological flaws in these studies necessitate further research into insurance industry profitability, however. In addition there is evidence indicating that direct writers earn substantially higher rates of return than the industry as a whole, (v) the underwriting behavior of direct writers is shown to be consistent with profit maximizing behavior of a group of low cost firms, insulated from entry, and operating in a market where prices are kept above competitive levels by the combined actions of rating bureaus and insurance regulators.

In the final section, open competition as an alternative to all forms of direct government price regulation is suggested as a public policy goal. The property insurance industry provides a unique opportunity to do more

than guess at which might happen under a regime of open competition (as opposed to regulation) because of the presence of a few instances of open or near open competition in rates, which have actually been in operation during the period of general state regulation.

II. THE STRUCTURE OF THE PROPERTY AND LIABILITY INSURANCE INDUSTRY

Basic Structural Characteristics

Insurance is a method of spreading the risk of property loss among a group of individuals. The insured trades an uncertain state of the world in which he has a small probability of a large property loss and a high probability of no loss for a certain state in which he pays a small premium for insurance against loss. By purchasing insurance, the insured is able to move from a state of uncertainty to one of certainty. Insurance is generally a "bad bet." That is to say, the premium is generally greater than the expected property loss without insurance. The difference between premiums and losses over time is made up of underwriting and other transactions costs and the profits of insurance firms.

The insurance market is normally separated into two broad industry groups: the life insurance industry and the property and liability insurance industry. The property and liability insurance industry, which is the focus of this study, includes fire and marine insurance, extended coverage, automobile insurance, homeowners' and commercial multi-peril insurance, some types of accident and health insurance and various other types of property and liability insurance.

Automobile insurance accounted for nearly half of the total premiums written by the property-liability insurance industry in 1971.[4/] This was not always the case. The dominance of automobile insurance is a post-World War II phenomenon, coinciding with increased automobile usage and the advent of compulsory auto liability insurance in many states.

Historically, the structure, behavior and regulation of this industry has its roots in fire insurance, which accounted for almost 30 percent of total property-liability premiums as late as 1943. This historical evolution is critical to an understanding of the property-liability insurance industry today, with regard to price determination and government regulation, and will be discussed extensively below.

Firms selling property and liability insurance in the U.S. are of four basic organizational forms. By far the most important type of firm is the stock company, owned by stockholders who have invested equity capital in the enterprise. Stock companies possessed $43 billion in assets in 1970 or 73 percent of the total assets of the property and liability industry and wrote over $22 billion in premiums or 68 percent of total industry premiums Mutual companies are corporations which are owned by their policy holders. Instead of paying stock dividends out of profits, dividend payments are often made directly to policy holders, effectively lowering their insurance rates. In 1970 mutual companies had assets of $14 billion or 24 percent of total industry assets and had premiums of almost $9 billion or 27 percent of total industry premiums. A reciprocal exchange is a cooperative organization formed to share specified risks of the members of the exchange. Reciprocal exchanges had assets of almost $2 billion in 1970 or 3 percent of total industry assets and wrote about $1.5 billion in premiums or 4 percent of total industry premiums. About 80 percent of the premiums of reciprocal exchanges are derived from auto insurance, and the reciprocals accounted for 7.6 percent of auto premiums in 1969. Finally, Lloyd's Organizations are made up of groups of underwriters, each taking on a portion of the injured's risks. Lloyd's Organization accounted for only .1 percent of total industry assets and .1 percent of total

industry premiums in 1970.[5/]

Property insurance is marketed in two basic ways in the U.S. The method employed by most stock companies is the American Agency System. Under the American Agency System independent retailers or agents represent a number of insurers and sell insurance for these companies to the public. For their efforts, the agents receive a commission, usually a fixed percentage of the premiums written. The system of "direct writing" arose in competition with the agency system, primarily (apparently) because of the high sales costs that had resulted. Insurance companies that became direct writers sold insurance directly, either through their own salesman or through the mail. Direct writing is a very important part of automobile insurance sales, accounting for nearly 50% of total auto premiums in 1971, but much less important in other insurance lines. Although the importance of direct writing has been growing over time it has not grown as fast as one might expect.[6/] An analysis of why this apparently superior marketing system has not completely taken over, and estimates of the economic losses attributable to the American agency system are presented in a section on industry performance below.

Number of Firms, Concentration and Entry

Best's lists 840 stock companies, 311 mutual companies, 44 reciprocal exchanges and 11 Lloyd's organizations for a total of 1206 property-liability insurance companies operating in the U.S. in 1971. Most of these companies operate in more than one state and a substantial number of these companies operate nationwide. In 1971 about 80 percent of property-liability premiums were written by national agency companies or direct writers. Of 829 auto insurers analyzed for 1967, 650 of them were regional, multi-regional or national and only 179 licensed to operate in only one state.[7/]

Any insurance company, must be licensed in each of the states in which it operates. The various states have different laws governing the requirements for both incorporation in the state and for an out of state corporation operating within the state. In general, the state laws will specify a minimum amount of paid-in-capital necessary to commence operations in the state. In addition, the laws will indicate what types of securitie the minimum capital is to be kept in as well as specifying eligible investments for other financial reserves. In New York state, for example, the insurance law requires that a stock company have a minimum of $250,000 of paid-in-capital and an additional $250,000 of initial surplus to be organized as a fire insurance company in the State. In addition to selling fire insurance, such a company may also sell miscellaneous property insurance (essentially extended coverage), water damage insurance, collision insurance, motor vehicle and aircraft insurance (except liability for personal injuries) and certain types of marine insurance.[8/] Out of state companies must maintain the same minimum capital requirements to be licensed in the state,

while alien companies require 200 percent of the minimum capital requirements of domestic corporations. Companies wishing to sell various casualty lines not included under this classification must put up similar amounts of capital and surplus to be licensed to write such lines. In most states mutual companies have surplus requirements which are similar or identical to the total capital and surplus requirements of stock companies.

The presence of a large number of firms selling essentially identical products does not itself assure a competitive market structure in the industry. If a small number of firms control most of the market, the presence of many firms may only give the illusion of competition. As a result we would like to examine the level of concentration in the property-liability insurance industry as a whole as well as within some individuals lines of insurance. The concentration ratios presented below indicate the share of total property-liability insurance premiums written by the largest firm, the four largest firms, the eight largest firms and the twenty largest firms for the nation as a whole. The definition of firm chosen here is that of the insurance group. Often individual insurance companies are part of the same jointly owned management group. Although individual companies within a group have considerable autonomy, joint directorships and ownership make it appropriate to consider an insurance group as one firm when examining questions of market control. Independent companies are considered as if they were groups composed of only one company.

A sales measure of concentration has been chosen -- premiums written -- instead of an asset measure so that national aggregate concentration ratios for the industry as a whole can be compared with concentration ratios for

particular lines of insurance. Since asset accounts are not segregated by line, sales concentration measures are the only ones feasible. In addition, since group figures are being used, asset concentration ratios would probably be biased upward, reflecting the assets of particular companies in some groups which do very little actual property-liability insurance business.

The use of national concentration figures must also be defended. In general,purchasers of insurance are limited to obtaining coverage from companies licensed within a particular state. However, since entry into any particular state by an established insurance company is very easy, sellers can easily move into any state if profitability conditions warrant it. In addition the large national agency firms and the direct writers account for 81% of property-liability premiums written nationwide and operate in almost every state.Although there will be some local variation, the property-liability insurance firms are essentially operating in a national market.

TABLE 1

CONCENTRATION IN THE PROPERTY AND LIABILITY INSURANCE INDUSTRY FOR SELECTED YEARS[9/]

% of Total Net Premiums Written

Year	Top Group	Top 4 Groups	Top 8 Groups	Top 20 Groups
1962	4.4	16.5	29.0	48.1
1971	6.2	19.8	32.8	54.2

The concentration ratios presented in Table 1 indicate that although there were over 1,200 firms selling property and liability insurance in 1971, the top 20 groups controlled over half of the market. Comparisons with concentration ratios for other industries indicate that those for the property and liability insurance industry are relatively quite low.[10/]

Table 1 does indicate, however, that the levels of concentration have been increasing over time. The rate of growth is relatively small and even if the current growth rate in concentration continued it would take many years before the four largest firms attained as much as 50 percent of the market. More importantly, it will be argued below that the increasing levels of concentration are indicative of a secular movement of business away from high cost firms employing an inefficient marketing technique toward lower cost, more efficient firms. Increasing concentration in this case is the result of increasingly effective competition in a market constrained by a peculiar array of regulatory and other legal constraints. As shall be argued below, the slowly increasing level of concentration is indicative of an improvement in consumer welfare and not an erosion of consumer welfare.

Although these aggregate concentration ratios give us some indication of overall market control by leading firms in a national market it is worthwhile to examine market concentration for individual lines of insurance. Automobile insurance appears to have concentration ratios somewhat higher than the industry as a whole but these are still relative low[11/] and have been increasing at about the same rate as the industry as a whole. It will be argued below that these increased concentration ratios are indicative of movements of customers away from high cost firms operating under the American Agency system toward lower cost direct writers. Fire insurance possesses concentration levels almost identical to the property-liability industry as a whole (in 1971) and these concentration levels have been almost constant over time. This is indicative of the fact that fire insurance has been of declining importance to many property-liability firms and has been of only minor interest to direct writers using mass marketing techniques.[12/] All things considered the property-liability industry nationally and by line appears to possess an atomistic market structure.

Selling Costs and Scale Economies

Besides paying out money for losses and loss adjustment expenses, property-liability insurance companies also incur substantial sales or underwriting expenses. In 1970, selling expenses amounted to 36.0 percent of premiums written for stock companies with commissions alone accounting for 21.4 percent of premiums written. Underwriting expenses were as high as 44.7 percent of premiums written in 1960. These figures may have important implications for theoretical work regarding economic decision-making under uncertainty. The assumption of perfect "no-load" insurance markets is extremely questionable. With transactions costs for property-liability insurance ranging between 35 and 50 percent of premiums written, there may be many risks which are completely uninsurable under present market conditions. Assuming selling costs plus a risk adjusted rate of return on investment is equal to 50% of the premiums, risks with probabilities of loss greater than 1/2 may be uninsurable. Assuming that in a competitive market the premium for a risk is equal to the expected loss plus selling expenses plus a risk adjusted profit (profits will be discussed further below), with selling expenses equal to 50% of premiums, risks with a loss probability greater than 1/2 will only be insured at a premium greater than the value of the property. Such a property is essentially uninsurable.

The property-liability insurance industry has traditionally been criticized for having excessive underwriting costs. Innovations or improved efficiency which could lower these costs would both increase the availability of property insurance and decrease the rates on those properties which are

currently insured. Stock companies have traditionally borne the brunt of the criticism regarding selling costs, because their costs have traditionally been so much higher than those of mutual companies. This difference was especially pronounced ten years ago, but the difference between stock and mutual company expense ratios has declined secularly over the past ten years.[13/]

The reduction of the proportion of the premiums going to selling and other underwriting expenses for stock companies appears to be in response to a fairly clear set of market stimuli. Relatively poor profit performance after the mid-50's, (the initial years of prior approval state regulation) resulting from rapid entry into the industry of all types of firms, but especially the dramatic growth of direct writers selling at reduced prices in the profitable auto lines, led many stock companies operating under the American agency system to cut costs through increased internal efficiency and by forcing lower commission rates on the independent agents. Mutual companies have been able to keep their expenses low by paying lower commissions, concentrating on a few classes of business and having exclusive agents who sell insurance for only one company. Even in 1970 brokerage and commission expenses for stock companies were substantial higher than similar expenses for mutual companies.

It is argued below that the American Agency system is an extremely inefficient sales technique compared to the alternatives of direct writing and the use of exclusive agents. It has led to substantially higher insurance costs than would be yielded by the least cost marketing technique. It has been preserved as a combined result of price regulation by state commissions, price making in concert and a quirk in the law which vests property rights to policyholders in the independent agent who writes the insurance and bars the company from writing insurance for a customer, originally obtained through a particular agent, independently. This issue is more conveniently analyzed after a discussion of economies of scale in the

marketing of insurance is presented. We turn to this question now.

There is a tremendous range in the sizes (in terms of premiums written as well as assets) of property and liability insurance firms in the U.S. There are a substantial number of firms with total annual premiums of less than $1 million and a few with total annual premiums of over $1 billion. Given this large variation in firm sizes,it is of interest to ask whether or not the larger firms have a cost advantage over the smaller firms. Such information will have important implications for a discussion of barriers to entry into the property-liability insurance industry, and the evaluation of the performance of the industry, especially with regard to the impact of state price regulation and cartel-like rating organizations. Substantial cost advantages for very large scale operation could indicate substantial barriers to entry and the possibility that large firms could set prices substantially above marginal cost without provoking competitive entry. At the same time the presence of a large number of small, high cost fringe firms may indicate that the large companies, acting through the cartel-like rating organizatioons, have succeeded in keeping prices above the competitive level, thus protecting inefficient producers. This latter phenomenon will most likely occur only if entry at optimum size is difficult.

A rather crude analysis of possible scale economies in the "production" of property-liability insurance has been performed by Hensley.[14/] The study lacks any statistical tests, lumps American agency companies together with direct writers and does not correct for the "mix" of insurance lines in particular companies. His conclusion that there are

moderate economies of scale may be especially sensitive to the non-differentiation between direct writers and agency companies since casual observation indicates that direct writers employ a more efficient sales technique and have a disproportionately high representation among large insurers. The study presented here should be an improvement on all of these counts and also presents framework for answering the question of whether direct writing is the lower cost production technique. In addition it provides useful empirical information for estimating the resource loss associated with the American agency system.

The economies of scale analysis performed here relates expense ratios to measures of firm size, business character, and marketing technique for three different samples of companies: stock companies which are primarily auto insurance producers; mutual companies which are primarily auto insurance producers, and stock companies which are primarily fire insurance producers. Each sample is analyzed separately (the stock auto and stock fire sample for two different years) and then as a pooled regression. (The data are discussed in Appendix B). The basic form of the model used in the economies of scale analysis is the following:

$$E = F(S, M, \epsilon)$$

E: Expense ratio

S: Variables measuring size of the company

M: Variables measuring marketing characteristics

ϵ: Random disturbance term.

If there are economies of scale present we would expect that the expense ratio will decline with firm size. Since Hensley's analysis considered only the relationship between expense ratios and firm size, ignoring other characteristics of the firms, an initial set of regressions was run to see if there is any "evidence" of scale economies when other company characteristics are omitted. Simple linear regressions relating the expense ratio to premium volume for three samples of data were calculated. The results for the regressions equations in which premium volume enters linearly are reported below.[15/]

Fire and Allied Lines (1971)

$E = 34.28 - 0.5\ DPREM$ Observations: 25
$(21.22)\quad (-0.28)$

$R^2 = .003$

Mutual Auto Insurers (1971)

$E = 26.41 - 0.60\ DPREM$ Observations: 34
$(23.30)\quad (-1.85)$

$R^2 = .09$

Stock Auto Insurers (1971)

$E = 25.58 - 0.35\ DPREM$ Observations: 35
$(19.66)\quad (-0.92)$

$R^2 = .03$

Stock Auto Insurers (1970)

$E = 25.92 - .48\ DPREM$ Observations: 37
$(22.55)\quad (-1.13)$

$R^2 = .04$

E = Expense ratio DPREM = Direct Premiums Written

Even this naive formulation of the relationship between expenses and firm characteristics yields only weak evidence of scale economies. Although the coefficient of the premium volume variable was negative in all cases

examined, it was only close to being significant at the 5% level in the mutual auto insurance sample. Allowing premium volume to enter quadratically did not yield any better results, nor did the use of net premiums instead of direct premiums. Even if no important explanatory relationships had been left out of these relationships, the notion that there are economies of scale in the "production" of insurance is given only weak to moderate support by these results.

There are at least two prospective characteristics of insurance firms in addition to premium volume which can be reasonably expected to affect expenses. One involves the firms reinsurance activities. When a firm takes on insurance from other firms (reinsurance) it must make additional commission payments. When it cedes reinsurance to other firms it receives commission income.[16/] Therefore we would expect, ceteris paribus, that firms whose net premiums (after all reinsurance activity) are large relative to their direct premium writings will have higher expenses as a proportion of premiums written than firms whose net premiums are low relative to their direct premiums written.

A second important consideration is the method of sales. Some of the companies in these samples are direct writers and are in essence employing a different production activity than the agency firms. Although we would expect the least cost technique to be adopted in a competitive market in the long run and would therefore expect the existence of two different techniques in competitive equilibrium to imply trivial cost differences, the behavior of this industry in this regard may be far from competitive. In particular, it is expected that direct writers will exhibit significant cost advantages

and that the agency firms have been able to survive because of a number of market imperfections. Finally, it is possible that direct writers or agency companies, but not both, exhibit economies of scale.

As a result, a far more reasonable production cost model is the following:

$$E = a + b\ DPREM + C\ INTER + d\ RATIO + e\ DWRITE$$

where

E = expenses as a percentage of premiums written/or earned

DPREM = Direct Premium Volume

INTER = Direct Premium Volume of Direct Writers and zero for agency companies

RATIO = Net Premiums/Direct Premiums

DWRITE = Dummy Variable = 1 Direct Writers

= 0 otherwise

The a priori expectations for the coefficients are the following:

b: This coefficient will be zero if economies of scale are absent and less than zero if economies of scale are present for agency companies.

c: This coefficient will be negative if direct writers have "more" scale economies than agency firms and positive if they have less.

d: This coefficient should be positive indicating the premiums net "reinsurers" must pay.

e: This coefficient should be negative indicating the cost savings associated with direct writing.

Stock Auto (1970)[17/]

$$E = \underset{}{21.41} - \underset{(-.11)}{.28\ DPREM} + \underset{(.14)}{.34\ INTER} + \underset{(2.69)}{8.10\ RATIO} - \underset{(-6.33)}{11.51\ DWRITE}$$
$$(7.35)$$

$$R^2 = .61$$

Stock Auto (1971)

$$E = 20.70 + .86\ DPREM - .78\ INTER + 7.49\ RATIO - 10.68\ DWRITE$$
$$\quad\ (6.66)\ \ (0.34)\qquad (-0.30)\qquad (2.72)\qquad\ (-4.85)$$

$$R^2 = .54$$

Stock Auto (1970 + 1971)

$$E = 21.38 + 0.33\ DPREM - 0.24\ INTER + 7.46\ RATIO - 11.08\ DWRITE$$
$$\quad\ (10.60)\ (0.19)\qquad (-0.14)\qquad (3.88)\qquad\ (-8.07)$$

$$R^2 = .57$$

Mutual Auto (1971)

$$E = 14.63 - 0.62\ DPREM + 0.62\ INTER + 16.36\ RATIO - 14.08\ DWRITE$$
$$\quad\ (2.45)\ \ (-1.99)\qquad (1.99)\qquad (2.49)\qquad\ (-5.46)$$

$$R^2 = 0.55$$

Stock Fire (1971) (no Direct Writers in sample)

$$E = 33.74 - 0.45\ DPREM + .38\ RATIO$$
$$\quad\ 16.70\ \ (-.25)\qquad (0.45)$$

$$R^2 = .01$$

The results of these regression estimates are of great interest. Evidence of economies of scale among stock companies and among direct writers is completely absent. There is evidence that mutual auto insurers exhibit scale economies,[18/] although the direct writers in that sample do not. The conclusion must be that stock property and liability insurance companies and all types of direct writers, the types of companies which sell the vast majority of property and liability insurance, exhibit no significant scale economies. In addition, the RATIO variable and the dummy variable denoting direct writers always have the expected signs and are significant at the 5% level for each sample except that for the stock fire insurance companies.

This analysis leads to the conclusion that the production of property insurance is characterized by constant returns to scale. Large companies do not appear to be able to produce insurance less expensively than small companies. We observe higher costs for firms which assume reinsurance from other firms, but this can be viewed as a secondary production activity of insurance firms. Finally, direct writers appear to exhibit significant and substantial cost savings over agency companies.[19] This phenomenon will be discussed more fully in a section below.

Entry

The difficulty of entry into an industry has important implications for the ability of the market to operate close to the competitive norm, especially in industries with high concentration ratios.[20] If a group of insurance companies act in concert through a cartel, attempting to hold prices well above competitive levels in the presence of only modest entry barriers, such efforts will ultimately be defeated by the entry of new firms. If existing firms wish to deter new entry they must hold the margin between price and cost to a level less than the cost advantage existing firms have over potential entrants. Large deviations of price above the competitive level will tend to result only if the industry has a small enough number of firms to covertly fix prices or legal mechanisms which can enforce cooperative pricing and high barriers to the entry of new firms. Since concentration ratios are low in the property-liability industry, cartel-like pricing which might exist would have to rely on legal mechanisms supporting such pricing behavior. We will turn to the question of cooperative pricing in the next section, but it is shown below that even if regulation and

rating bureaus can facilitate cooperative pricing entry has been extensive and entry barriers are low to moderate, making it extremely unlikely that a substantial margin between prices and costs, resulting in excess profits, could persist.

The record for the past twelve years indicates that there has been continuous and substantial entry of corporations into the property liability insurance industry. For the period 1960-1971 a total of 336 new companies are reported as entrants into the property liability industry. The rate of entry has varied from a low of 14 companies in 1966 to a high of 51 companies in 1961.[21/] This substantial amount of entry appears to be the result of rapid growth in the demand for property and liability insurance (especially auto insurance), a regulatory system which effectively pegs prices at a level that is on average above marginal cost,[22/] and very low entry barriers. We examine entry barriers next and turn to the regulatory process in the next section.

Economies of scale have been examined in the previous section. Since they are non-existent (at least for agency companies) they do not appear to be an important barrier to entry. In many American industries, even where substantial economies of scale in production do not exist, potential entrants face the problem of getting their products recognized by consumers in a market characterized by heavy product differentiation and entrenched brand loyalty. This has not been too much of a problem for potential entrants into insurance in the past for a number of reasons. The insurance product itself -- the policy -- is essentially identical from company to company within a state since most policy forms (except for special risks) are mandated by state law. Under the American agency system consumers do not shop around for a company they recognize or like, but rather seek an agent who will try to get the customer insurance coverage from one of the companies that he represents, often at a price fixed by a rating bureau and adhered to by a large proportion of the companies in the market. Under the American agency system the consumer must rely on his agent to find a company and secure the best price if there happens to be some price variation among companies. The company writing insurance under the American agency system is therefore faced with minimal "product recognition" costs and instead must contact independent agents who will be willing to market the company's policies. The costs of "plugging in" to this existing marketing network should be very low.

Company identification is probably much more important for companies wishing to enter the market as direct writers. New companies

must make expenditures to make consumers aware of their products. Mass advertising and direct mail campaigns are favorite devices for the establishment of product identification and for contacting potential customers. It is difficult to say whether this is an important barrier or not. The available information is qu quite ambiguous. For example GEICO was able to enter the market at a relatively small size, has had extremely good earnings performance, and has become one of the largest automobile insurers in the country. However, the high levels of concentration among direct writers, as well as apparently consistent profit performance above the industry average indicates that barriers to entry for direct writers may be quite high.[23] Substantial initial funding may be necessary to get a direct writer set up in the market.[24]

Artificial constraints on entry are also quite small. Rating bureaus must now be open to all to subscribe to or join. State licensing appears to be easily available to any company that can meet the minimum capital requirements and other statutory restrictions. Some states, however, still impose special taxes on companies domiciled in other states which would raise the costs of a foreign corporation. This is an effort by some states to protect domestic corporations and may deter entry by foreign or alien corporators.

Entrants seeking to enter markets at deviated or bureau rates may experience opposition from rating bureaus which have often been recognized as aggrieved parties.[25] In addition, associations of insurance agents may attempt to restrict the entry of mutual companies, participating stock companies and direct writers.[26]

All things considered, most of the traditional barriers to entry

discussed so far appear to be quite low. The one remaining barrier is the capital requirement for entering insurance market. We turn to this question now.

The capital requirements of a company seeking to become incorporated or to enter a state where it has not been licensed previously are not very high. State insurance laws normally set minimum amounts of paid-in-capital and surplus as a requirement for obtaining a license to sell insurance. The capital requirement varies from state to state and depends on the number of lines of insurance the company wishes to write. In New York State a stock company must have paid-in-capital and surplus of over $3,000,000 to write all non-life lines. To write auto it would require paid-in-capital and surplus of $500,000, but this would also entitle the company to write several other lines. Similar rules apply to mutuals.

All things considered barriers to entry, at least for agency companies, appear to be low. Direct writers apparently are faced with higher barriers to entry, attributable primarily to advertising and other "product recognition" expenditures and the recruitment of a core of sales personnel. We would therefore expect that as long as the rating bureaus can keep insurance rates above the costs of agency companies, free entry will drive rates of return on capital toward the competitive level. However we shall see below, that such a "normal" profit equilibrium is characterized by prices above the competitive level, excess capacity in the industry as a whole and selective underwriting (and above normal profits) by the low cost direct writers.

Market Structure: Conclusions

The property-liability insurance industry possesses the structural characteristics normally associated with the idealized competitive market: a large number of firms, operating in a market with low concentration levels, selling essentially identical products, provided at constant unit costs and with ease of entry of new and potential competitors. The only deviation from the ideal is presented by the possibility that direct writers may face high entry barriers. It is indeed difficult to find too many other industries which conform more closely to the economist's idealized competitive market structure.

When we turn from market structure considerations to the behavior of the property-liability insurance industry we do not find a continuation of the competitive ideal, however. Insurance rates have traditionally been set in concert through rating bureaus and the rates subject to some form of state regulation in most cases. To understand the pricing behavior of the property-liability industry today, and to evaluate proposed changes in state regulation, the fault system and other public policy issues, we must first examine the development of ratemaking in concert, antitrust, and regulatory policy as it pertains to this industry.

III. PRICING BEHAVIOR IN THE PROPERTY AND LIABILITY INSURANCE INDUSTRY

The Development of Government Policy toward the Insurance Industry[27]

Although a majority of the property and liability insurance sold in the U.S. today consists of auto and homeowner's multiperil insurance, industry price setting behavior and government regulatory policy has its origin in fire insurance. Since fire and allied lines insurance was a very important component of the property insurance industry as recently as World War II, this is not too surprising. To understand how current pricing behavior and regulatory control evolved we must take an excursion back into history.

The history of fire insurance rating and regulation is a direct consequence of the essentially non-competitive fire insurance market, dominated by cartels and essentially exempt from the federal antitrust laws, that existed through most of the first half of this century.

The development of cooperative fire ratemaking goes back to the beginning of the 19th century:

> It began with local boards, one of which was organized in New York in 1819. In 1866, the National Board of Fire Underwriters was organized to establish and maintain uniform premium rates and to control agents' commissions... During profitable periods in the fire insurance business, however, companies violated their membership agreements by ratecutting.[28]

The National Board was discontinued in 1877 as a countrywide rating organization and replaced with local and regional rating organizations. The National Board was essentially a cartel meant to fix rates, to overcome the "bad effects" of competition, namely insolvencies, and to generally "stabilize" the market. It had difficulty succeeding as

a cartel because membership was voluntary and it was difficult to force a large number of firms to adhere to the bureau rates.

The development of the "compact system" succeeded the demise of the National Board.[29] Under this system local insurance agents agreed to respect uniform rates set by compact managers. The "compact system," however, was evolving at the peak of antitrust fever in the U.S. From 1885 to 1907 about 20 states enacted anti-compact laws to combat price fixing in fire insurance. The compact laws do not appear to have been very successful in stemming the de facto fixing of rates in concert.[30]

By the late 19th century proposals for regulation of insurance rates were made in several states. A Joint Legislature Committee, known as the Merritt Committee, was formed in New York in 1910 to study problems of fire insurance ratemaking. Based primarily on the findings of the Merritt Committee, an insurance law was passed in New York State in 1911 which permitted "action in concert in the fixing of fire insurance rates, but required rating associations or bureaus to file such rates with the Superintendent of Insurance."[31] The legislation required that rates set not be unfairly discriminatory, but although the Superintendent of Insurance could evaluate rates after they were filed, prior approval was not required at this time.

There are two interesting features of government policy toward the insurance industry at this time. The primary concern of both the insurance companies and their regulators was to guard against rates that were <u>too low</u>. Competition was viewed by industry and its regulators

as leading to instability and insolvencies among fire insurance firms. The regulatory agencies apparently did not view their jobs as guarding against monopolistic pricing resulting from ratemaking in concert, but rather making sure that firms did not charge off bureau rates that were too low. Competition in fire insurance ratemaking was viewed as being destructive with rating bureaus and regulatory agencies making sure that price competition became virtually non-existant. No study seems to exist which shows that competition in fire insurance is any more "destructive" than in any other industries, and it appears that the evolution of regulation of the fire insurance industry stems more from an effort to protect existing firms than the interests of consumers.

The second interesting feature of public policy toward the insurance industry involves the federal antitrust statutes enacted between 1890 and 1914. The coordinated rate-setting activities engaged in by insurance firms through the rating organizations would appear to be in clear violation of the federal antitrust laws. However, the decision of the Supreme Court in Paul v. Virginia (8 Wall 168 (1869)), upholding a state law subjecting an out-of-state insurance company and its local agents to a licensing requirement, contained language which was interpreted for the next 75 years as meaning that insurance could not be classified as interstate commerce.[32/] As a result, the insurance industry was considered to be exempt from the federal antitrust laws.

Before 1944 the position of the fire insurance industry vis-à-vis government control was characterized by a general exemption from federal antitrust laws and direct state regulation of fire insurance rates in

about 35 states. On June 5, 1944 a dramatic shift in the court's interpretation of the commerce clause and implicitly of the applicability of the antitrust laws to the insurance industry took. The court's opinion in United States v. South-Eastern Underwriters Association (322 U.S. 533 (1944)) ruled that insurance was commerce and by implication that combinations of insurance companies designed to fix rates would be in violation of the Sherman Act.[33/]

> Overnight, the entire legal basis for the immunity of combinations in rate-making, the cornerstone of the fire insurance business--and hence, at that time, of the dominant segment of the property-liability insurance business--was eliminated. Moreover, doubt was cast on the system of state regulation and taxation of the insurance business. The decision precipitated widespread controversy and dismay. Chaos was freely predicted.[34/]

Undoubtedly under tremendous pressure from the insurance industry, the U.S. Congress stepped into the picture. The McCarran-Ferguson Act,[35/] signed by President Roosevelt on March 9, 1945, declared the continued regulation and taxation of the insurance industry to be in the public interest and that the federal antitrust laws were only to be applied to the insurance industry to the extent that the insurance business was not regulated by the states.

Exactly what was meant by regulation by the states was not made clear by the act nor by its legislative history.[36/] The National Association of Insurance Commissioners acting with industry representatives drafted two model bills which would establish state regulation of the business of insurance and preclude the application of the antitrust statutes against the insurance industry.

> The overriding concern of the framers of these All-Industry model bills was to preserve the business and regulatory status quo and to demonstrate that rate-making, in particular, bureau rate-making, would be quite explicitly 'regulated' by the states. This approach was designed to provide a state regulatory umbrella under which cooperative rate-making by bureaus would be exempt from the Federal antiturst laws.[37/]

Eventually 44 states, enacted new laws or amended existing laws to conform to the NAIC-All Industry model bills. These laws, known as prior approval laws, were the predominant form of regulation of the property-liability insurance industry from 1940-1970.[38/]

Setting Insurance Rates Under the Prior Approval Regulatory System

Setting rates for property and liability insurance is a relatively complex procedure. This section describes the general technique and rate-making formulas which regulatory agencies have been applying in the "prior approval" states since 1944. Appendix C presents a more detailed discussion of rate making in fire and automobile insurance.

Under the prior approval laws fire insurance ratemaking involved the use of a fairly standard formula for the production and evaluation of bureau rates, rate revisions and rate deviations. Prior approval regulation does not involve the traditional public utility concept of fair rate of return on capital. Instead rates are established so as to yield a particular rate of return on sales (premiums). A standard rate of return on sales figure of 5% is employed in most states as a result of a recommendation by the National Association of Insurance Commissioners in 1921.[39/] This figure appears to have been picked out of thin air. It does not relate profitability to return on capital nor even to competitive profit margins on sales in other industries having the same capital base per unit of output or sales. In addition investment income is not included as revenue. The technique appears to be a priori nonsensical.

Although usually faced with many companies selling fire insurance in a particular state, adherence to bureau rates was so great that most regulatory agencies had to approve only bureau rate filings and a moderate number of rate deviations based on the rating bureau filings themselves. In New York, for example, the rating formula was applied to the rate applications of the New York Fire Insurance Rating Organization in determining fire insurance rates.

In general we can summarize the pricing formula for rates of a particular line of property insurance as one which sets insurance rates to cover losses, expenses and a profit factor (5 percent of premiums) based on aggregate experience for the industry as a whole in a particular state. While individual class by class rates are set in a similar way, aggregate profitability is the binding constraint. Rates set below the "formula" figure for some class will be compensated for by rates set above the "formula" figure for one or more other classes.

$$E + \frac{L_i}{P_i} + .05 = 1$$

$$P_i = \frac{L_i}{(1-.05-E)}$$

P_i = total premiums for a particular territory and class

E = measure of historical operating and production expense ratio.

L_i = measure of historical losses (estimate of expected losses) for this territory and class.

It there are X_i identical risks in a particular territory and class (let's say they are automobiles) we would expect the average basic premium for this class and territory to be P_i/X_i per car. Letting

$\Sigma P_i = P$ = total premiums indicated by the formula rating for all classes and territories in the state.

(1) $$P_i = \frac{L_i}{(.95-E)}$$

(2) $$P = \frac{\Sigma L_i}{(.95-E)}$$

Note that if for some reason the insurance regulators feel that some particular class j yields an average premium $\frac{P_j}{X_j}$ which is in some sense "too high," (even though appropriate given historical losses) the rating formula works in such a way that (2) is always met, whether or not (1) is met in all particular classes. This means that forced reductions in some classes rates are automatically loaded on to the rates for the remaining classes of customers. We will return to this point when we discuss assigned risk

pools, FAIR plans, and attempts by regulatory agencies to implicitly redistribute income.

Price Competition Under the Prior Approval Regulatory System

Although the property-liability insurance industry possesses a market structure that is characteristic of a competitive market, the industry is notable for the limited amount of price competition which actually exists. Fire insurance companies only rarely tend to deviate from fixed bureau rates which have been approved by the regulatory authority. The automobile lines have tended to have a greater amount of price competition, primarily because of the direct writers who tend to deviate below fixed bureau rates. But even by the end of the 1960's, a large proportion of automobile insurance was written at rates copied right out of the IRB guide. Most prior approval insurance laws authorized rating bureaus to make and file rates, rate changes, rating schedules, etc. for their member and subscriber companies. Companies not wishing to use the bureau rates had two options open to them: they could file deviated rates for one or more classes of insurance or they could submit an independent filing.

A company wishing to deviate from the bureau rates would simply have to file an application with the Superintendent of Insurance requesting to write one or more lines of insurance at some amount (say 15 percent) less than the rates then in effect for the members and subscribers of the rating bureau. The deviating company had to justify its rate deviation application by showing that its reduced rates were justified by lower costs than for the industry as a whole. Since its costs were lower, such a company could reduce its rates and still earn an "adequate" profit. Regulatory scrutiny of rate deviations appears to have been most concerned with keeping firms from filing deviations which would result in rates which were "too low"

and might result in "destructive" competition.

Independent filings represent the submission of a complete set of rates, rating schedules, etc. which a particular company plans to follow as opposed to the much simpler across-the-board reduction in bureau rates. For reasons which will become obvious presently, true independent filings have been rare in the insurance industry.

Observers have often criticized the administration of deviation procedures as tending to discourage companies from filing rate deviations. In many states rate deviations had to be renewed annually and rating organizations were often recognized as aggrieved parties, allowing them to challenge rate deviations and independent filings. Groups of companies, acting through the rating bureaus could thus challenge deviations and independent filings leading to protracted and often costly proceedings.[40] The possibility of opposition to deviations and independent filings has been pointed to as being especially discouraging to new entrants and small firms wishing to sell at off-bureau rates.[41] Some of the more restrictive deviation procedures were gradually liberalized. The right of bureaus to act as aggrieved parties was banned in many states and the requirement that deviation filings be renewed each year was eliminated. In addition, many insurance departments continued to support companies which could justify lower rates whether they were independent filings or deviations from bureau rates.[42]

Although it has been argued that price competition gradually increased over time under the prior approval laws,[43] it is extremely difficult to obtain adequate data necessary to quantify this trend in prior approval states. Some suggestive data for New York State for the late 1960's are available, however.

TABLE 2

PERCENTAGE OF DIRECT PREMIUMS WRITTEN IN NEW YORK AT OFF-BUREAU RATES - 1967

Fire and Allied Lines, and Extended Coverage	8.9%
Homeowners	22.5%
Commercial Multiperil	14.4%
Automobile Liability	22.6%
Automobile Physical Damage	24.7%
Liability Other than Auto	23.1%

Source: New York State Insurance Department (16), p. 93.

TABLE 3

PRICE COMPETITION IN NEW YORK STATE AMONG THE TOP 30 INSURANCE COMPANIES AND ASSIGNED RISK PLAN
(Under Prior Approval)

		% at Bureau Rates	% Off Bureau Rates	No. of Companies Off Bureau Rates
Auto Liability	1967	61.8	38.2	8
	1968	61.3	38.7	8
	1969	61.7	38.3	7
Auto Physical Damage	1967	53.1	46.9	8
	1968	54.1	45.9	8
	1969	53.0	47.0	7
Homeowners Insurance	1967	77.2	22.8	6
	1968	77.9	22.1	6
	1969	75.3	24.7	6

Source: New York State Insurance Department (17), pp. 21-25.
New York State Insurance Department (19), p. 63.

The first table indicates the overall price competition for the property-liability insurance in New York State.[44/] Given the large number of companies in New York and the encouragement that the insurance department gave to price competition under the strictures of prior approval, the New York experience should indicate the maximum tendencies to price at other than bureau rates

under the prior approval system. Fire insurance had only 8.9% of its premiums written at off-bureau rates while auto physical damage had 24.7% of the premiums written at off-bureau rates. Even in 1967 after many of the initial blockages to deviations and independent filings had been removed, the vast majority of the insurance policies were sold at the agreed upon cartel rate.

The second table indicates the results for the 30 largest insurers in New York State for three years and for three different lines of insurance. These figures differ from those of the first table because if a company filed a substantial number of deviations, all insurance it wrote was counted at being written at deviated rates, even if some of the rates were the same as the bureau rates. These calculations therefore count as a "competitive" price those rates or classes for which deviating and independent companies felt the bureau rate was justified by expense and loss experience. As a result these figures indicate substantially more competition in these lines than the latter. Even so, less than a third of the companies were filing deviating or independent rates and both the number of companies and proportions of premiums written at off-bureau rates remained approximately constant for the three years.

Of course there is the chance that the rating bureaus are setting prices at or near competitive levels, and this is why there has been so little price diversity and differences from bureau rates. Preliminary evidence indicates that this is not the case and that bureau rate-making under prior approval rate regulation leads to substantially less competition. The evidence takes two forms. One is the experience in California where regulation was not based on the all-industry prior approval system, but has been instead much closer to open competition in rate setting. The second

source is New York State experience since January 1, 1970 when an experimental law went into effect, which essentially eliminated the prior approval system and substituted a California type open competition ("no filing") rating system. The following two tables should be compared with the previous two tables.

TABLE 4

PERCENTAGE OF DIRECT PREMIUMS WRITTEN AT OFF BUREAU RATES IN CALIFORNIA

Fire and Extended Coverage	32.0% (1967)
Homeowners	67.7% (1967)
Automobile Liability	49.9% (1966)
Automobile Property Damage	45.9% (1966)

Source: New York State Insurance Department [17], p. 93.

TABLE 5

COMPANIES WRITING PREMIUMS AT OFF BUREAU RATES AMONG 30 TOP INSURERS AND THE ASSIGNED RISK PLAN

(New York 1970-1972)

Type of Insurance	Year	% of Premiums at Bureau Rates	% of Premiums at Off Bureau Rates	No. of Companies Off Bureau Rates
Automobile Liability	1970	66.8	33.2	7
	1971	66.7	33.3	6
	1972	49.4	50.6	12
Auto Physical Damage	1970	56.0	44.0	9
	1971	40.5	59.5	15
	1972	14.6	85.4	26
Homeowners	1970	69.1	30.9	7
	1971	42.8	57.2	10
	1972	21.1	78.9	17

Source: New York State Insurance Department (17), pp. 21-25.
New York State Insurance Department (19), p. 63.

The first table shows that at the same period of time, California, operating under an open competition law had a substantially larger proportion of premiums written at off-bureau rates than did New York, which was operating under the prior approval regulatory statues. However, table 5 indicates that when the prior approval restrictions were eliminated, the power of rating bureaus reduced, and price competition encouraged in New York in 1970, the percentage of premiums written (implicitly the number of companies writing at off-bureau rates) at off bureau rates increased substantially.

The evidence supports the hypothesis that rate-making in concert, combined with prior approval rate regulation tended to discourage price competition. The rating bureaus with the knowing or unknowing help of the regulators had managed to maintain at least moderate cartel control of insurance prices in almost all of the property-liability insurance lines.

IV. THE PERFORMANCE OF THE PROPERTY AND LIABILITY INSURANCE INDUSTRY

The notion of industry performance is of course quite ambiguous, primarily because of its multi-dimensional nature. This section will analyze the following three aspects of the performance of the property-liability insurance industry:

a) the efficiency of the prevailing production and distribution system;

b) supply shortages;

c) profitability and capacity utilization.

The analysis is based on the notion that ideally we would like an insurance industry which provided insurance as cheaply as possible, confronting consumers with prices equal to the marginal (expected) costs of coverage and equilibrating supply and demand at the prevailing market price.

It is argued here that the combination of cartel rate-making and other collusive behavior combined with state regulation of rates, rating classes, territories and other insurance practices has resulted in:

a) the use of a grossly inefficient sales and distribution technique (the American Agency System);

b) severe supply shortages;

c) unnecessarily high prices, excess capacity but probably only normal profits for the industry as a whole.

Sales Distribution Technique: The American Agency System

Historically, fire and property insurance was sold through independent agents and brokers to the public . Insurance companies themselves did not possess their own retail sales personnel. For this service agents were paid on a fixed commission basis, with the commission set at some percentage of the customer's premium. Agents organizations and rating bureaus

often worked together to keep rates high by refusing to allow agents to sell the insurance of non-bureau firms and in return sought high commission rates from the companies that they represented. Casual empiricism indicates that the selling costs through the American Agency system were higher than necessary to provide effective service. Mutual companies, writing through their own groups of agents or directly to consumers often sold insurance at lower prices than the agency stock companies and still managed to have better underwriting results than the stock companies. The growth of direct writers in auto insurance after World War II, their ability to charge lower rates and their financial success and fantastic growth rates reinforced the idea that the agent middleman could be either eliminated or their numbers greatly reduced, resulting in substantial cost savings.

The analysis presented below indicates that the cost savings from full use of the direct writing or exclusive agency technique would result in substantial cost savings in the provision of insurance. It is argued that stock companies using the American Agency system have the highest costs and the highest prices and are employing an inefficient production technique costing consumers hundreds of millions of dollars annually.

The basic model used for explaining company expense ratios as was employed in the returns to scale section is utilized here. For the analysis presented in this section two relationships were estimated. In the first observations on stock fire insurance companies, mutual auto insurance companies and stock auto insurance companies were grouped together and the following relationship estimated:

$$E = \alpha + \beta\ DPREM + \lambda\ INTER + \gamma\ RATIO + \delta\ DWRITE + \phi\ D_1 + \psi\ D_2$$

where $D_1 = 1$ auto stock companies

$= 0$ otherwise

$D_2 = 1$ mutual auto companies

$= 0$ otherwise

The estimate of δ is then used to measure potential efficiency gains from direct writing for the entire property liability insurance industry. In the second, only observations on auto companies are used and the following relationship is estimated:

$$E = \alpha_a + \beta_a\ DPREM + \lambda_a\ INTER + \gamma_a\ RATIO + \delta_a\ DWRITE + \phi_a\ D_1$$

The estimate of δ_a is used to estimate potential efficiency gains from the use of direct writing in auto insurance only. The regression results are reported below:

(I) $E = 33.85 - 0.65\ DPREM + 0.73\ INTER + 0.70\ RATIO - 10.82\ DWRITE - 5.79D_1 - 6.23D_2$
(31.42) (-0.73) (0.80) (1.67) (-7.88) (5.05) (-3.70)

$R^2 = 0.51$ 157 observations

(II)[45/] $E = 21.00 - 0.99\ DPREM + 1.05\ INTER + 7.90\ RATIO - 11.48\ DWRITE - 0.32\ D_1$
(10.84) (-0.67) (0.70) (4.31) (-9.65) (0.32)

$R^2 = .54$ 108 observations

The results indicate that overall, the expense ratios of direct writers average 10.82 percentage points less than the agency companies ceteris paribus. For the auto companies themselves the figure is 11.48. In addition, the expense ratios for auto insurers average about 6 percentage points less than those for fire insurance companies. This latter result may have emerged because there

has been much more competition in auto insurance lines than in fire lines. As a result agency companies may have been forced to cut commissions to agents for auto policies in order to stay competitive with the direct writers who had lower costs and could successfully justify rate deviations with regulatory commissions. Finally (from ϕ_a) the cost structures for stock and mutual auto insurers are not significantly different from one another.

Let us assume that the technology for producing insurance business contains only two activities: direct writing and agency writing. Let us assume further that in a well functioning competitive market the choice among these two activities would be based strictly on which was the least cost activity (the outputs are the same) first for the auto insurance industry only and then for the property-liability insurance as a whole. At current output and price levels we may calculate the efficiency gain from use of the direct writing system as follows:

$$EG = A \times B \times C$$

EG = Efficiency Gain

A = Expense Saving (Expressed as a Percentage of Premiums)

B = Total Premiums

C = Proportion of Premiums written by other than direct writers

Factor (A) can be obtained from the regression results reported above and factor (B) is available from Best's. I was able to find a value for C for the P - L industry as a whole (Direct writers = 31.5%) but was not able to find a precise figure for the auto lines. I have estimated it as 50% direct writing.[46/]

EG (Auto) = $830.0 million

EG (Total P-L) = $2.64 billion

The measure can also be represented as the shaded area in Figure 1. Here r* is the prevailing price per unit of coverage and AC_1 and AC_2 represent the average costs per unit of coverage under the agency system and direct writing respectively (including the "regulated" profit factor).[47/]

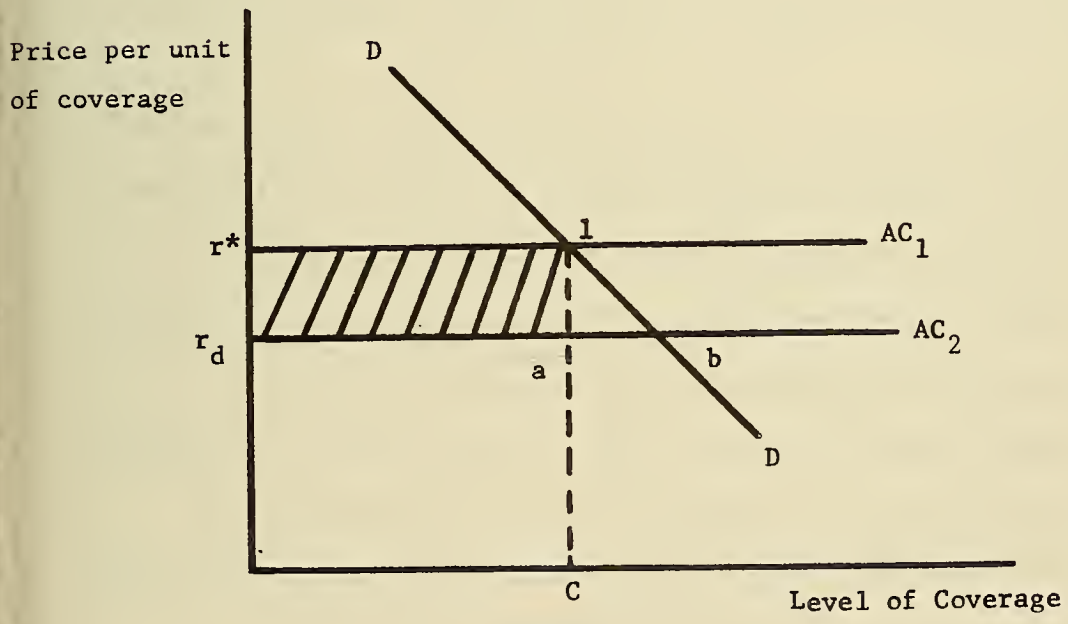


FIGURE 1

Now, this calculation assumes that the price remains at $r^* = AC_1$. However, even under regulation we would expect the price to fall to at least AC_2, yielding an additional increase in consumer surplus equal to the small rectangle labelled, abl. If prices remain at r^*, the entire efficiency gain has been absorbed as higher profits to the insurance industry. The additional gain in efficiency from a price reduction will depend on the elasticity of demand and the difference between r^* and r_d.

Assuming a linear demand function[48] and Δr and ΔC small we may approximate the dead weight loss resulting from setting price at AC_1 as

$w = 1/2(\text{Premium Volume})(\text{Elasticity of Demand})(\%\text{Change in Expense Ratio})$[49]

The dead-weight welfare gain from direct writing is calculated for three different elasticity measures based on different assumptions.

(a) Only auto insurance can be successfully sold using direct writing and all companies charge r^* under the current system;

(b) Only auto insurance can be successfully sold using direct writing and direct writers charge r_d under the current system.

(c) All property-liability insurance can be successfully sold using direct writing and direct writers charge r^* under the current system.

(d) All property-liability insurance can be successfully sold using direct writing and direct writers charge r_d under the current system.

$\eta = 0.5$, 1.0 and 1.5 are used for the calculations.

TABLE 6

DEAD WEIGHT LOSSES FOR SELECTED ASSUMPTIONS ABOUT DIRECT WRITING POSSIBILITIES AND THE ELASTICITY OF DEMAND FOR INSURANCE

Elasticity	Underwriting Possibilities			
	(a)	(b)	(c)	(d)
		$ millions		
0.5	46.9	23.5	104.1	71.3
1.0	93.8	46.9	208.3	142.7
1.5	140.8	70.4	312.4	214.0
Primary* Efficiency Gain	830.0	830.0	2,640.0	2,640.0

*(as calculated previously)

These calculations give us some feeling for the range of values for the welfare gains which society might achieve by moving from a system of independent agents to one of direct writing under various assumptions concerning which lines of insurance are amenable to direct writing and what the pricing behavior of firms under regulation actually is. The minimum efficiency gain is $830 million dollars per year under the assumption that the auto insurance market is the only one congenial to direct writing and that the elasticity of demand for coverage is zero. The maximum gain is $2.64 billion under the assumption that the entire property-liability industry is susceptible to direct writing, that the elasticity of demand for coverage is 1.5. For arguments sake we will say thatthe efficiency loss is $1.5 billion per year because of the prevalence of the American Agency system.

The natural question which arises here is why the American agency system continues to exist at all. If direct writing is cheaper, and if direct writers can justify lower rates through deviation procedures before state regulatory commissions, why doesn't the direct writing sales technique drive the American agency system out of the game? We turn to this question now.

A possible answer to this question is that the system of small independent agents dealing with the public is in some sense "better." The argument goes that the agent can service the specific problems and needs of each of his individual customers. For some lines of insurance and for certain types of properties with special insurance problems there certainly is need for individual insurance counseling. However, the Senate Judiciary Subcommittee hearings are full of testimony that this is just the kind of thing which the small independent agent does poorly. He has neither the training nor the day to day experience to handle tricky insurance problems. The customer in need of special advice will either have to deal directly with a service representative of a company or through a large agency or independent consultant with personnel capable of handling special problems. The kinds of things which the small independent agents handle well are the standard recurring day to day insurance coverage. Most auto insurance is of this form; standardized policies, printed application forms, and a book with rates printed in it. The customer need only appear, specify his age, sex, driving record and type of car, basic coverage or excess coverage and his policy application is complete. The agent will then "try" to get the customer coverage. This is also just

the type of thing which direct writers do very well. For many types of homeowners policies and straight five policies (especially for small dwellings and commercial properties) as well as auto insurance, the agent often does little more than fill out a pre-printed form and act as a go between for the customer and the insurance company. In many urban areas the assigned risk plans (auto) and the fair plans (fire, extended coverage) are really no more than direct writing organizations for the insurance industry as a whole, serving those persons who can't get insurance in the voluntary market. While the agent continuesto be a middleman in this situation, he is certainly redundant. Much of this business could easily be handled by mail directly to customers, with service personnel available for questions or through large area sales outlets.

The advantages of independent agent contact, for many types of insurance customers appears to be small or even perverse. Since an insurance company which integrates forward into sales can both sell insurance by mail and maintain regional offices to handle claims and deal with special problems, the need for the independent agent per se appears to be non-existent.[50/] Why then, in the face of large cost savings, haven't many companies integrated forward into sales eliminating the inefficient agency system as a sales technique?

As a matter of fact no major company has ever switched over from the agency system to the direct writing system. Direct writers in existance appear to have begun as direct writers. While it would seem reasonable for companies to switch from an agency operation to a direct writing operation there are substantial blockages to this occurring.

One of the primary barriers is legal. Since the National Fire Insurance case (1904) the "property rights" in an insurance customer belong to the agent who brought the customer to the company. A company is legally prohibited from going out and soliciting the business of one of its customers itself. It must deal with the customer through the agent who generated the business. Therefore a company which wished to switch from a system of generating business through independent agents to direct writing would essentially have to give up all his existing customers. A large company might attempt to make this transition region by region or state by state, funding the changeover costs through remaining agency business, however the strong national agents trade associations would certainly frown on this. A company trying to shift to direct writing gradually might find itself informally blacklisted by the trade associations and lose its agents everywhere. In addition, evidence cited above indicates that there are moderate to high entry barriers facing potential entrants into the direct writing market. As a result, although the property-liability insurance industry taken as a whole possesses concentration ratios indicating a competitive market structure, the direct writing segment appears to be much more oligopolistic.

The problem of consumer information has also probably been a contributing factor. There is probably no other product for which consumer ignorance is so prevalent. Many consumers are unaware that there are price differences among insurance companies and that it is not necessary to go through an independent agent to obtain insurance. Comparative price shopping is very difficult since price differences for comparable coverages are not readily available in printed form and because it is difficult to obtain information from friends and neighbors. I can get good information on price differences and price levels for all kinds of products from the fellow in the next office if he has purchased these products and/or shopped around for them. Asking him about his insurance is of little value since he is in a different risk class, lives in a different community and drives a different kind of car. In many states deviations from bureau rates were so rare that many consumers simply believed that all rates were the same and just left it to their agent to find them a company. The agent himself had little incentive to obtain cut rate insurance since his commission usually varied directly with the size of the premium.[51/] In the presence of such large information problems it is not surprising that it has taken so long for the direct writers charging lower rates to capture a sizable portion of the property insurance markets, even given their relatively strict underwriting policies.

Regulatory commission have given only limited recognition to this consumer information problem. Under the prior approval system regulation seem more concerned with making sure that rates were "adequate"

than with encouraging consumers to take advantage of lower rates where available. Only recently have the Pennsylvania and New York insurance departments published guides which give consumers more information on price differences among companies, for different classes of insurance and in different areas of the state. It was recognized in New York that such information was essential if the new open competition rating system was to work in such a way that the competitive market would become an effective regulator of insurance prices insuring that they are both "adequate" and not "excessive".

Even with these barriers, however, it would not be unreasonable to suppose that the large cost advantage direct writers possess would allow them to reduce prices so much that they could increase their market shares very quickly. Although direct writers have been increasing their share of the market, the movement has been gradual. Almost nonexistent before the Second World War, the four largest direct writers possessed 15.5% of the total auto insurance market in 1954 and 25.5% of the auto insurance market by 1971.[52/]

By and large it doesn't seem as if the direct writers have tried to rapidly take over the market. Although the direct writers and many mutual companies tend to file across the board 10-20% deviations on all lines of insurance, they also tend to have very strict underwriting policies. They attempt to take the "cream" of each of the risk classes. Since the risk classes are not really homogeneous in terms of type of person or neighborhood character, the direct writers tend to look to additional characteristics which will differentiate out the best risks in the class. Driving record, accident record, home address, occupation, etc. are the kinds of things

direct writers and some mutual companies look to in obtaining the "quality" risks in each class. The sales situation appears to be one in which the low expense direct writers charge reduced rates for quality risks, leaving the rest of the market to be serviced by agency companies and assigned risk plans.

While this behavior may appear to be paradoxical we shall see below that it is not. On the contrary it appears to be consistent with profit-maximizing behavior of low cost oligopoly firms (the direct writers) insulated from entry and faced with short run "capacity" constraints.

Supply Shortages

The problem of supply shortages in property and liability insurance has resulted in a great deal of criticism of the industry. By supply shortages we simply mean that customers who desire insurance at prevailing market rates simply cannot obtain it through standard channels or cannot get as much insurance as they would like at posted rates. Fire, extended coverage and theft insurance became very difficult to obtain in the ghetto core areas of many cities in the United States in the 1960's.[53/] The exact extent of the shortage is difficult to measure, but some estimates run as high as 80% non-availability in particular ghetto areas. Fire insurance pools, known as FAIR plans have been set up in many states to provide insurance to those who could not get it in the open market (often at open market rates). Similar types of shortage problems hav arisen in automobile insurance also. These problems became especially evident when many states initiated mandatory financial responsibility laws, resulting in a situation in which those who could not get insurance in the voluntary market could no longer obtain car registrations.

Assigned risk plans were established in all states to provide at least the basic minimum insurance coverage to everyone (again often at bureau rates). The exact operations of the FAIR plans and the assigned risk plans will not be discussed here. However FAIR plans in many states have been forced to write substantial volumes of fire, extended coverage and burglary insurance. The New York FAIR plan was, by 1972, the largest fire insurance underwriter in New York state. The supply shortage situation in automobiles was not so severe, however. An examination of the activities of New York State's Assigned Risk Plan is revealing.[54/]

Except for the years following the introduction of compulsory automobile liability insurance, the proportion of vehicles unable to obtain insurance in the voluntary market hovered near 10% and was 12.7% in 1971.[55/] The situation in ghetto areas was considerably worse than the yearly averages. In Bronx County South fully 34% of the automobiles were insured through the assigned risk plan in 1971.[56/] Youthful owners or principal operators also found it difficult to obtain automobile insurance in the voluntary market, with 29% of the vehicles registered to this class of operators insured through the assigned risk plan in New York state. The proportion ran as high as 48% in one particular rating territory.[57/]

In addition, until recently most states only provided minimum coverage through the assigned risk plans so that many of those in the plan may not have been obtaining the quantity of coverage which they desired at prevailing prices. In fire and extended coberage as well as in the auto insurance lines a far from insignificant proportion of the population is not being serviced adequately by the voluntary market.

Clearly an understanding of why supply shortages exist is crucial to the evaluation of the performance of the insurance industry under regulation. The contention here is that supply shortages exist because regulatory authorities have refused to allow the creation of enough truly homogeneous risk classes. Rates determined on the basis of average historical losses for a particular class may be profitable for a "typical" risk. However, as long as risk classes are not homogeneous from the viewpoint of insurers, and insurance underwriters can differentiate between "good" risks and "bad" risks within a particular class,no risk will be treated as "typical". On the contrary most insurance companies will attempt to insure the "good" risks first and may or may not insure the bad risks.

Proposition 1: The existence and extent of supply shortages within a particular class will depend on the expected profits associated with the particular identifiable subclasses within the heterogeneous rating class and the ability of insurers to successfully differentiate between good risks and bad risks within this rating class.

Proposition 2: Supply shortages within a particular heterogeneous rating class will vary inversely with the underwriting profit for the "typical" risk in the rating class.

Arguments in favor of these two propositions are presented in the context of a simple model of the short run underwriting behavior of a profit maximizing property insurance company.

Consider a typical insurance company with some fixed capital base (K) "backing" its insurance operations. The company earns income from its insurance operations in two ways.

a) Direct underwriting profits

b) Investment income from prepaid premiums often called "unearned premium reserves."

Let us assume for simplicity that the typical firm sells one type of insurance to only one class of customers.

Let π^* = profit per premium dollar for the "average" or typical customer in the class. π^* is determined by the regulatory authority and defines a price per unit of coverage for all customers in the class.

$$\pi^* = 1 - \ell - e$$

ℓ = expected losses per premium dollar for the class as a whole

e = expenses per premium dollar.

Let us assume further that there are two types of risks in this class "good" risks and "bad" risks, defined by some indicator variable not used for determining the rating class itself. Let's say that this variable is dichotomous and indicates "good" neighborhoods and "bad" neighborhoods within the territory used for establishing the prevailing price for all risks.

Let π_B = expected profit per premium dollar for the "bad" risks in the group.

π_G = expected profit per premium dollar for the "good" risks in the class.

$$\pi_G < \pi^* < \pi_B$$

$$y_i = \pi_i + r^{**}$$

where y_i = expected net income from writing a risk with characteristic i

r^{**} = investment return per premium dollar from the "unearned" premium reserve.

Short run/expected profit maximizing behavior of insurance firms, given π_G, π_B and r^{**} implies that an insurance company will write all subclasses of the heterogeneous rating class for which

$$y_i \geq 0$$

and will not write subclasses for which

$$y_i < 0$$

In general the higher is π^* (ceteris paribus) the more subclasses (with progressively poorer loss expectations) will be written. In the two subclass case the higher is π^* the more likely the bad risk group will be taken on. If $\pi_B + r^{**} \geq 0$ both subclasses will be written. We therefore expect that a class will still be written for some values of $\pi_i < 0$.

This simple model includes only two types of risks and implies a simple dichotomous decision index which specifies good neighborhoods and bad neighborhoods which in turn determines "good" risks and "bad" risks (and the expected profitability of each). Especially for automobile insurance, we might expect to find a decision index which takes

on many values and is a function of such things as neighborhood residence, driving record, accident record, age etc. which have not been used in defining the rating class itself.

Let

$\pi_I = F(I)$ where I is the value of the decision index and π_I are expected profits

$F'(I) < 0$

In the short run we would expect firms to write all customers for which $F(I) \geq -r^{**}$ which is essentially the result for the more simple case. Quite simply firms just will not write risks for which they expect to lose money. If risk classes are in fact really heterogeneous, all risks will be insured only if π_i for the "worst" identifiable group in the class is equal to or greater than $-r^{**}$. This means, however, that persons in the intra-marginal classes will be paying too much for insurance. In the short run firms would be earning profits in excess of what would induce them to write each subclass if each were priced according to its own expected losses in a competitive market with truly homogeneous risk classes. Note finally that π^* may be so low that nobody within a particular class will be insured.

There is substantial evidence to indicate that rating classification have been too large in many states. In New York city, for example, although there are 115 building hazard classifications, rates for each are based on data from a very large territory -- the entire City of New York. Companies often believed that within any hazard class, some neighborhoods have higher expected losses than others. A system of "redlining developed

where some areas of the city were designated as not insurable. The number of areas designated seems to have increased during the late 1960's as underwriting profits declined (π^*) and expectations of losses increased. The large supply shortages which resulted in many major cities appears to have been caused because companies felt that the premium rates did not justify the expected returns from writing in these areas. Attempts by insurance companies to put surcharges on particular neighborhoods have generally been resisted by regulatory authorities as being discriminatory. This was at least partially the fault of the industry which did not collect industrywide loss data by neighborhood . Even if they had, changing expectations based on things other than historical loss experience, might still have resulted in "regulated" prices which were too low for some risk classes..

Similar behavior appears to exist for auto insurance. While the number of territory classifications for auto insurance in New York City is much larger than for fire insurance, there is evidence that insurers tend to avoid people with poor driving records, poor traffic records, people in certain occupations, aliens etc.[58] In particular, new inexperienced drivers tend to be avoided by insurance companies. For some of these characteristics surcharges are available, for others they simply are not.

The behavior of insurance companies in "risk selection" certainly appears to have been justified, when we look at the loss experience for auto risks insured through the voluntary market and those insured through the assigned risk plan. The losses and loss adjustment figures for assigned risk drivers are much higher than those for drivers insured through the voluntary market.[59] In 1970 the ratio of losses to premiums for risks

insured through the voluntary market was .68, while it was almost twice as high at 1.28 per assigned risk drivers. Similar results were obtained during the previous 10 years.

Given excess demand and the contention by underwriters that the excess demand exists because particular subgroups of exisiting rate classifications are identifiably "unprofitable" at bureau rates, why doesn't the regulatory authority allow more rate classifications? In many cases they have allowed more rate classifications and special surcharges. Convincing regulatory authorities that additional risk classifications are justified is not easy, however. Data must be collected justifying new classifications, and often must be of at least five years duration to be used for making rates. Chicago was recently broken up into four rating areas for auto insurance and New York City will soon be rated by borough for fire insurance. The burden of proof for justifying new classifications is up to the companies in the industry and must be supported by extensive loss data.

In addition, regulatory authorities have resisted attempts at certain types of classification schemes on equity and distributional grounds. The fact that the poor, the non-white and the young would tend to pay more for all types of insurance, if risk classes were truly homogeneous, has certainly had a lot to do with the policies of the regulatory authorities. Insurance regulators seem to have felt that charging higher rates in slum areas, to black people, to persons with particular occupations, etc., for what to the layman appears to be an identical product, could present severe political difficulties.[60/] The true price of insuring

some bad risks profitably would be so high that they appear to be "unconscionable" to many concerned. By lumping good risks together with bad risks in identical rating classifications, regulators could approve posted rates which appeared to be fair for all rating classifications. However, true cross-subsidization was impossible because insurance companies were not forced to provide service to all customers who demanded it.[61/]

A cross-subsidy scheme which probably would have worked in the traditional public utility setting could not work here as long as companies could easily identify the poor risks in each class which would not be profitable to underwrite. The result was not cross-subsidization, but a lack of supply availability at posted prices for many groups of consumers.

The introduction of assigned risk plans and FAIR plans was an ideal solution for the regulatory authorities. Companies were now being forced, indirectly, to provide all customers with at least some service. Since this service was often provided at bureau rates

established on the basis of loss experience for customers insured both inside and outside of assigned risk plans, good risks ended up subsidizing bad risks. It has been estimated that this subsidy amounts to an increase of $9 per car per year on the rates of auto liability risks insured through the voluntary market, and a reduction of $76 per car per year on the rates of assigned risk participants below what would be required to cover losses, expenses and a 5% profit factor.[62] The insurance industry appears to have been satisfied with this arrangement as long as overall rates were high enough to keep the number of customers in special insurance pools small and overall profitability acceptable. Recent experience, with poor industry profits appears to be making the insurance industry as a whole far less satisfied with the current arrangement than it has been in the past. The question of profitability is one to which we turn now.

Profitability

Profitability, in the context of a "fair rate of return" on capital, is an important aspect of the pricing process in most regulated industries. Overall allowed rates of return are normally determined by regulatory agencies in rate hearings on a company by company basis and price structures yielding the allowed rate of return approved.[63] The question of excess profits and profit measurement methodology was not very much of an issue in insurance rate regulation until recently. A standard formula, yielding "fair" profits to the industry as a whole was agreed to by the National Association of Insurance Commissioners in 1921. It has been in effect in most regulatory jurisdictions ever since. Recent criticism of rising insurance rates, coupled with a reconsideration of the effectiveness of regulation has led to an examination both of the industry's profit

performance and the profitability measures to be used in approving and "surveying" property-liability premium rates.

Traditional Measures of Profitability

The traditional measure of profitability used for property-liability insurance ratemaking is based on the "1921 Profit Formula" adopted by the National Association of Insurance Commissioners in 1921. While the rationale for this formula was based on the situation in fire insurance ratemaking, the basic profit allowance and its calculation has been applied to all major property-liability lines. This formula contains the following provisions:64/

(1) Underwriting profit (or loss) is arrived at by deducting from earned premiums, all incurred losses and incurred expenses.

(2) No items of profit or loss connnected with the so-called banking end of the business should be taken into consideration; and

(3) A reasonable underwriting profit is 5 percent plus a 1 percent conflagration hazard (as modified by the NAIC in 1948) for fire insurance ratemaking.

In most regulatory jurisdictions the profit formula has been applied to the performance of the industry as a whole and not on a company by company basis. Individual companies wishing to reduce rates below approved bureau rates normally had to show that there operating expenses (but not their losses) were enough below those for the industry as a whole so that the rate reduction would still yield them the statutory profit figure. To evaluate this profitability measure and the actual profit performance of the insurance industry, the following simple model of the behavior of the insurance firm in the long run will be useful.

A Simple Model of the Behavior of a Property Insurance Firm in the Long Run

The insurance firm is conveniently conceptualized as a levered investment trust. It obtains capital from an initial sale of stock and invests most of this capital in securities (both stocks and bonds). This is the strict "investment trust" aspect of the firm. The firm's portfolio is then used as backing for its insurance operations. The insurance operations yield two sources of net income: direct income from underwriting (expenses less losses) plus investible capital (unearned premium resrves) made up of prepaid premiums, with which the firm purchases more securities for its portfolio. For U.S. stock companies to value of capital attributable to unearned premium reserves is equal to about 80% of the equity capital (including retained earnings or surplus). By engaging in insurance operations, the "investment trust" gains additional investible capital and additional income, but must also assume the additional risk of engaging in the insurance business.

Let:

r^* = expected rate of return on equity portfolio

I = expected underwriting profit after losses and expenses per premium dollar (as determined by regulatory authority and rating bureau).

P_i = total premiums written by firm i.

r^{**} = expected rate of return on "insurance capital" portfolio [65]

K_i = equity investment in firm i

U_i = unearned premium reserve possessed by firm i

So total expected net income of the insurance firm in a given period is:

$$(1) \quad \pi_i = r^*K_i + IP_i + r^{**}U_i$$

and the rate of return on the operations of the firm as a whole is given by:

$$(2) \qquad r_I = \pi_i / K_i$$

Assuming U_i/P_i remains constant at a value of approximately .8 we may rewrite (2) as

$$r_I = r^* + \frac{P_i}{K_i} \left[I + .8r^{**} \right]$$

With r*, I, r** constants given by the market, the expected rate of return for the insurance firm varies directly with the ratio of premiums volume to equity capital, ceteris paribus.

Let us assume that premium rates have been fixed at some level by the rating bureau and/or regulatory agency so as to yield I and that all firms adhere to these "cartel" rates. This premium rate level defines a level of total insurance coverage demanded and in turn a level of total premium volume P ($P = \Sigma P_i$). If all firms are identical and there is free entry we would expect the long run equilibrium positions of all firms to be characterized by:

$$(3) \qquad r_I^c = r_I = r^* + I \frac{P_i}{K_i} + .8r^{**} \frac{P_i}{K_i}$$

where r_I^c is the competitive opportunity cost of capital.

r_I^c is in turn defined as follows

$$r_I^c = r_c + g\left(\frac{P_i}{K_i}\right)$$

$$g'\left(\frac{P_i}{K_i}\right) > 0$$

$$g''\left(\frac{P_i}{K_i}\right) \geq 0 \qquad\qquad r_c > r^* \text{ [66/]}$$

where r_c is the expected return from operating a pure investment trust, and where the opportunity cost of capital rises as the investment portfolio "backs" more and more insurance claims (since prices are fixed here

this is represented by premium volume).

$$(3') \qquad r_c + g\left(\frac{P_i}{K_i}\right) = r^* + I\left(\frac{P_i}{K_i}\right) + .8r^{**}\left(\frac{P_i}{K_i}\right) \quad (r_c > r^*)$$

(3') may be solved for an equilibrium value of $\frac{P_i}{K_i}$. Single and multiple equilibria are possible depending upon the shape of g(·) and the level of I. The four possible situations are depicted below.

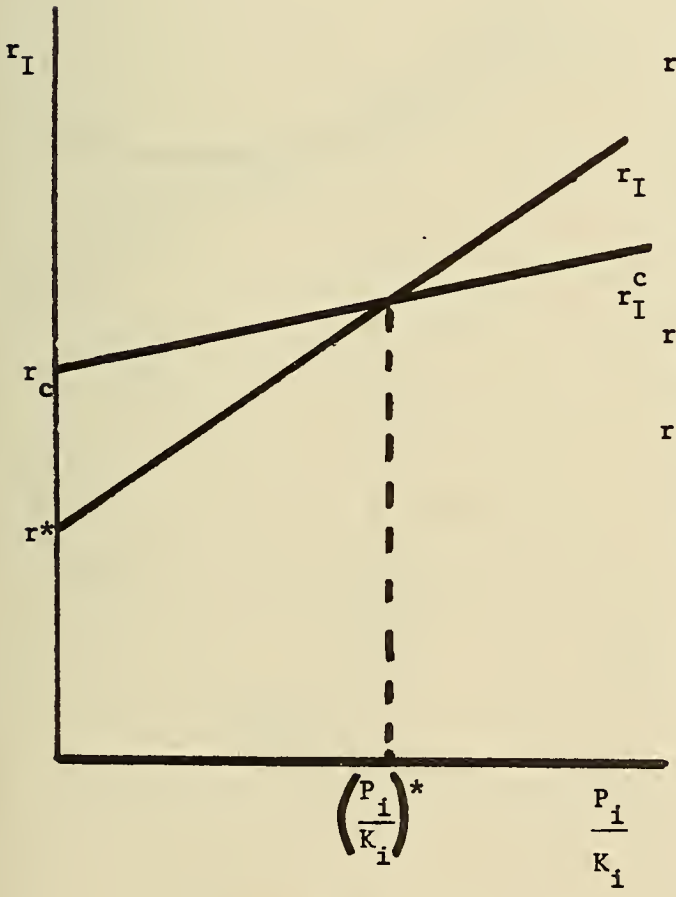


FIGURE (a)

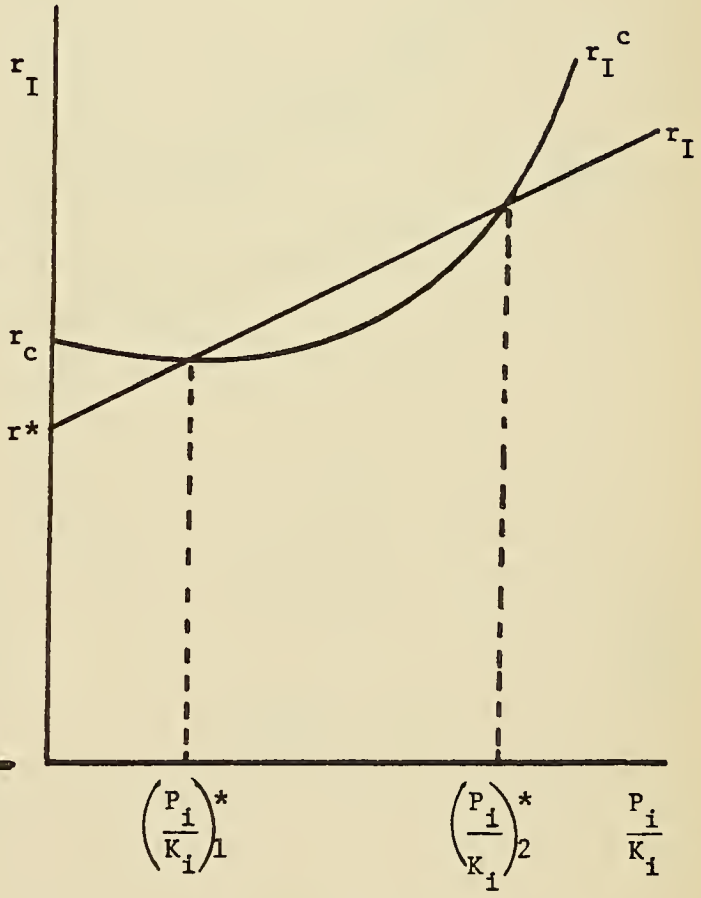


FIGURE (b)

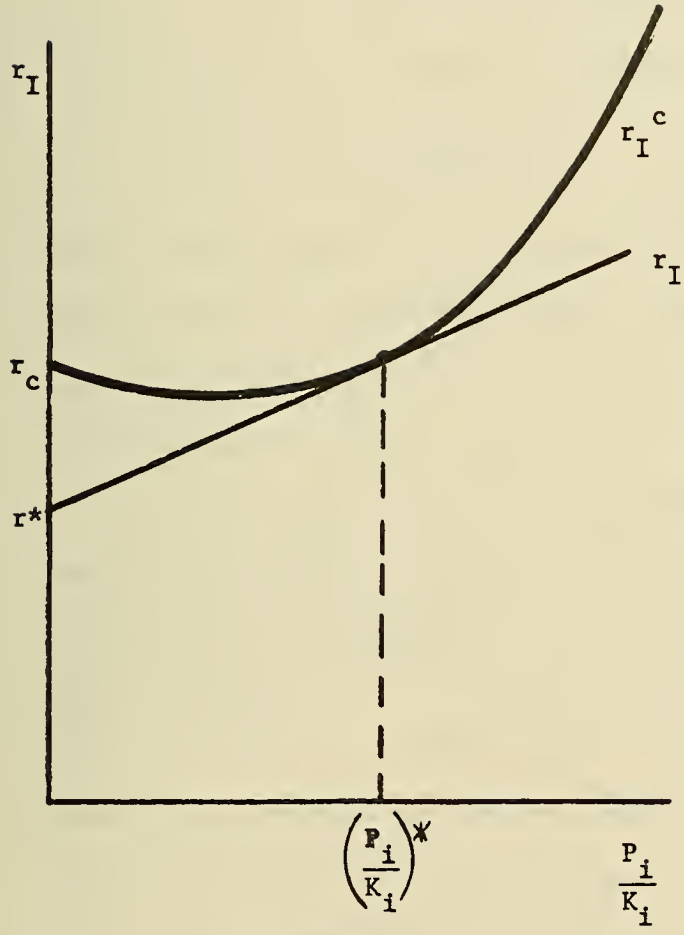


FIGURE (c)

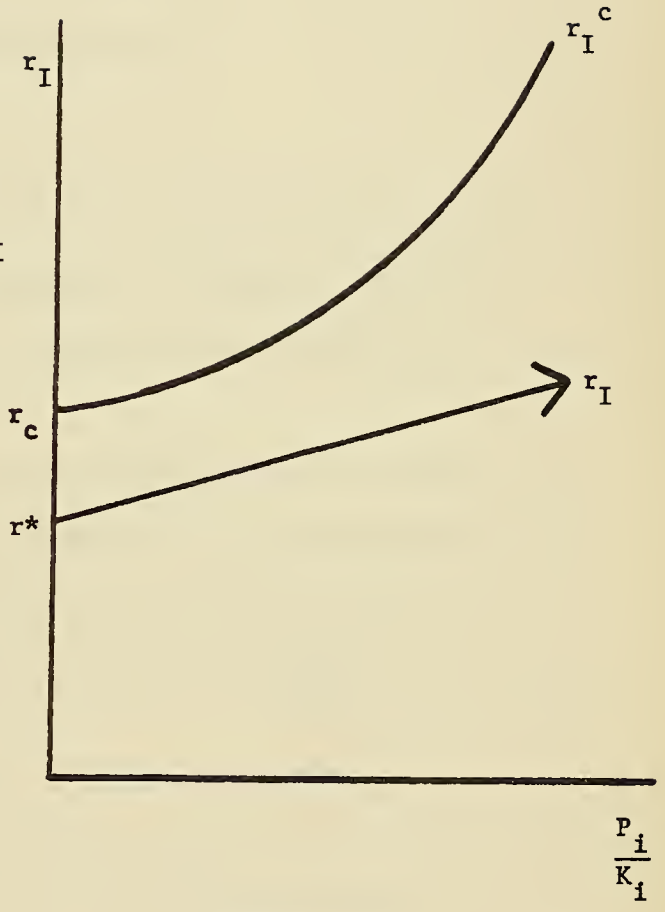


FIGURE (d)

The force driving firms to an equilibrium point is the entry and exit of equity capital into and out of the industry. Since ΣP_i is fixed, (since prices are fixed) adjustment takes place in terms of K.

If $r_I > r_I^c$ capital will enter the industry

$r_I < r_I^c$ capital will leave the industry

$r_I = r_I^c$ equilibrium

We may think of this entry in terms of additional identical firms (P_i for each firm then declines with entry, K_i remaining constant), as existing firms expanding their capital base (P_i constant and K_i increasing), or as a combination of both.

Case (a) where r_I^c is a linear function of $\left(\frac{P_i}{K_i}\right)$ leads to a unique and stable equilibrium position. Case (b) where r_I^c increases more than proportionately with $\left(\frac{P_i}{K_i}\right)$ yields 2 equilibrium positions, however only $\left(\frac{P_i}{K_i}\right)^*$, is stable. Firms can avoid moving beyond $\left(\frac{P_i}{K_i}\right)^*_2$ by refusing to supply all insurance demanded so that the system is not explosive.
Case (c) is a polar case of (b) and is stable as long as firms can refuse to write some insurance demanded or recognize that entry will drive down the opportunity cost of capital Finally (d) is a situation in which income from insurance opeartions is jut not worth the risk.

Let us concentrate on the equilibrium positions in (a) and (b) $\left[\left(\frac{P_i}{K_i}\right)^* 1\right]$. The equilibrium premium/capital ratio for individual firms will vary inversely with I (ceteris paribus). In (a) any $\left(\frac{P_i}{K_i}\right)^*$ value can

be supported at some value for I (and this is probably an unrealistic characterization of the cost of capital for this reason).[67] In (b) only a limited range of stable values for $\left(\frac{P_i}{K_i}\right)^*_1$ can be supported by varying I. In both cases there is some lower bound on I below which firms will simply withdraw from the industry. Call this floor value on the underwriting pofit level I*.

In this world then, by defining a particular value for $I \geq I^*$, the regulatory authority and the rating bureau are implicitly defining an equilibrium level of $\left(\frac{P_i}{K_i}\right)$ at which firms will sell insurance. The higher I is the smaller will the value of $\frac{P_I}{K_i}$ tend to be. Since there is easy entry we would expect that the earned rate of return for individual firms and for the industry as a whole should be equal to the opportunity cost of capital for all $I \geq I^*$. As long as the regulatory authority sets $I \geq I^*$ insurance will be provided in the long run. However, if the regulatory authority should also undertake to prescribe a maximim $\left(\frac{P_i}{K_i}\right)$ ratio at which firms must write insurance, it will either be applying an ineffective constraint (if it is greater than $\left(\frac{P_i}{K_i}\right)^*_1$) or will force firms out of the market (if it is less than $\left(\frac{P_i}{K_i}\right)^*_1$). Proposals to have regulators set both I and $\frac{P_i}{K_i}^*$ may create considerable problems.

In a truly competitive market we would expect insurance premium rates to be driven down to the point where they were just high enough to clear the market. The competitive underwriting profit would therefore be I* (which could be negative because of the earnings from the increased premium reserves) which would be just high enough to coax

firms into the industry, providing insurance to all who demand it with each firm operating at some premium/equity capital ratio which we may call $\left(\frac{P_i}{K_i}\right)^{**}$. If cartel prices are set above I*, market equilibrium will result in a $\left(\frac{P_i}{K_i}\right)^{*}$ value smaller than $\left(\frac{P_i}{K_i}\right)^{**}$. The cartel pricing situation will result in less real insurance coverage being offered, (assuming demand is not perfectly elastic) more capital (capacity) per premium dollar and per unit of real insurance coverage, and a lower rate of return (although still equal to the opportunity cost of capital) than would be achieved in a competitive market. To the extent that consumers are indifferent among the $\left(\frac{P_i}{K_i}\right)$ values $\leq \frac{P_i}{K_i}^{*}$ they will be better

they will be better off with a competitive market. A possible rationale for the cartel arrangement thus presents itself. If the demand for insurance coverage has a price elasticity less than or equal to unity and if demand itself is growing only slowly, the introduction of competitive pricing necessarily means that some existing firms will be forced to exit from the industry. Even for some values of the price elasticity greater than unity exit would be necessary. Therefore, from the viewpoint of existing firms in the industry, the elimination of cartel pricing may indeed have resulted in excess capacity and competition destructive to some existing firms. The fact that a cartel with free entry could not achieve excess profits in the long run for the constituent firms is not a deterent to the establishment or maintenance of a cartel. With the cartel all existing firms would stay in the ballgame. The elimination of the cartel would

probably have meant that some of the existing firms would have been forced out of the market. Once a cartel type equilibrium has been attained (or if there is excess capacity for some other reason) existing firms have an interest in maintaining (or creating) the cartel to keep themselves in the market.

We may conclude that one of the reasons many insurance companies (especailly the larger ones) have not resisted the movement to open competition in insurance pricing is because the cartel arrangement was falling appart anyway with the direct writers and the eased deviation procedures. Effective prices were being driven toward the competitive level and no doubt many of the larger companies felt that they could do much better, at least in the short run, with open competition, at the expense of many of the smaller companies.

Before moving on certain consumer protection arguments in favor of regulated prices should be made. It is often argued that because of consumer ignorance, consumers appear to be indifferent between companies selling insurance with different $\left(\frac{P_i}{K_i}\right)$ values, but really would not be if they were appraised of the significance of the $\left(\frac{P_i}{K_i}\right)$ ratios to them. In some sense the higher the value of the $\frac{P_i}{K_i}$ ratio of the firm from which one purchases an insurance policy, ceteris paribus, the lower is the quality of the "product."[68/] The quality of the product is reduced because the higher is $\frac{P_i}{K_i}$ the higher is the probability that the insurance firm will go bankrupt and that losses incurred will not be paid off. This argument implies that with perfect information consumer demand would depend not only on price but

also on the $\frac{P_i}{K_i}$ ratio maintained by firms selling contingent claims.

The perfect competition equilibrium without proper consumer information will therefore yield a $\frac{P_i}{K_i}^*$ ratio higher than would result with perfect information about the risk of non-payment due to bankruptcy.[69]

There is certainly some validity to this argument. However, it would seem that capital market themselves recognize the chance of bankruptcy very well. Where $\frac{P_i}{K_i}$ ratios become high enough to raise the probability of bankruptcy to more than de minimus proportions, the opportunity cost of capital probably begins to rise rather quickly, thus probably restricting the value of $\frac{P_i}{K_i}^*$ in a competitive market to some fairly reasonable level. There certainly does remain room for fraud and manipulation which should probably be a source of some public policy concern. This is particularly true if management is not particularly sensitive to stockholder pressures and in mutual companies where the policyholders themselves are the source of the capital base. Therefore, the cartel pricing scheme certainly does tend to yield a $\left(\frac{P_i}{K_i}\right)^*$ ratio less than what would be achieved in a competitive market, but it is not at all clear that this increase in product quality is worth the price. A proposal is presented in the final section which should ensure that the risks associated with various $\frac{P_i}{K_i}$ ratios are properly taken into consideration by management and that consumers are protected from bankruptcy.

Profit Results for the Property Liability Insurance Industry

There has been a great deal of recent controversy over the profitability of the property-liability insurance industry.[70] The analysis in the previous section indicated that since entry is easy we would expect the overall rate of return for the industry to be equal to the opportunity cost of capital. Although the Merritt Report (1911)[71] cast the question of profitability in terms of the ability to attract sufficient equity capital to provide service, this sensible notion of firm profitability, including all sources of income, was essentially lost from the regulatory process for over 50 years. The 1921 profit formula calling for a 5% return on premium volume gained acceptance as a just standard even though no attempt had ever been made to show that this figure bore any relationship with rate of profit which would be sufficient to generate a rate of return just high enough to encourage entry and service.

If profits fell below 5% of premiums companies felt justified in asking that their rates be increased. Companies seeking to file deviated rates under prior approval laws were compelled to show that they would earn at least the 5% statutory profit figure.

It was not until the late 1960's that the profitability question again received detailed economic analysis. Under increasing pressures to return "high profits" to consumers (especially from some Senate Committees) the insurance industry commissioned a series of profitability studies by Arthur D. Little, Inc.[72]

The ADL studies reject the traditional profitability concept adopted by insurance regulators, at least for comparing profitability among industries. Instead, ADL concludes that it is the rate of return on capital that should

be used in making such profitability comparisons. Included in return were all sources of income including underwriting profits, interest, dividends and capital gains. The initial ADL study examined the profitability of the insurance industry for the period 1955-1965. In this study ADL chose to examine rates of return on total capitalization as the relevant measure of comparable profitability. For an industrial firm total capitalization includes stockholder's equity and surplus plus debt. For an insurance company the "equivalent" of total capitalization was taken to be total investable funds, which include equity capital and surplus plus unearned premium reserves. ADL argued that rate of return on total capital was the relevant rate of return figure for comparing different industries because this would give a measure of the relative "efficiencies" of capital employment among industries. The ADL studies also contain figures on rates of return on equity capital, but ADL has continued to argue that those figures are not as relevant as are the rates of return on total capital.

The ADL studies use these figures in two ways. First ADL regressed the rates of return on total capitalization against the average intercompany temporal rate of return variance (a measure of risk) for a group of U.S. industries including the property liability insurance industry (a sample of 43 stock companies). ADL found that the insurance industry point fell far below the regression line with an average rate of return on total investable funds of 4.4 percent and a risk measure of 10.89 (percent squared).[73/] The study concludes that this indicates that the property liability insurance industry is not earning a rate of return commensurate with that being earned in other industries with similar risks.

While the attempt to "adjust" rates of return by "risk" has great intuitive and theoretical appeal, the ADL reports, especially those following the initial report, have relied primarily on the straight comparison of rates of return between industries, using aggregate data from Best's, to measure property-liability industry performance. For the period 1955-1967 ADL found that stock insurance companies earned an average rate of return on investible funds of 3.8%,[74/] while the rate of return on total capital for all industrial companies was 9.8% during the same period.[75/] ADL finds, in addition, that the property and liability insurance industry had an average rate of return lower than all 119 Standard and Poors industries.[76/]

ADL also presents calculations for rates of return on equity (net worth) for the property and liability insurance industry. After making what appear to be reasonable adjustments for peculiarities in insurance industry accounting practices ADL concludes that the rate of return on net worth was 7.3%.[77/] for stock insurance companies for the period 1955-1968. (It was about 9% without the adjustments.) This compared with an average rate of return on net worth of 11.8% for Standard and Poor's Industrials (1955-1967) and 9.1% for 102 Gas and Electric Public Utilities. ADL concludes that even if one chooses rate of return on net worth as a measure for comparison the property and liability insurance industry does very poorly.

There have been a number of criticisms of the ADL study. Most have pointed to minor accounting problems and some have been quite ridiculous.[78/] There appear to be two serious flaws in the ADL profitability studies, however. First, although a comparison of long run rates of return on total

capital (adjusted for risk) may indicate the relative efficiencies of capital usage in various industries there is absolutely no reason to expect that the property and liability industry uses its total capital resources efficiently. On the contrary, the analysis in the previous section indicates that although free entry will drive returns on equity capital to the competitive level, price regulation will result in an equilibrium position in which the ratio of premiums to equity capital is too small. Since increased premium reserves are directly related to premium volume, total investible funds (equity + unearned premium reserves) will be too large relative to premium volume. We would expect a priori that the rate of return on total capital would be lower in the property and liability insurance industry than in an industry of equivalent risk characteristics, but which used its available capital efficiently. The results of the risk-return analysis of ADL is consistent, therefore, with the conclusion that there is excess capital in the property and liability insurance industry and does not give us a good measure for answering the question of whether the industry earns "normal" profits or not. Other things being equal, the rate of return on net worth would be the relevant profitability measure to use if one were concerned with the industries' ability to attract capital. (There is no real debt financing.)

Is the solution to this problem then to re-calculate the ADL risk-return results using the rate of return on net worth? The answer, I believe, is no. The measure of risk employed by the ADL study (temporal intercompany variance in rates of return) is simply not a good measure of the relative riskiness of a financial institution, whose assets are primarily liquid, and industrial corporations, whose assets are primarily

fixed capital. An investor should certainly be willing to tolerate more variation in expected profits of an insurance firm which can easily liquidate its assets, than in a steel company which cannot. The comparison of the profitability of financial institutions with industrial corporations requires a much more sophisticated definition of risk.

One approach toward answering the profitability question properly might be to compare insurance firms with comparable financial institutions. It was suggested above that the insurance firm is best viewed as a levered investment trust. Table 7 presents First National City Bank figures on rates of return on net worth for fire and casualty companies (property and liability) and for investment trust companies. These figures are illustrative and do not represent a rigorous "comparable" earnings study.

TABLE 7

RATES OF RETURN ON NET WORTH FOR FIRE AND CASUALTY COMPANIES AND INVESTMENT TRUSTS[79/]

Year	Fire and Casualty*	Investment Trusts**
1965	2.9	2.9
1964	4.8	2.9
1963	4.4	3.1
1962	3.9	2.7
1961	6.0	3.2
1960	5.8	3.7
1959	7.4	4.0
1958	5.6	4.9
1957	2.0	4.7
1956	2.2	4.7
1955	5.5	5.2
Average	4.5	3.4

*Net Worth = Policyholders' Equity (primarily at market value)
Net Income = Underwriting profits, interest and dividends, and realized capital gains

**Net Worth = Net assets at market value
Net Income = Operating profit, interest and dividends, not including capital gains

The comparability of these figures suffers from one serious problem. The investment trust figures do not include realized capital gains, while the insurance figures do. A crude adjustment is possible using some of ADL's own figures. ADL calculates the ratio of operating income to policyholders' surplus to be 4.2% for the period 1955-1965 and the ratio of operaters income plus all realized gains (including interest and dividends) at 5.4%.[80/] The elimination of all realized gains reduces the rate of return on policyholders' surplus by 22%. Let us assume that realized capital gains are

about half of total realized gains, so that the elimination of realized capital gains would reduce the rate of return on net worth of insurance companies by 10%. Applying this figure to the First National City Bank figures we get an "adjusted" rate of return on net worth of 4.1% for the insurance industry. This is somewhat higher than the 3.4% figure for investment trusts, which is exactly what we would expect.

The conclusion of this little exercise should be that, at least superficially, the returns earned by the property and liability insurance industry are not out of line with what we would expect when we compare industries which are realistically comparable. Most importantly, this discussion suggests that the issue of the profitability of the insurance industry is still an open question. Although the discussion above suggests that the rates of return observed for the property and liability insurance industry should approximate the competitive cost of capital, sound empirical verification is still an open area of research which should be pursued. Of special interest would be the more direct approach of estimating the cost of capital itself instead of relying on comparisons with other industries. A discussion of exactly how one might use the various approaches to the estimation of the cost of capital for insurance firms is outside the scope of this paper. However, it is an exercise that is certainly well worth pursuing.

But as the analysis in the previous section indicates a rate of return analysis proves nothing about whether premium rates are too high or too low. Regulation and bureau ratemaking may still lead to prices which are higher than necessary and to excess industry capacity. Since entry into the industry continues to be vigorous it appears that the rate of profit which

bureaus and regulators have been able to achieve is sufficient to guarantee that overall industry capacity will be large enough to cover the demand for remunerative lines of insurance.

The Behavior of Direct Writers

Finally an explanation of the behavior of direct writers must be attempted. Recall the following stylized facts regarding direct writers:

(a) Substantially lower underwriting costs than the industry as a whole.

(b) Deviations below bureau rates for many lines of insurance and for many classes of customers.

(c) Moderate to high entry barriers into the "direct writers'" market.

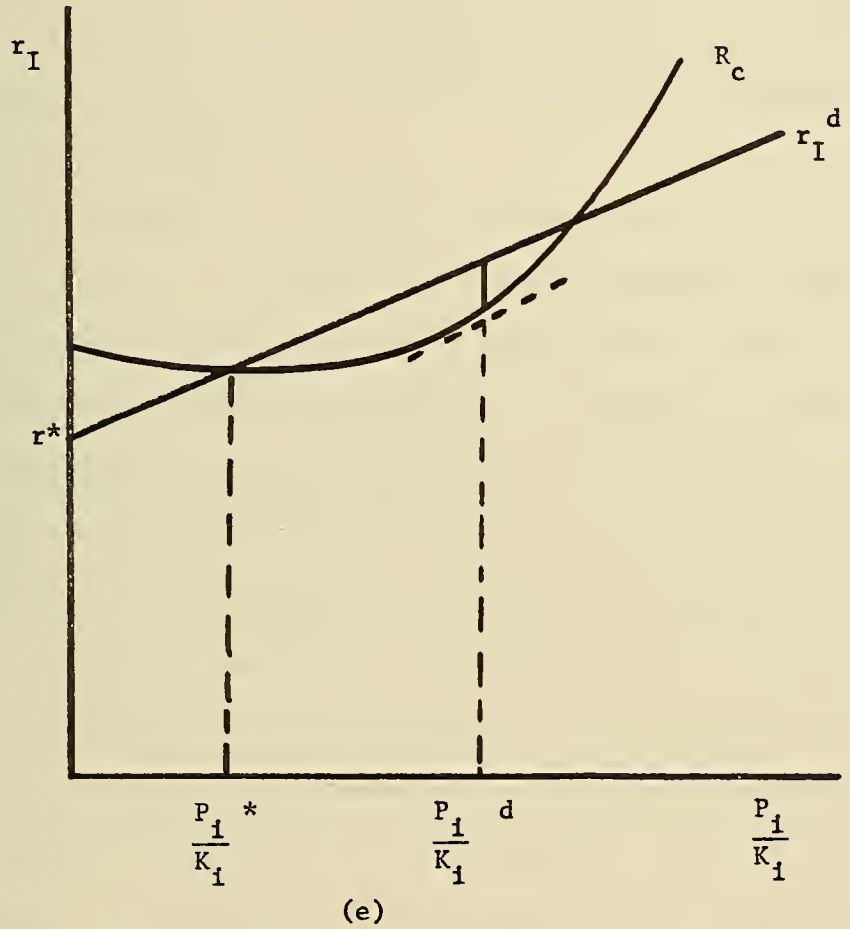
(d) Gradually increasing market share in most lines of insurance.

(e) Stricter underwriting policies than the industry as a whole.

The surprising elements of this picture are (d) and (e). Since direct writers have much lower costs than agency companies, even after small deviations below bureau rates (to attract customers), it would seem that any risk class which is profitable for an agency company to write ($y_i \geq 0$) would be at least as profitable for the direct writers. They should therefore be willing to accept all risks that agency companies accept (perhaps even more) and rather quickly take over the entire market as the word that direct writers have lower rates gets around. The problem of lack of consumer information limiting the speed with which "the word gets around" has already been mentioned. But why do direct writers consciously refuse to write risks which agency firms, in the voluntary market are quite willing to write?

Recall the model of long run behavior of the firm discussed above. In particular let us concentrate on case (b). Since the direct writers' market is not characterized by easy entry, there is no reason to expect that

$\left(\frac{P_i}{K_i}\right)^*$ will result as an equilibrium position for them. On the contrary, direct writers will seek a $\frac{P_i}{K_i}$ ratio where the difference



(e)

between the earned rate of return and the cost of capital is maximized. (See (e) above) But the existing direct writers are certainly limited with regard to how quickly they can <u>individually</u> accumulate equity capital. As a result, in achieving the desired $\frac{P_i}{K_i}$ ratio they are limited with regard to the total premiums they can write in any period, by the total equity capital which they have available. Adding premiums beyond this point increases their rate of return less than it increases the opportunity cost of capital.[81] Direct writers can achieve the profit maximizing $\left(\frac{P_i}{K_i}\right)^d$ ratio in any period only by selling

insurance to a portion of the profitable ($y_i \geq 0$) risks who demand it. Since they have to limit supply, they do best by choosing the best available risks in each class. Therefore the strict underwriting policy is chosen. As equity capital is accumulated over time the direct writers would thus be expected to relax their underwriting policies, gaining a larger and larger share of the market.

In summary, the strategy of the direct writers in this scenario should be to lower their prices below bureau rates just enough to "differentiate" their products and then fill up their premium "quota" with the best risks available. Even if entry barriers to direct writing are extremely high, they can exploit this "monopoly" power to only a limited extent, in a de-regulated insurance market, because the competitive price for insurance written by agency firms will continue to provide a strong price ceiling.

There are two operating characteristics of insurance firms which should be consistent with the explanation of the behavior of direct writers. First, we would expect that direct writers will exhibit higher rates of return on net worth than the industry as a whole. Second, we should find that direct writers operate with a higher premium /equity capital ratio than the industry as a whole. A detailed analysis of these two indicators is still underway, but the following evidence is available at this time. Table 8 presents data on the average return on net worth after taxes and policyholder dividends of the five largest direct writers and the average rate of return for 1200 property-liability companies for the period 1959-1968. Four of the five direct writers exhibited rates of return substantially above the industry average, which is exactly what we expect from the hypothesis.

TABLE 8

RETURN ON NET WORTH AFTER TAXES AND POLICYHOLDER DIVIDENDS OF 5 LARGEST DIRECT WRITERS

(1959-1968)

Company	Rate of Return
State Farm	13.1
Allstate	20.9
Liberty Mutual	11.8
Nationwide	7.4
GEICO	20.5
1200 Property-Liability Companies	8.8

Source: U.S. Senate, Subcommittee on Antitrust and Monopoly [31] Part 17, p. 10201.

An examination of the relevant operating ratios for 1971 (a very good year for the insurance industry) is very revealing. Table 9 presents values for two measures of profitability -- operating (insurance) income divided by net worth and total income (including interest, dividends and capital gains) divided by net worth.

TABLE 9

PREMIUM/NET WORTH RATIOS AND RATES OF RETURN FOR FIVE DIRECT WRITERS AND THE TOTAL PROPERTY AND LIABILITY INDUSTRY

1971

Company	Net Premiums / Net Worth	Earned Premiums / Net Worth	Operating Income / Net Worth	Total Returns / Net Worth
Allstate	2.02	1.87	12.8	21.8
State Farm	2.19	2.11	25.1	29.4
Liberty Mutual	3.52	3.51	19.8	25.0
GEICO	3.45	3.04	19.1	22.7
Nationwide	2.09	2.06	17.7	27.8
Total Industry	1.79	1.73	13.1	19.5

Source: Calculated from New York State Insurance Department, Statistical Tables and Annual Statement 1972.

The model of the long run behavior of direct writers indicates that direct writers should earn higher operating returns on net worth and operate at higher $\left(\frac{P}{K}\right)_i$ ratios than the industry as a whole. Table 9 presents additional evidence indicating that both predictions appear to be correct. All five direct writers operated at $\left(\frac{P}{K}\right)$ ratios larger than the average for the industry. Liberty Mutual and GEICO operated with P/K almost twice the industry average. In addition, four of the five direct writers had substantially higher ratios of operating income to net worth than the average for the industry. The one company (Allstate) which had an operating return slightly below the industry average also operated at a $\left(\frac{P}{K}\right)$ ratio closest to the industry average.

While the data presented in Tables 8 and 9 do not provide conclusive "proof" of the validity of the behavioral models presented here, the data is so consistent with the implications of these models that further consideration and attempts at empirical verification are certainly justified.

Conclusions: Why Regulate Insurance Rates?

In light of the foregoing analysis we may conclude that the property liability industry under prior approval rate regulation has the following features:

(1) A competitive market structure with a large number of firms and low levels of concentration.

(2) Constant returns to scale in production.

(3) Low to moderate barriers to entry for agency companies; moderate to high barriers to entry for direct writers.

(4) A combination of ratemaking in concert and regulation which makes true price competition difficult.

(5) An inefficient sales technique, probably costing consumers hundreds of millions of dollars per year, which is being eroded, but only slowly.

(6) Supply shortages induced by the inability or the resistance of regulatory authorities to establish truly homogeneous risk classifications.

(7) Insurance premiums which are probably too high and effective capacity which is probably too large.

Faced with this picture one wonders why insurance rates and rating classifications should be regulated at all. There are no natural monopoly characteristics which would indicate that open competition would be unstable and eventually lead to monopoly. Rather, the argument has been that rate-making in concert through rating bureaus is a necessity to insure the public and the industry against "destructive" competition and large numbers of bankruptcies. There does not seem to be any reason why this industry

should be more unstable than others as long as fraudulent practices are guarded against and proper consumer information is provided for. In many instances recommendations for deregulation of particular industries have rested on conclusions about performance after deregulation which are largely speculative. In the case of the property-liability insurance industry we don't have to rely on such speculation entirely, however. California has been operating under a "no-filing" regulatory statute since 1947. Rates and to some extent rating classes have essentially been regulated by the forces of free competition. While the insurance commissioner continues to have general supervisory power to guard against unfair prices or practices, his main job is to see that the free market works effectively as the regulator of prices.

The experience in California has been excellent; there have been neither mass bankruptcies nor price wars. While supply shortages continue to exist in some cases, this is primarily because of time lags inherent in adjusting rating classifications and collecting data to justify classification changes. The shortage problem appears to have been less severe than in other states, however. Rating bureaus continue to exist, but their powers are strictly advisory. Insurance companies find that they have much more freedom to quickly adjust rates to changing loss situations. This has become very important as inflation has been rapidly increasing the cost of accident repairs. As pointed out before there tends to be more pricing at off bureau rates in California than in prior approval states.

The success of the California system has not gone unnoticed. A number of states have recently enacted California type rating laws. [82/] The impetus and research backing this move was provided by the staff of

the New York Commission. Along with the NAIC, the New York Insurance Department has strongly encouraged the move to more price competition in states where the market is competitive. In addition, a new emphasis on providing consumers with price information for premium rates charged by different companies has been instituted in New York.[83/] The Department realized that such information is an important component of any open competition system, especially in the context of the American agency system where price comparisons have historically been difficult.

On the basis of this analysis, the experience in California and the experience in New York since the no-filing statute was enacted in 1970, the following general public policy recommendations are made with regard to the property-liability insurance industry.

(a) Prior approval rate regulation should be eliminated and replaced with a no-filing system allowing insurance prices to be determined competitively. State Insurance Departments should be retained to perform certain consumer protection functions to be outlined below. Insurance companies should file rate schedules with the insurance department as a source of general information. Companies should be free however to set any level of rates which they please.

(b) All anti-competitive aspects of rating bureaus should be eliminated. The rating bureaus should become strictly service organizations, collecting and processing loss and expense data for its customers. Any information provided to one company should be provided to all at appropriate fees.

(c) Flexibility in establishing truly homogeneous rating classifications should be encouraged. While a great deal of uniformity among companies is probably desirable with regard to the establishment

of risk classifications so as to facilitate the collection of consistent loss data, no company should be forced to adhere to any established structure if it believes rate variability is justified. Given the availability of automatic data processing equipment, wise coding of all policyholder characteristics should make it possible for a rating bureau to provide loss experience to a customer insurance company for almost any conceivable category. Competition among rating bureaus may even be desirable.

(d) The Insurance Department should play a consumer information and consumer protection role. The greatest possible amount of price information should be put into the hands of consumers. Handbooks listing representative rates for all major underwriters should be provided. Possible additional savings available from mutual companies paying dividends and participating stock companies should be brought to the attention of consumers. The insurance department should continue to audit company books and enforce the minimum capital requirement provisions of the state insurance laws. They should assist consumers in mediating complaints against insurance companies and publicize the names of companies which have consistently poor payoff policies.[84/]

(e) All insurance companies should be required to carry complete insurance against bankruptcy. Insurance rates should not be uniform for each company nor should a state insurance fund be made available to pay off for bankrupt companies. Neither of these schemes would give companies additional incentives to evaluate the premium/capital ratio they are carrying in terms of the true risk adjusted opportunity cost of capital. Rather, bankruptcy insurance rates should be geared to the insolvency

risk of the companies themselves as determined by semi-annual audits of their operations. Companies operating with very high $\left(\frac{P_i}{K_i}\right)$ ratios should pay higher insolvency insurance rates than those operating with lower $\left(\frac{P_i}{K_i}\right)$ ratios. Companies which don't have to go to the capital markets for new funds will thus continue to face the risk consequences of their underwriting policies. It will help avoid attempts by risk loving managers to run companies at very high $\left(\frac{P_i}{K_i}\right)$ ratios in the face of consumer ignorance and temporary impotence of capital market forces.

(f) Attempts should be made to speed up the transition from agency production of customers to direct writing wherever possible. The social costs of current laws forbidding agency companies from writing existing customers should be more thoroughly studied and an equitable scheme for phasing out independent agents devised. Trade associations of insurance agents should be strictly enjoined from taking any concerted action against a company which attempts to switch to direct writing region by region. Other barriers to entry of direct writers should be isolated and efforts made to lower them.

(g) Assigned risk pools will, by necessity, have to be continued as long as supply shortages continue to exist. Hopefully competition in rates and rating classification and extended consumer information will eventually cause the shortage problem to disappear. The practice of subsidizing high risk drivers in the assigned risk plans should be carefully re-evaluated.

(h) Attempts by some states to go toward more price regulation rather than less should be vigorously discouraged. New Jersey has recently attempted to introduce public utility type rate of return rate regulation

for insurance.[85] While the rate of return on equity capital is certainly a much more meaningful profit figure than the traditional rate of return on premiums, the attempt to determine a fair rate of return for the entire insurance industry is fraught with difficulties. How should the rate of return be calculated? What is a fair rate of return? Shouldn't we calculate a fair rate of return for each company? Regulators attempting to apply public utility ratemaking procedures to individual insurance firms or for the industry as a whole will be applying these techniques to an industry which has every single characteristic of historical regulatory disasters. Since there is no apparent reason to go this route, this can of worms should remain closed.

There are very few examples of de-regulation in the history of rate regulation in the U. S. Here is an example, however, of a situation in which regulation has worked to the benefit of almost no one (except perhaps the direct writers) in the last 15 years. A system designed to promote the orderly sale of fire insurance through cartels protected by state regulation finally broke down as the nature of the product changed, the sales technology changed, income redistribution attempts of regulators led to supply shortages and falling short run profitability for existing firms made almost everyone unhappy with the existing system. The availability of a real world model of a competitive market which really worked will no doubt make the transition politically more appealing. Those states which have eliminated formal rate regulation should be congratulated and other states encouraged to follow their example.

Appendix A

CONSUMER PROTECTION AND INSURANCE FIRM BANKRUPTCY

It was argued in the body of this paper that in the long run in a competitive insurance industry capital markets will operate in such a way as to yield an equilibrium value of $\left(\frac{P_i}{K_i}\right)$ for individual firms which is finite and represents a reasonably low probability of bankruptcy for the individual firms. Separation of ownership from management and a capital structure composed almost entirely of equity for the stock insurance companies in the industry, may give managers wide latitude in choosing a $\frac{P_i}{K_i}$ ratio for their firms in the short run. Overzealous managements may embark on imprudent underwriting policies to improve profit performance and increase market shares, resulting in very high $\left(\frac{P_i}{K_i}\right)$ ratios which opportunity costs of capital for in excess of expected returns. Such a problem is compounded for mutual companies where capital is essentially provided by policyholders. Even with capital markets operating perfectly and continuously, the inability of consumers to discriminate among insurance companies with different $\left(\frac{P_i}{K_i}\right)$ ratios in a regime of *caveat emptor* may result in equilibrium values of this ratio considerably higher than might result if consumers had better information about the nature of the contingent claims being purchased. This appendix analyzes the nature of this problem in more detail than the discussion provided in the body of the paper.

When a consumer purchases an insurance policy from a firm, he has entered into a contract specifying that if a loss occurs a certain payment will be made to the insured. Clearly the "quality" of the contingent claim purchased depends on the ability of the firm to deliver payments if a loss should be incurred. One case of failure to deliver on this contract will

occur if the total loss claims made against a company in any period exceed its premium and capital reserves. Such a company goes bankrupt and some losses go unpaid.

Consider a company which writes policies that yield P dollars in premiums net of all underwriting and operating expenses in a particular year. Assume further that this company has equity capital reserves of K. If L are the loss claims against the company in a particular year, $L > P + K$ implies that the firm goes bankrupt and cannot pay-off all losses. If we let F(u) be the probability distribution function of losses, faced by this firm, the probability of bankruptcy may be represented by

$$P\ (L > P + K) = 1 - F\ (P + K)$$

The larger the value of P given K, the larger is the probability of bankruptcy. Faced with two firms selling insurance at identical prices, consumers should prefer to purchase insurance from the firm with the lowest probability of bankruptcy. Given current levels of consumer information, it is highly doubtful that consumers can make this type of differentiation.

Given a particular capital stock ($\bar{K}$) the firm's expected profits (and rate of return) vary directly with premium volume. We may represent this relationship in the following way:

Let profits = π

$$\pi = P - L \quad (L \leq P + \bar{K})$$

$$= -K \quad (L > P + \bar{K})$$

and

and

$$E(\pi) = \int_0^{P+\bar{K}} (P-L)\, dF(L) - \bar{K} \int_{P+\bar{K}}^{\infty} dF(L)$$

$$= \int_0^{P+\bar{K}} (P-L)\, dF(L) + \bar{K} \int_0^{P+\bar{K}} dF(L) - \bar{K}$$

$$= \int_0^{P+\bar{K}} (P+\bar{K})\, dF(L) - \int_0^{P+\bar{K}} L\, dF(L) - \bar{K}$$

$$= (P+\bar{K})\, F(P+\bar{K}) - \int_0^{P+\bar{K}} L\, dF(L) - \bar{K}$$

$$\boxed{E(\pi) = \int_0^{P+\bar{K}} F(L)dL - \bar{K}} \quad 86/$$

Expected profits increase with premium volume ($K = \bar{K}$). As a result, a manager seeking to increase the firms' rate of return, regardless of the attendant risk, might undertake an underwriting policy aimed at yielding a very high $\frac{P}{\bar{K}}$ ratio.87/ In the absence of necessary information to enable consumers to differentiate among insurance contracts of different "qualities," consumers may be led into buying "unconscionable" contracts.

There are three types of consumer protection policies which can be followed

(1) Provide more consumer information in the form of P/K ratios for different firms or even estimates of probabilities of bankruptcy and continue caveat emptor.

(2) Require insurance firms to purchase insurance against bankruptcy at rates commensurate with their risk of bankruptcy. The government may have to ultimately underwrite such a scheme to insure against "second-level" bankrupcies.

(3) Regulate directly the P/K ratio which insurance firms must maintain to maintain their operating licenses.[88]

The author's preference for a scheme of the type (2) variety has already been expressed. Type (1) type schemes always appear attractive on the surface. However given the generally low level of understanding which consumers have of the nature of the insurance contract and the risks attendant to bankruptcy, such a consumer information effect would probably have to be so extensive that it would not be worth the cost. Type (3) type schemes raises the specter of regulatory commissions determining "fair" or "optimal" P/K ratios for firms in the industry to follow. Given our experience with the ability of regulatory agencies to determine fair rates of return for public utilities one is led to reject such a proposal out of hand.

Appendix B

INSURANCE COMPANY SAMPLES EMPLOYED IN THE EXPENSE ANALYSIS

All of the data employed in the expense analysis came from Best's Aggregates and Averages 1972 and 1971 editions. The fire insurance company sample consists of 26 stock companies chosen from those listed in Best's as predominantly fire insurance writers in 1971. Additional data were collected for the 23 of these companies for which data were also available for 1970. The mutual company sample consists of 32 companies from those listed in Best's as predominantly auto (participating and deviating) for the year 1971 plus 3 additional companies listed under different headings but writing a substantial portion of their business in auto insurance. Finally the auto stock company sample originally consisted of 39 stock companies from those listed by Best's as predominantly auto (participating and deviating) for 1971 - data inconsistencies and omissions reduced this sample to 36 companies for 1971. Additional data were collected for 37 of the original 39 companies for 1970.

Determining which companies are direct writers was not an easy task. No generally available guide provides a concise listing. Attempts to get a listing of direct writers from Best's, etc. were only partially successful. As a result it was necessary to supplement readily available information by going through corporate underwriting descriptions in Best's Property and Liability Insurance Reports (1972 Edition) company by company for each sample. Where there was some ambiguity the authors' best judgment was used in making the allocations.

Appendix C

RATE ADJUSTMENTS UNDER PRIOR APPROVAL REGULATION

The NAIC profit formula has been employed in almost identical ways in prior approval states. The formula is normally applied to the applications of the various rating bureaus making filings in the state. Potential deviators must then show that their own individual expenses are sufficiently below the industry average to allow them to lower their rates and still earn at least the statutory profit figure. This appendix first discusses fire insurance ratemaking and then turns to auto insurance.

Applications for fire insurance rate adjustments are normally made by a state fire insurance rating bureau. (Most have recently been replaced by a consolidated rating bureau known as the Insurance Services Office which maintains regional facilities.) In New York, for example, the rating formula was applied to the rate applications of the New York Fire Insurance Rating Organization. Historic expense experience of stock companies (based on from 2 to 5 years experience) was collected. These expenses were then expressed as a percentage of premiums (either earned or written premiums depending on which expense component was being calculated) resulting in a number of, say, 40 percent. To this figure is added the statutory NAIC recommended profit factor of 5% (of premiums) plus a 1% conflagration hazard factor.[89] This gives us a figure of 46% in this example. 46% is then subtracted from 100 percent to yield what is called the balance point loss ratio (54% in this example). The balance point loss ratio indicates the loss ratio that fire insurance companies should be achieving on average to cover expenses and a "fair" profit for the industry as a whole.

The balance point loss ratio is then applied to particular rating areas to determine whether overall premiums need be adjusted to bring the actual aggregate loss ratio into equality with the balance point loss ratio. For example, the entire City of New York is one rating area. In order to determine whether or not rates should be adjusted in New York City the actual loss experience for the industry in New York City must be determined. Data for total fire premiums written in New York City by stock and mutual companies are collected for the six previous years, adjusted for past rate changes and an earned factor. A weighted average of the six years premium experienc is computed, giving the most weight to the most recent years. A similar procedure is then applied to New York City loss experience.

The weighted average of New York City losses is then divided by the weighted avarage of New York City premium to give the "actual" loss ratios for New York City. Let us say that it comes out to be 60 percent. The general level of premium rates is then adjusted so that the actual loss ratio will equal the balance point loss ratio.

$$\text{Rate Adjustment for a rating area} = \frac{\text{Actual loss ratio in rating area}}{\text{balance point loss ratio}} - 1$$

In the example for New York City presented here the adjustment would be:

$$\frac{60}{54} - 1 = 11 \text{ percent general rate increase}$$

After the overall premium adjustment is calculated, class by class adjustments for each of the 115 occupancy hazard classes are also calculated. In determining the rate adjustment for each class, essentially the same procedures are employed. Individual class adjustments are, however, constrained by the "credibility" of the data, the necessity of obtaining total dollar adjustments from the individual class adjustments that equal the indicated overall rate adjustment as previously determined, and miscellaneous constraints such as not adjusting any one rate by more than some percentage fixed by the regulatory authority.

Now turning to automobile insurance rates.[90] We will concentrate on auto liability insurance for private passenger cars. The basic principle in setting auto insurance premium rates in the same as that in setting fire insurance premiums. Rates are set so as to cover the average operating and sales expenses of insurance companies taken as a group plus losses and loss adjustment expenses plus a profit factor (5 % in the case of auto insurance). Rates are developed by territory and by class of drivers in accordance with this general principle consistent with the indicated overall levels of auto rates for an entire state, which is of course also based on this principle. The primary responsibility for collecting data on loss and expenses for insurance companies in the U.S. and for promulgating bureau rates in the individual states is the Inusrance Rating Bureau (IRN). This national rating bureau represents a large number of stock and mutual auto insurance companies

and appears to work closely with the Mutual Insurance Rating Bureau (MIRB) which acts as a rating bureau for many mutual companies. (Recent reorganization of the IRB and the various state and regional rating bureaus for fire, property and casualty insurance has resulted in the creation of the Insurance Services Office (ISO) as one large national rating organization for the property-liability insurance industry).

As with fire insurance the initial calculation involves isolating underwriting and other operating expenses of the auto insurers as a group, as a proportion of premiums. To this is added the 5% underwriting profit factor. Let's say that this total is 35%. This figure is then deducted from 100% to given the expected loss ratio (including loss adjustment expenses) which ideally established rates would yield. This is the equivalent of the balance point loss ratio in fire insurance rating. This figure is then used in conjunction with loss experience by state, territory within the state, and finally by class within the territory to determine required rate adjustments. Calculations are normally made for the minimum basic coverage (10/20/5) for the base class (Adult male, 25-65, auto used for pleasure and single care household) for each territory; so as to yield the proper aggregate premium level for the state as a whole. Rates for other classes and for additional coverage are expressed as multiplicative factors of the basic rate in the IRB rating book.

FOOTNOTES

1. I became interested in the property insurance industry while working on the fire protection and prevention project of the New York City - Rand Institute during the summer of 1972. I have benefitted from discussions with members of the staff of the New York State Insurance Department, the Insurance Services Office, the New York Property Insurance Underwriting Association, Peter Diamond, Paul MacAvoy, Irving Plotkin and many others. I am grateful to the College of Insurance in New York City and the Insurance Library Association of Boston for making their library facilities available to me.

2. Scherer [27], p. 2.

3. Kahn [12], pp. 3 and 6.

4. PREMIUM DISTRIBUTION BY LINE OF INSURANCE-1971

Type of Insurance	Percent of Total
Fire	6.3
Allied lines	2.6
Homeowners	8.6
Commercial Multiperil	5.1
Ocean Marine	1.3
Inland Marine	2.6
Group Accident and Health	2.6
All Other Accident and Health	1.6
Workmen's Compensation	10.8
Misc. Liability	6.9
Auto Liability	30.9
Auto Physical Damage	16.8
Aircraft	0.6
Fidelity	0.5
Surety	1.2
Glass	0.1
Burglary	0.4
Boiler and Machinery	0.4
Credit	0.1
Misc.	0.6

Source: Best's Review, July 1972

5. The previous data on market shares of the various types of "producers" comes from Best's Aggregates and Averages, 1971.

6. PERCENTAGE OF TOTAL PREMIUMS WRITTEN BY AGENCY AND DIRECT WRITING COMPANIES

	1967	1968	1969	1970	1971
National and Regional Agency Companies	71.5	70.5	69.5	69.0	68.5
Direct Writers	28.5	29.5	30.5	31.0	31.5

Source: Best's Review, July 1972.

7. Federal Trade Commission Report [32], p. 13.

8. New York State Insurance Law, Article XI-A, Section 341.

9. Calculated from data obtained from Best's Aggregates and Averages. Comparable group data only available since 1962.

10. 1963 CONCENTRATION RATIOS FOR REPRESENTATIVE INDUSTRIES
(4 Digit Industries)

Industry	4 Firm Ratio	8 Firm Ratio
Passenger Cars (5-digit)	99	100
Primary Aluminum	96	100
Cigarettes	80	100
Tires and Tubes	70	89
Motors and Generators	50	59
Beer and Malt Liquors	34	52
Cement	29	49
Fluid Milk	23	30
Men's and Boys' Suits	14	23
Bottled and Canned Soft Drinks	12	17

Source: U.S. Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, Report, Concentration Ratios in American Manufacturing Industry: 1963, Part I, 1966.

The comparison of sales concentration ratios for insurance firms with those for manufacturing enterprise probably overstates the relative degree of control of the firms in the insurance industry. Insurance firms can easily expand output in the short run with little or no increase in "capacity" (see p.64) and both output and capacity in the long run by obtaining more equity capital if such expansion is desirable to compete with a particular company which gets out of line in terms of price. Particular firms can vary output and "capacity" much more quickly and with less cost than could a steel or automobile firm.

11. CONCENTRATION RATIOS FOR AUTOMOBILE INSURANCE
% of Earned Premiums by Top Groups

Year	Top Group	Top 4 Groups	Top 8 Groups	Top 20 Groups
1954	4.8	17.7	27.9	45.3
1962	7.5	21.0	31.1	46.6
1971	11.3	27.3	38.8	56.6

Calculated from data obtained from The National Underwriter May 5, 1972, June 7, 1963, and May 19, 1955.

12. CONCENTRATION RATIOS FOR FIRE INSURANCE
% of Net Premiums Written by Top Groups

Year	Top Group	Top 4 Groups	Top 8 Groups	Top 20 Groups
1954	6.40	17.87	29.42	49.04
1962	5.28	19.42	31.64	53.88
1971	5.06	19.37	32.98	56.73

Calculated from data reported in Best's (4).

13. STOCK AND MUTUAL COMPANY EXPENSE RATIOS 1960-1970
(Expenses/Premiums Written)

Year	Stock	Mutual
1970	36.0	33.7
1969	37.6	34.4
1968	38.9	35.1
1967	39.7	34.3
1966	40.8	34.5
1965	42.1	35.2
1964	43.6	35.4
1963	44.3	36.2
1962	44.5	34.0
1961	45.0	34.9
1960	44.7	35.2

Source: Best's Aggregates and Averages, 1971

14. Hensley [11], p. 29.

15. These relationships were also estimated allowing premium volume to enter quadratically.

16. As the management of Equity Funding understood well.

17. t-statistics appear in parentheses under the estimated coefficients.

18. This result may have emerged because the larger companies in the mutual company sample are all direct writers.

19. This evidence should not be construed as implying that small companies are not riskier than large companies. The nature of insurance makes it essential that companies be large enough to exploit the law of large numbers. The opportunities for re-insurance facilitate this convergence greatly. An analysis of the loss experience of insurance firms and how it relates to company characteristics like size is now underway. In the context of the discussion presented here, the question of whether existing small firms exhibit significantly more loss variability than large firms will be analyzed.

20. Bain [3].

21. ENTRY INTO THE PROPERTY AND LIABILITY INSURANCE INDUSTRY IN THE U.S. 1960-1971

Year	Number of New Companies
1960	27
1961	52
1962	41
1963	35
1964	23
1965	18
1966	14
1967	24
1968	21
1969	15
1970	32
1971	34
Total	336

Source: Best's Insurance News, 1961-1971

22. See pp. 64-72 below.

23. These issues are discussed more fully below. The suggestion that there are moderate to high barriers to entry does not necessarily contradict the earlier finding that there are not economies of scale exhibited by direct writers. Those firms successfully operating in the market and included in our samples have probably been operating long enough to have achieved minimum efficient size. The entry barriers themselves are more of the nature of "threshold" barriers requiring substantial expenditures to gain even minimal market recognition.

24. Allstate was able to use the existing Sears sales network, State Farm was able to use farm bureau contacts and GEICO concentrated on a restricted group of customers at first.

25. U.S. Senate, Subcommittee on Antitrust and Monopoly [31], Part 2, pp. 925, 930-931, 940.

26. Ibid., pp. 920-922.

27. A more detailed discussion of the history of government policy toward the insurance industry is contained in my paper, "Government Intervention in the Property Insurance Industry, 1870-1972," unpublished.

28. New York State Insurance Department [17], p. 69.

29. The National Board continued to exist, but not as a formal rating bureau.

30. Merritt Committee Report [22], reprinted in [31], p. 2791.

31. New York State Insurance Department [17], p. 69.

    The raison d'etre of the Merritt Committee report seems to have been to convince state legislators that unregulated competition in insurance would be "destructive" with regard to the financial viability of insurance companies as well as incentives to provide rate structures which encourage fire prevention.

32. Among those cases that relied on this interpretation were Hooper v. California (155 U.S. 648), Liverpool Insurance Company v. Massachusetts (10 Wall 566), Philadelphia Fire Insurance Association v. New York (119 U.S. 110), Nutting v. Massachusetts (183 U.S. 533) and National Union Fire Insurance Co. v. Wanberg (260 U.S. 71).

33. It is interesting to note that the state regulatory authorities were opposed to the majority opinion. Thirty-five state insurance departments joined in an amicus curia brief opposing the classification of insurance as commerce. The dissenting opinions of Mr. Justice Jackson and Mr. Justice Stone indicated that the court's action might not only allow federal antitrust statutes to be applied to the insurance industry, but actually nullify the authority of individual states to regulate and tax the insurance industry.

34. New York State Insurance Department [17], p. 69.

35. Public Law 15, 79th Congress; 59 Stat. 33-34 (1945).

36. Brainard and Dirlam [7], pp. 248-253.

37. New York State Insurance Department [17], p. 72.

38. Various other schemes were adopted in other states. California adopted a "No-Filing" system in 1947, essentially leaving rate determination to the market. Texas instituted state made rates for many lines of insurance to which all insurers were required by law to adhere. North Carolina required bureau membership of all insurers. Other systems involved minor procedural differences from the prior approval laws.

39. It is interesting to notice that the NAIC 1921 profit formula bears a strange resemblance to a report written by Wilfred Kurth of the Home Insurance Company in 1919 and entitled "What Constitutes a Reasonable Underwriting Profit and the Method of Determining Same." The profit formula recommended by the insurance commissioners in 1921 appears in fact to be almost identical to that recommended by Kurth.

49. Under these assumptions the dead-weight welfare loss may be approximated as

$$w = 1/2\ (r^*C)\ \eta\ \frac{\Delta r^2}{r}$$

where

r^*C = total premiums (P)
η = elasticity of demand
Δr = change in the price per unit of coverage (r^*-r_d)

But what is the relationship between the percentage change in the price per unit of coverage and the expense ratio reduction which we have already calculated? We know that

$$r^*C = P$$

and

$$r^*-r_d = 1-1_d$$

so that

$$C(r^*-r_d) = C(1_a-1_d) = \text{total expenses}$$

and

$$\frac{C(1_a-1_d)}{P} = \Delta E \qquad [\Delta E = \text{difference in expense ratios}]$$

50. By independent agent we mean the agent whose incomes from commissions on policies he can actually sell. There is no reason to believe that truly independent insurance consultants, charging fees directly to customers with insurance problems, would not thrive with the elimination of the agency system. If services are in fact needed beyond those provided by the insurance firm we would expect such consultants be developed. The choice would then be left to consumers and fees charged would not necessarily be tied to premium volume generated.

51. This is less of a problem for large customers since there is some competition among agents for customers' business. Even here severe information imperfections probably keep the market from working very effectly.

52. It should not be assumed that direct writing is only suitable for auto insurance. The top 4 direct writers wrote 16.4% of homeowners' premiums in New York State in 1971 up from 12.4% in 1967.

53. Meeting the Insurance Crises in Our Cities [26].

54. PERCENTAGE OF TOTAL CAR YEARS INSURED WHICH ARE INSURED THROUGH THE ASSIGNED RISK PLAN IN NEW YORK

Year	Percentage
1957	3.1
1958	6.7
1959	9.2
1960	10.4
1961	10.0
1962	9.3
1963	8.1
1964	7.8
1965	7.4
1966	7.7
1967	8.2
1968	8.4
1969	8.8
1970	9.9
1971	12.7

Source: New York State Insurance Department [19], p. 16.

55. There may be an element of perverse behavior here which is putting some people into the assigned risk plan who might be able to find insurance in the voluntary market. This seems to be related to the American agency system. Before 1969 agents in New York received only a 5% commission on business written through the assigned risk plan, based only on the basic premium charge which at that time was identical to the bureau rates in the voluntary market. Since commission rates on business written through the voluntary market were substantially higher, agents had an incentive to write their business through the voluntary market if they could. In 1969 the insurance law was amended to allow agents to charge 5% not only on the basic premium, but on the basic premium plus surcharges made due to accident and driving records. These surcharges could increase premiums as much as 100% and although surcharge provisions were available to companies in the voluntary market they were very rarely used (especially for minor traffic violations). In addition agents could now make more money by getting insurance for his client at a surcharged rate through the assigned risk plan than he could by getting insurance at standard rates in the voluntary market. This incentive was strengthened when rates in the assigned risk plan were allowed to go above the standard bureau rates in 1971 and when the actual rates charged by many companies under the new open competition fell below bureau rates. Many agents were faced with a situation in which 5% of a large premium looked much better than 10% of a much smaller premium. They had an incentive to feed business into the assigned risk plan which had no real way of verifying whether a risk was really uninsurable in the voluntary market. This is probably why the number of risks in the assigned risk plan increased so dramatically between 1970 and 1971.

56. New York State Insurance Department [19], p. 19.

57. Ibid., p. 22.

58. See New York State Insurance Department [19], p. 36.

59. NEW YORK STATE AUTOMOBILE LIABILITY INSURANCE
PRIVATE PASSENGER CARS
All Companies 1960-1970

Accident Year	Loss and Loss Adjustment Ratio	
	Voluntary Market	Assigned Risk Plan
1960	.58	1.15
1961	.55	1.07
1962	.57	1.12
1963	.60	1.14
1964	.64	1.23
1965	.66	1.30
1966	.64	1.27
1967	.67	1.28
1968	.73	1.39
1969	.72	1.39
1970	.68	1.28

Source: New York State Insurance Department [19], p. 29.

60. Attempts to separate out high risk areas have often been met by stiff resistance by the persons who live in those areas. Attempts to get surcharges put on the fire insurance rates in the Lower East Side area of New York City by the insurance raters was met with great resistance. The insurance department indicated that such surcharges would be "discriminatory" unless backed up by substantial loss data for the area in question.

61. See Posner [25].

62. U. S. Senate, Subcommittee on Antitrust and Monopoly [31], Part 18A, p. 12677.

63. A notable exception to company by company rate determination was the FPC's area rate method of determining the wellhead price of natural gas.

64. Proceedings of the National Association of Insurance Commissioners, 1922, pp. 19-29.

65. We differentiate between r* and r** since certain regulatory restrictions may limit the ways in which certain sources of investible funds may be invested.

66. $r_c > r^*$ because transformation of an investment trust into an insurance company, even if no insurance is actually written requires some expenditures of funds for licensing and auditing which would not otherwise be incurred and also restricts somewhat the kinds of securities that may be purchased.

67. Or of actual consumer preferences, which will be discussed presently.

68. See Appendix A for discussion of bankruptcy and consumer protection.

69. And the efficient $\left(\frac{P_i}{K_i}\right)^*$ ratio in figure (a) would then probably be be finite without the necessity of having capital costs increase at an increasing rate with $\left(\frac{P_i}{K_i}\right)$.

70. See National Association of Insurance Commissioners [16] for a discussion of the controversy and analysis of various measurement methodologies.

71. Reported in U.S. Senate, Subcommittee on Antitrust and Monopoly, [31], Part 5, p. 2791.

72. Arthur D. Little, Inc. [1], [2] and Irving Plotkin [24].

73. Plotkin [24], p. 187.

74. Arthur D. Little [2], p. 34.

75. Ibid., p. 37.

76. Ibid., p. 40.

77. Ibid., p. 45.

78. Some of the criticisms have bordered on the ridiculous. See Norgaard and Schick [23]. They include as profits any increase in assets, whether or not such assets had attendant liabilities. With their measure a company could become very "profitable" by going deeply into debt.

79. First National City Bank of New York, as reprinted in Plotkin [24].

80. Plotkin [24], p. 192.

81. It is really stronger than this since expected underwriting profits (I) will also decline as the poorer risks in each heterogeneous class are taken on.

82. Among them are New York, Illinois, Florida, Ohio, Connecticut and Indiana.

83. See New York State Insurance Department [18, 19, 20].

84. The consumer protection function should also extend beyond rates to include standardization of basic policy forms and contract provisions. A wide array of policy provisions for basic types of customers would probably result in more confusion than expected benefits from "innovation" are worth. Companies or groups of companies actually creating "innovations" in types of coverage should be encouraged to institute them after scrutiny of the policy provisions by the regulatory authority.

85. See National Association of Insurance Commissioners [15].

86. Integrate this expression by parts to obtain the previous line.

87. He might attempt to do this by lowering his price slightly below the competitive market rate in an effort to quickly attract customers away from other firms.

88. A rule of thumb often cited is the "Kenney rule"; premiums written by a company should be more than twice as large as its net worth. The rule draws its name from Roger Kenney who has proposed it as a guide. See his Fundamentals of Fire and Casualty Insurance Strength, The Kenney Insurance Studies, Dedham, Mass. (1967), 4th edition. Other scholars have criticized this rule of thumb as being far too conservative.

89. Proceedings of the National Association of Insurance Commissioners, 1922.

90. For a more complete discussion see U.S. Senate, Subcommittee on Antitrust and Monopoly [31], Part 19, p. 14550.

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