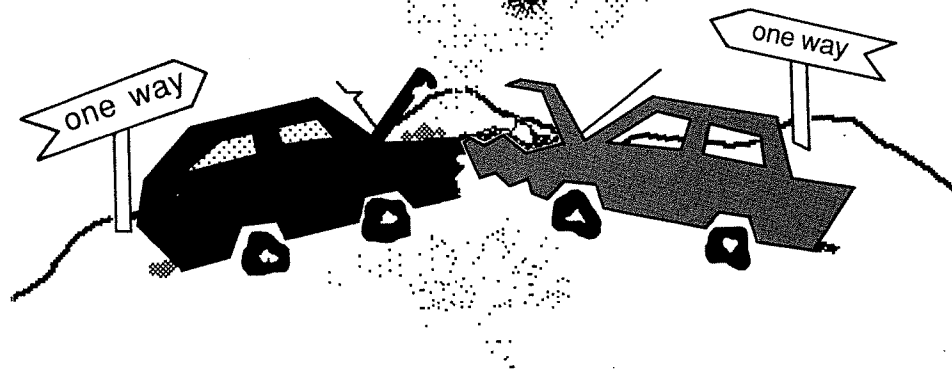


The Cost of Regulated Pricing

*A Critical Analysis of Auto Insurance
Premium Rate-Setting in Massachusetts*

Simon Rottenberg



PIONEER INSTITUTE FOR PUBLIC POLICY RESEARCH

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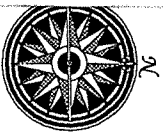
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Foreword

In 1988, the Commonwealth enacted an automobile insurance reform law. To learn more about the impact of this law on the problems facing the automobile insurance market in Massachusetts, Pioneer Institute commissioned University of Massachusetts economics professor Simon Rottenberg to study the situation. His work concentrates primarily on the issue of regulated pricing, and concludes that regulators in Massachusetts are mispricing automobile insurance. Until this issue is addressed, the system will remain in a state of disarray.

However, this study does not mean to suggest that inappropriately priced policies are the only problem facing the automobile insurance system in Massachusetts. Certainly, no major reduction in automobile insurance premiums will be possible without an increased commitment to law enforcement and a subsequent reduction in our auto theft rates, the highest in the nation.

Pioneer is founded on the premise that scholarly analysis is an essential prerequisite to achieving sensible solutions to social and economic problems in the Commonwealth. We are proud to offer this monograph as a contribution toward a better automobile insurance system in Massachusetts.

LOVETT C. PETERS
 Chairman, Board of Directors

August, 1989
 Boston, Massachusetts

Overview and Summary

Massachusetts in Perspective

Chapter one orients the reader to the basic auto insurance situation in Massachusetts and the history of its evolution. It also compares Massachusetts with other states. Massachusetts has the:

- highest average premium rates, 35 percent above the 1987 national average;
- highest claims frequency rate, 67 percent above the 1986 national average; and
- highest auto theft rate, 75 percent above the 1987 national average.

In comparing the Commonwealth's regulatory system with other states, some interesting differences emerge. For example:

- Thirty-two other states have compulsory coverage requirements, but none require as much compulsory coverage as Massachusetts does. Seventeen states have no compulsory coverage requirements at all.
- Only four other states ban the use of relevant risk classification variables, such as age, gender and marital status, to set prices.
- Only three other states have a mandatory offer rule requiring insurers to cover almost any driver seeking a policy.
- Only one other state, Texas, sets rates. The other states permit companies to establish their own rates, subject to review and, in some cases, prior approval by the regulator.
- No other state has as large a high-risk pool, and unlike Massachusetts, most states permit insurance companies to

charge higher rates for the riskier pooled policies.

- No other state imposes such burdensome exit restrictions on companies that want to stop writing automobile insurance as Massachusetts does.

Mispricing and Its Effects

Chapter two presents the central thesis of the paper: that regulators in Massachusetts are mispricing auto insurance premiums and this mispricing has serious negative consequences. In a competitive market, automobile insurance companies use loss data to group policyholders by relative risk, and charge these groups accordingly. Companies normally charge high-risk drivers higher prices because they represent larger potential claims against premiums.

However, regulators in Massachusetts misprice insurance premiums by grouping drivers into classes and categories that do not completely reflect risk, and by pressing together the different rates that would be charged to the classes they define. The effect is to flatten relative rates and obscure the differences in prices paid by high- and low-risk drivers. Inefficient pricing has a perverse effect on driving habits, so that high-risk drivers tend to behave less cautiously than they would if they had to pay insurance rates that accurately reflected the risk they pose.

Chapter two explains how this policy of mispricing insurance evolved in Massachusetts. It examines decisions made by the Division of Insurance in the late 1970s to reject a number of predictive variables — age, gender and marital status — for use in designing risk classes.

The Insurance Commissioner's argument against using these variables to classify risk was twofold. First, the risk classes

produced by using age, gender and marital status are not "socially acceptable" because an individual cannot change these traits in order to affect the rate he is charged. Second, since not all members of a particular group share the same driving characteristics, some members will be overcharged or undercharged within groups.

Contending that these two arguments are incorrect, Professor Rottenberg points out that the price of insurance coverage has incentive effects on the driving habits of an entire group. Even though an individual may not be able to change his age, gender, or marital status, he can and will exert more caution in his driving habits if his rates are higher. In addition, Professor Rottenberg asserts that age, gender, and marital status are efficient tools to predict risk. Their exclusion results in broader risk classes with larger quantities of over- and undercharging within groups.

He goes on to examine the political purpose behind the Commissioner's decisions to reject these variables, and quotes from a decision in which the Commissioner states, "Most important, a proposed classification with impacts contrary to established public purposes deserves tighter scrutiny than one with implications consistent with public policy." Furthermore, "a proposed classification which...takes a small increment from (each of) many to lighten the load of a designated few" is less "suspect" than its opposite. These quotes suggest that the Commissioner viewed the automobile insurance system as an instrument of social policy and favored a classification system that would have income redistribution effects.

Today, the risk classification system in Massachusetts is mainly based on territories. In other words, a driver's insurance premium is determined largely by where he lives. Drivers are also

classified by years of driving experience, but this has little influence on rates since most drivers fall into one large experience grouping. Rates are modified based on an individual's driving history, and further pressed together by tempering (which dampens differences among risk classes) and capping (which limits the year-to-year rate changes a group can experience).

Professor Rottenberg argues that as a result of this regulatory process a large portion of the high-risk drivers in the Commonwealth are undercharged for their insurance. Therefore, they tend to buy more coverage than they otherwise would and to drive with less care. Consequently, accidents and auto thefts are more frequent than they would be if insurance were priced to reflect accurately the risk involved.

Regulation in Disarray

In chapter three, Professor Rottenberg offers a further discussion of the reasoning behind the Commissioner's 1978 decision. The Commissioner argued that income transfers occur anyway when insurance companies pool risk, so a deliberate government policy of causing some drivers to subsidize others was justified. Professor Rottenberg draws important contrasts between the money income transfers that occur as a natural result of risk pooling and the cross-subsidies directed by a regulator for social purposes.

In addition, the author contends that the growth of the residual market, otherwise known as "CAR" (Commonwealth Automobile Reinsurers), is a function of the state's misguided pricing policies. Since a large portion of policies are underpriced by regulators (meaning they represent potential losses that are larger than the premium revenues they generate), insurance

companies do not want to hold these policies. Therefore, an inordinately large number of policies are ceded to CAR.

While in most other states, the high-risk pool is truly a "residual" share of the market, CAR currently holds 65 percent of all policies in Massachusetts, and one-fifth of the residual market premium volume in the United States.

Partly because pooled policies represent higher claims but cannot be charged higher rates than the policies in the voluntary market in Massachusetts, CAR runs a large deficit. Financing this deficit through additional charges on all policies further flattens rates. This effect is significant, since about one-fifth of all premium charges are allocated to covering the CAR deficit.

Furthermore, Professor Rottenberg quantifies the numerous cross-subsidies that occur among different driver groups. Essentially, the pattern created by insurance industry regulators means that:

- Residents of small towns and rural areas subsidize urban residents.
- Experienced drivers subsidize inexperienced drivers.
- Adults subsidize young drivers.
- Women subsidize men.

The magnitudes of these subsidies can be very large. Residents in small towns and rural areas are paying an average of up to \$73 more for each car they insure, given their level of risk, so that urban drivers can pay an average of up to \$453 less per car. A large group of experienced drivers pays up to \$42 more apiece so that a small group of inexperienced drivers can pay up to \$651 less per car than they would under cost-based pricing.

Adult drivers with more than three years of experience pay 13

THE COST OF REGULATED PRICING

to 17 percent more than the level of risk they represent, so that young males can pay anywhere from 11 to 58 percent less and young females can pay 19 to 22 percent less. Inexperienced female drivers pay 27 to 31 percent extra, while inexperienced males receive subsidies of 36 to 43 percent. Finally, drivers whose policies are held in the voluntary market pay \$196 more per car, so that drivers in CAR can receive subsidies of \$155 per car.

Conclusion

In Massachusetts, insurance companies are losing money on automobile insurance, some are paying massive penalties to leave, and almost all are ceding huge percentages of the policies they underwrite to the residual market. Average premium rates are the highest in the country, and relative premium rates are discriminatory: they do not reflect the relative claims costs imposed on pooled funds by different classes of policyholders.

More importantly, the price of insurance does not relate directly to the behavior of the driver, so higher risk drivers are not given appropriate incentives to drive with greater care. Insurance is underpriced for those drivers fortunate enough to be subsidized by the rest. If the Commonwealth wishes to engage in income redistribution strategies, it should do so by using other mechanisms that are more efficient than the regulatory apparatus controlling the automobile insurance market.

Professor Rottenberg concludes, "The public welfare would be well-served if the Commonwealth withdrew from strong intervention in the automobile insurance market, permitted the freedom to choose to prevail in that market, and permitted competition to establish an efficient set of risk classes and prices."

1

Massachusetts Automobile Insurance in Perspective

The market for automobile insurance in Massachusetts is in a state of crisis. The problems of the market are widely perceived. The average premium cost of an automobile insurance policy is higher in Massachusetts than in any other state as are the frequency of insurance claims and the automobile theft rate. Despite the high rates, insurance companies find the market very unprofitable. Nine major insurers have exited the market or announced plans to exit the market in recent years.

The Cost of Automobile Insurance in Massachusetts

There are almost four and a half million vehicles in Massachusetts. Over three-quarters are private passenger vehicles and the remainder are commercial. By law, all must be insured up to at least a defined minimum of coverage. Insurance coverage over that minimum is optional. It is estimated that some five or ten percent of cars are uninsured, in violation of the law.

About one hundred insurance companies sell automobile insurance in the Commonwealth.

TABLE 1
Average Automobile Insurance Premiums
In High- and Low-Ranked States, 1987

State	Average Premium
Massachusetts	\$ 656
New Jersey	635
California	623
Arizona	602
Nevada	600
Tennessee	328
North Dakota	328
Alabama	307
South Dakota	295
Iowa	256
National Average	487

Source: Insurance Information Institute, *Auto Insurance Issues*, January 3, 1989, p. 53.

Massachusetts has the highest average automobile insurance premiums in the country, when average premiums are measured by dividing the premium revenue of insurance companies by the number of registered automobiles. The average annual cost of an auto insurance policy in the United States was \$487 in 1987. The average in Massachusetts was \$656, nearly 35 percent above the national average.

Massachusetts had the second highest premium growth rate between 1986 and 1987. Nationally, rates grew by an average of

TABLE 2
Premium Growth Rates in High- and Low-Ranked States

State	1986-87	1982-87
Wash. D.C.	25.2 %	119.6 %
Massachusetts	18.0	71.7
Maryland	17.9	87.5
Indiana	17.3	86.8
Hawaii	16.9	45.3
Idaho	4	49.5
Oklahoma	4	47.2
Wyoming	-8	30.6
Colorado	-2.1	51.6
Alaska	-2.3	66.3
National Average	10.0	63.1

Source: Insurance Information Institute, *Auto Insurance Issues*, January 3, 1989, p. 54.

10 percent during 1986. The rates in Massachusetts grew 18 percent over the same period. This growth rate was exceeded only by the District of Columbia. Between 1982 and 1987, the average automobile insurance premium rate rose by 63 percent nationally, compared to 72 percent in Massachusetts.

Premium rates and changes in those rates over time reflect claims made upon the pooled funds of all policyholders by those who encounter accident and theft losses. If premiums are relatively high in Massachusetts, it is because the number of claims filed is also relatively high there.

In 1986, property damage claims were paid on 4.3 percent of all cars nationally. In Massachusetts, the comparable figure was

7.2 percent. Table 3 shows the highest ten states in terms of claim frequency. Massachusetts was highest of all. The claims rate in Massachusetts was 67 percent higher than for the whole country.

TABLE 3
Paid Claim Frequencies per 100 Car Years
Property Damage Liability, 1986

State	Claim Frequency
Massachusetts	7.2
Washington D.C.	6.1
Connecticut	5.3
New Hampshire	5.2
New York	5.2
Rhode Island	5.2
Missouri	5.2
Texas	5.1
Maryland	5.0
Illinois	4.9
National Average	4.3

Source: Commonwealth of Massachusetts, Executive Office of Consumer Affairs and Business Regulation, *Massachusetts Automobile Insurance: Yesterday, Today, Tomorrow*, February 1988, p. 56.

Additionally, more cars are stolen in relation to population in Massachusetts than in any other state. In 1987, 924 cars were stolen per one hundred thousand people in Massachusetts, a rate almost 75 percent higher than the national average.

TABLE 4
1987 Motor Vehicle Theft Rate
Thefts/100,000 People in High- and Low-Ranked States

State	Theft Rate
Massachusetts	924
New Jersey	845
California	830
Rhode Island	784
Michigan	752
Mississippi	161
Iowa	151
Wyoming	139
North Dakota	123
South Dakota	96
National Average	529

Source: National Auto Theft Bureau newsletter, undated. (Based on Federal Bureau of Investigation's *Uniform Crime Report for 1987*.)

Auto Insurance in the United States: A Brief History

The first automobile liability insurance policies were issued in 1898, a year in which 200 cars were manufactured in the United States. Loss experience data was too thin to permit correct prediction of future claims. Premium rates were set too low and insurance firms became insolvent. Insurers then, in the early 1900s, entered into a "Gentlemen's Agreement" to share loss data. They also agreed to set and adhere to standard premium

rates based on those data. In 1914, the first manual establishing rates on a nationwide basis was published.

As early as 1917, insurers began to differentiate rates based on where a person lived. Autos were broken down by vehicle class: private pleasure, public, commercial, or dealer vehicle. Within the private pleasure vehicle class, rates were further differentiated by territory, and by the motive power and horsepower of the vehicle.

During the 1920s and 30s, as more loss data became available, more elaborate schemes were developed, based mostly on territorial rating. A brief experiment in merit rating, basing premiums on the accident history of the driver, was tried in the late 1920s. It was found, however, that whether or not a person had been involved in an accident in the recent past was not a good predictor of future losses, since personal injury and property damage claims occur very infrequently — on average once in every twenty and twelve years respectively.¹ The experiment was abandoned.

Variables that could better predict accident probabilities were needed. By 1939, the age of the driver was being used to set rates. By the early 1940s, firms began to incorporate into their rates all relevant variables they were able to measure.

Massachusetts: Early Regulator

Automobile insurance is now regulated in all fifty states, but the intensity of regulation varies greatly among states. Mas-

sachusetts regulates the market very intensely. Massachusetts enacted the first compulsory automobile insurance law in the United States; the law made insurance compulsory, effective in 1927. The next to do so — New York — did not follow suit until 1957.² The Massachusetts law made registration contingent upon the purchase of a defined minimum amount of bodily injury coverage.

When the Massachusetts compulsory insurance law was enacted, some legislators argued that if insurance coverage was to be mandatory, the Commonwealth must assure the availability of "affordable" coverage for all. "Affordable" was apparently intended to mean insurance coverage at a price lower than the competitive market price. In principle, of course, the arrangement might have provided for compulsory insurance at market prices, but instead the legislature granted the Commissioner of Insurance broad powers to set rates for compulsory coverage. The Commissioner issued the first set of regulated rates in 1926. The rates were set at different levels for different automobile owners, depending upon the place the vehicle was garaged.

A major change in Massachusetts insurance regulation came with the passage by the Congress in 1946 of the McCarran-Ferguson Act, which made the insurance industry exemption from antitrust law conditional upon the existence of state regulation. Massachusetts responded to McCarran-Ferguson by expanding rate regulation to non-compulsory physical damage coverages.

¹ H. Jerome Zoffer, *The History of Automobile Liability Insurance Rating* (Pittsburgh: University of Pittsburgh Press, 1959), p. 32.

² U.S. General Accounting Office (U.S. GAO), *Auto Insurance: State Regulation Affects Cost and Availability* (Washington D.C.: U.S. Government Printing Office, August 1986), p. 87.

In 1954, the Commissioner introduced the Age and Use Classification plan to fix different premium rates for different classes of owners. The plan established rate classes for persons above and below age 25, with sub-classes based on marital status, vehicle use, and completion of a driver's education course. Shortly thereafter, gender was introduced as a variable, since the higher loss experience among youths was observed mainly among men.

In 1968, a law established the Fraudulent Claims Board to attempt to hold down burgeoning personal injury claims, many of which were thought to be fraudulent. No-fault personal injury protection was enacted in 1970.³ The law also made uninsured motorist coverage compulsory and established "mandatory offer," which forbids insurers to deny compulsory coverage to any applicant except in cases of premium default or when the usual driver has no operator's license.

Regulatory expansion continued throughout the early 1970s. In 1971, legislation made property damage insurance compul-

sory, and thus subject to the Commissioner's rate-setting authority, and in 1973 the law extended "mandatory offer" to non-compulsory coverages.

In May 1976, the Massachusetts legislature passed a bill calling for a return to competitive rating in automobile insurance. The bill allowed firms to set their own rates for both compulsory and non-compulsory coverages, effective for the fast-approaching 1977 rate year.

The result was a modest 11.4 percent average rate increase. According to a report prepared by the Commonwealth's Office of Consumer Affairs, "Rates for most people increased modestly, remained level, or fell."⁴ However, premium rates rose substantially for some — especially young urban males — to reflect the loss experience of that class. In response to the protests of affected groups, the legislature enacted a law limiting the 1977 rate increase for any individual to 25 percent.

The Commissioner called a hearing to determine if competition in the industry was sufficient to prevent "excessive" rates, a power granted to him by the competitive rating law. The Commissioner found competition inadequate, and in late July 1977, he ordered a return to state-made rates. Competitive rating was to be reinstated the next year unless the Commissioner again found competition lacking.

³ In tort law, if a driver is in an accident, he will be reimbursed the cost of repairing the damage he has suffered only if he can prove that the other driver was at fault. In a no-fault arrangement, fault is not examined. Each driver carries personal injury protection and is reimbursed by his own insurance company. Massachusetts was the first state to enact a no-fault law; other states have done so since. From the beginning, no-fault statutes have been criticized because, if drivers are not held liable for damage done by their imprudent behavior (as they are not, if fault is not examined), they have less incentive to drive with care.

⁴ Commonwealth of Massachusetts, Executive Office of Consumer Affairs and Business Regulation, *Massachusetts Automobile Insurance: Yesterday, Today, Tomorrow* (Boston: February 1988), p. 54.

The Commissioner proceeded to develop a new classification scheme that would not employ traditional rating variables, such as age and gender. The scheme eliminated gender as a variable, and substituted years of driving experience for age. The number of different driver classification cells was decreased from 11 to 5.

In May 1978, the Commissioner determined that competition was still inadequate, and competitive rating was suspended for another year. Numerous changes have been made to the insurance statutes since 1979, but they consist mainly of tinkering with mandatory coverage and other rules, and attempts at "cost containment." Age and gender are still prohibited as classification variables, as is marital status which was expressly prohibited by law in 1983.

How Massachusetts Compares to Other States

The automobile insurance market is now more intensely regulated in Massachusetts than in any other state. Even the compulsory auto insurance law in place in Massachusetts since 1927 is not universal. Thirty-three states plus the District of Columbia were reported in 1986 to have compulsory automobile insurance laws. At that time, seventeen states did not.⁶

In states without compulsory insurance laws, car owners are permitted to self-insure, rather than being required to buy commercial insurance, to protect themselves against loss if they are

held liable for accidental injuries suffered by others. Any owner can, of course, buy personal insurance to assure that he will be compensated by his own insurance company in the event that he suffers loss from the negligent behavior of other drivers who are uninsured and without sufficient personal resources to adequately compensate victims. Car owners who are held to be at fault in civil liability suits following accidents but do not have sufficient resources to compensate victims are deprived of their right to drive under "financial responsibility" laws.

In Massachusetts the minimum, defined package of compulsory insurance coverage includes personal injury, bodily injury and property damage and uninsured motorist protection. Most of the thirty-two other states with compulsory insurance laws require less coverage.⁷

With respect to rate regulation, rates are fixed by the regulatory authorities in only one state other than Massachusetts — Texas. In some 25 states, companies offering insurance coverage file their prices with the regulatory agency and use them in pricing, subject only to review and disapproval. In 23 states, plus the District of Columbia, prices are filed but may not be used until expressly approved.⁸ Only in Massachusetts and Texas are companies required to charge prices fixed by the state.

⁵ American Insurance Association (AIA), *An Evaluation of the Massachusetts Automobile Insurance Market with Recommendations for Change* (November 1988), p. 85.

⁶ U.S. GAO, *Auto Insurance: State Regulation Affects Cost and Availability*, pp. 87-88.

⁷ Office of Consumer Affairs, *Massachusetts Auto Insurance: Yesterday, Today, Tomorrow*, p. 16.

⁸ AIA, *An Evaluation of the Massachusetts Automobile Insurance Market*, pp. 27-28.

The Commonwealth is also among a handful of states that do not permit some relevant variables — age, gender, and marital status — to be employed as criteria in defining classes for setting premium rates. Only five other states are reported to expressly prohibit the use of any or all of these variables.⁹

With trivial exceptions, such as premium default and when the usual operator is not licensed, Massachusetts does not permit any applicant for a policy for compulsory coverage to be rejected. Generally, insurance companies are required to issue a policy to anyone upon receipt of an application and cannot cancel or fail to renew any policy. Only three states other than Massachusetts have such a "mandatory offer" requirement.

If a firm in Massachusetts does not wish to carry a policy at the price fixed by the regulators, the firm may cede the policy to a quasi-public agency. (See page 32 for a discussion of Commonwealth Automobile Reinsurers.) However, for any given driver class, the rates charged for policies retained by insurance companies and the rates charged for policies that are ceded must be identical. All other states have shared risk pools, but they are much smaller than the Massachusetts pool and most states permit substantially higher rates to be charged for pooled policies than for retained policies.¹⁰

Also, Massachusetts imposes severe restrictions on exit from the market by insurance companies. It does not permit any carrier that has offered automobile insurance coverage to

withdraw from the line unless it gives up its license to sell insurance of any kind and pays substantial sums to be permitted to exit from the market. Massachusetts appears to have the most onerous restrictions of any state for exit from the auto insurance line.

In setting rates, Massachusetts engages in some unusual practices that are not common and standard in any other state. In the late 1970s, the Commissioner of Insurance held that the automobile insurance industry was not sufficiently competitive. In subsequent years, Commissioners have determined, usually after a perfunctory examination of the market at the annual "sufficiency of competition" hearing, that each year is not sufficiently changed from the immediately antecedent year to warrant a finding that the industry is sufficiently competitive "to assure that premium rates will not be excessive."¹¹

The Commissioner's sufficiency-of-competition proceedings are essentially *pro forma*. "Excessive" premium rates are not defined. The Commissioner's tests of competition discover only that the automobile insurance market in Massachusetts is heavily regulated and that competitive behavior is forestalled by regulatory prescription.

The Commissioner's opinion that regulatory control in Massachusetts prevents "excessive" premium rates does not square with the experience of other states. In the 1970s, while Massachusetts flirted with competition, numerous other state:

⁹ Insurance Information Institute, *Auto Insurance Issues* (New York, January 1989), p. 26.

¹⁰ U.S. GAO, *Auto Insurance: State Regulation Affects Cost and Availability*, p. 40.

¹¹ Commonwealth of Massachusetts, Division of Insurance, *Opinion, Findings and Decision on the Operation of Competition among Motor Vehicle Insurers*, various years, typescript.

liberately and successfully relaxed regulation as a means of creating market conditions that would produce lower rates.

It has, indeed, been found that the relaxation of regulation in other states has lowered, rather than increased, the price of automobile coverage. A recent study done by economists at Duke University found that the evidence "suggest(s) that deregulation (of automobile insurance by various States) in the 1970s was basically a strategy for lowering prices rather than raising them" and that "the primary focus of (governmental) regulation in that market (is to set) a price floor for liability coverage" (emphasis added).¹² They found that "The states that undertook deregulation over the past two decades experienced reduced unit prices and decreases in the size of the involuntary market."¹³ A study by personnel of the U.S. Department of Justice found that "unrestricted price competition can provide an effective substitute for rate regulation as a means of achieving reasonable prices...in the sale and distribution of insurance."¹⁴

In yet another departure from standard practice in other states, Massachusetts government officials each year engage in a guessing game to assign precise rates to each type of coverage. Following the annual decision that he will "fix and establish" premiums for automobile insurance, the Commissioner holds hearings

Henry Grabowski, W. Kip Viscusi, William N. Evans, "Price and Availability Trade-offs of Automobile Insurance Regulation," *Journal of Risk and Insurance*, Vol. 56 No.2 (June 1989), p. 298.

Ibid., p. 275.

Paul W. MacAvoy, ed., *Federal-State Regulation of the Pricing and Marketing of Insurance* (Washington, D.C.: American Enterprise Institute, 1977), p. 2.

at which testimony and papers are presented by representatives of state agencies, insurers, agents, and others. The Commissioner fixes statewide average premium rates for each type of coverage. In principle, these fixed rates provide sufficient revenues to cover expected payouts to insured persons who will file claims in the forthcoming year, plus insurers' expenses for writing policies, general administration and the adjustment of claims.

In fixing those rates, the Commissioner relies heavily on what are called "external" variables. These are phenomena, other than the trend of past claims experience, that he believes will affect the frequency and severity of claims in the ensuing year. In the absence of evidentiary data, he is led to make arcane estimates that are by their nature subject to large estimational error. For example, the overriding of the law requiring the use of seatbelts had the Commissioner estimating the fraction of drivers and passengers who would nonetheless persist in using seatbelts. Then, he calculated the effect this estimated intensity of use would have on the prospective filed claims experience of insurance carriers. Similarly, he was found estimating the effect of revised bumper standards.

Mispricing and its Effects

One fundamental cause of the Commonwealth's auto insurance difficulties can be found in a set of regulatory practices that result in the mispricing of insurance. Each year, having fixed average premium rates for each type of coverage and having defined different risk classes of policyholders, the Commissioner then allocates the premium revenues of insurers among those who buy insurance coverage by establishing "relativities" for his diverse risk classes. That is to say, the Commissioner determines the different premium rates to be paid by different classes of policyholders for a given coverage.

Automobile insurance is mispriced in Massachusetts because the regulators lump together in single risk classes separable subsets of drivers for whom the expected losses and claims are different and because the regulators fix premium rates that do not reflect differences in expected losses and claims, even for the risk classes they have defined.

Massachusetts risk classification practice is highly truncated by the rejection of several efficiently predictive variables on largely political grounds. This practice had its origins in a decision made by the Commissioner of Insurance in the late 1970s. He found it objectionable to employ age, gender, and marital status as classification variables. This decision was later codified in legislation.

The Commissioner rejected these variables basically on two grounds. First, he said they "failed to meet a minimum standard of social acceptability."¹⁵ He reasoned that, since age, gender and marital status are not subject to control by the policyholder, their use for classification will not cause policyholders to alter their behavior in order to reduce the price they pay for insurance.

Secondly, the Commissioner objected to overlap among risk classes. For example, even if, on average, women have fewer accidents and file fewer claims than do men, some men make fewer claims than do some women. He reasoned that, since a class defined by gender would overcharge careful male drivers, because rates for all males would be determined by the poor average driving behavior of all males, and careless female drivers would be undercharged for analogous reasons, gender ought not to be used as a classification variable.

The Commissioner's reasoning was not credible. In arguing that driving behavior will not be affected by the use of these variables, the Commissioner lost sight of the fact that for those drivers who find themselves in high-risk classes for reasons they cannot control, high prices for insurance will induce the purchase

of less coverage and higher deductibles. This will produce incentives for drivers in a high-risk group to avoid accidents and thefts by exerting more precautionary care in order to protect themselves against loss. Thus, higher insurance costs for high-risk drivers have salutary behavioral effects among this entire group of policyholders, which can be expected to reduce accidents and claims on pooled insurance funds. This can be expected to occur even if the criteria for designing risk classes — such as age or gender — are not subject to control by any given driver.

A young man cannot alter his age or his gender. He can, however, alter his behavior. How prudently he behaves in driving will depend on how much he relies on the exercise of care and how much on insurance to diminish his risk of loss from driving. Those proportions depend on whether insurance is available to him only at the cost implied by expected loss or whether it is made available cheaply and at subsidized rates.

The Commissioner's second objection to the use of these classification variables — because of overlap — ignores the fact that no useful risk class is completely homogeneous. What is desirable is that a risk class be brought as close to homogeneity as is measurably possible. The Commissioner's elimination of age, gender, and marital status as variables for differentiating risk classes had the effect of decreasing homogeneity within classes rather than increasing it. Each efficiently predictive variable that is rejected broadens classes, makes them more heterogeneous, increases the overlapping of classes, and produces a larger quantity of over- and under-pricing within classes. The Massachusetts Automobile Rating and Accident Prevention Bureau has found that, the Commissioner's "truncation of the old class plan...in

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Commonwealth of Massachusetts, Division of Insurance, *Automobile Insurance Risk Classification: Equity and Accuracy* (Boston, 1978), p. 4.

1978 resulted in rating classes composed of identifiable subsets with significantly different loss experience."¹⁶

Efficient Pricing Theory

To fully understand the flaws in the Commissioner's reasoning during the late 70s, one must apply efficient pricing theory to the insurance market. There is a market for automobile insurance. Automobile owners are buyers and insurance companies are sellers of the market's product. That product is protection against loss in the uncertain event that the car is involved in an accident or is stolen or damaged by vandals. Owners pay premiums to insurance companies for that protection and the companies make payments from the funds that they collect to those who suffer damages and make claims. The risk of damage is pooled among all who buy insurance.

The price of the insurance product is not the same for everyone because the probability of accident or theft varies among individuals. If an insured owner is included in a group that suffers severe accidents or frequent losses, he receives, when he buys insurance coverage, more protection against loss and, therefore, a more expensive product than does a member of a group that generally suffers light or infrequent losses. The price of insurance — the premium rate — will be higher for the former "high-risk" owners and lower for the latter "low-risk" owners because the two sets buy different quantities of protection.

The cost and availability of automobile insurance is not a trivial issue. The automobile is ubiquitous in American life. Because the income of the American family is high by world standards, a large network of roadways is in place, the price of gasoline is low when compared with other countries of the developed world, and an owned automobile is a convenient instrument of transport, the private automobile is by far the preferred mode of transit, except for very long-distance travel. The number of motor vehicles in the United States far outstrips the number of households and a very large fraction of households includes someone with an owned automobile.

Owning and driving an automobile are risky activities. Automobiles may be stolen or damaged by vandalism or fire, and they may be involved in accidents. When there are accidents, there may be injury or death to drivers and their passengers or to occupants of other cars, with consequent costs of lost earnings and medical care, and damage to one's own property or the property of others.

The owner of an automobile can affect the magnitude of the losses he may personally encounter. One way of reducing his exposure is to purchase insurance. Another way is to exercise more caution in the care and operation of the automobile. For example, the probability of suffering losses from theft can be reduced by: installing anti-theft devices; remembering not to leave the key in the ignition; taking care not to park in isolated, untrafficked, theft-prone places; and being vigilant in the oversight of the car. Similarly, the probability of being involved in an automobile accident or the severity of loss should an accident occur can be reduced by: driving less; driving more slowly; avoiding congested roads and intersected trafficways; driving only

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Massachusetts Automobile Rating and Accident Prevention Bureau (MARB), *Subsides in 1986 Rates*, Actuarial Notice 86-2 (Boston, 1986), p. 7.

when sober; taking care in permitting others to use the car; using seatbelts; and avoiding driving the car on icy roads and in stormy weather.

Each automobile owner can be perceived to invest in a portfolio to minimize the summed cost of preventing loss — the costs associated with the exercise of care plus the cost of insurance. If the price of insurance is too low for some risk classes, members of that class will hold portfolios that will contain too much insurance and not enough cautionary behavior. They will overinsure by enlarging insurance coverage or by reducing insurance deductibles and will be less than optimally careful. The incidence of accidents and of theft will be increased.

Whether appropriate care is taken to prevent loss depends upon whether an insurance arrangement provides car owners with sufficient incentives for precautionary behavior. Whether the insurance system does so or not depends essentially on the price of insurance, and on the proper design of risk classes for differentiating the prices of insurance among individuals. That is to say, the price of automobile insurance has incentive effects; it affects the behavior of owners and drivers and the care taken by them to prevent loss. The case has been well put by Kenneth Abraham, Professor of Law at the University of Virginia:

(An) effect of an *efficient* classification system is that it does not discourage allocation of an optimal amount of resources to loss prevention. (When) insurance is priced in accord with expected cost, insureds have the incentive to compare the cost of protecting against risk with the cost of reducing risk through loss prevention. *Efficient* classification discourages insureds from purchasing insurance when they can more cheaply protect against risk by investing in loss prevention. In contrast, *inefficient* classification may produce

suboptimal loss prevention incentives. When coverage is priced below expected cost, for example, insureds may not take safety precautions that would otherwise be worthwhile because they may be able to obtain equivalent protection against risk by purchasing insurance at a lesser cost than from the precaution. (Emphasis added.)

The price that will produce the proper attention to care and to the prevention of loss is a function of the expected loss for a risk classification group, given that the risk group is well-designed.

Risk Class Design

A well-designed risk class should meet several criteria. First, it should be relatively homogeneous with respect to risk. Second, it should be sufficiently different from other classes in its expected loss experience to justify separation into a distinct group. And finally, it should be large enough for risk-spreading to occur. A competitive automobile insurance market in which there are many insurance carriers that are permitted to distinguish risk classes by employing *any relevant criteria* will establish a set of prices for automobile insurance coverage that would be consistent with the foregoing principles of efficiency.

Since the first automobile insurance policies were written early in the 20th century, immense quantities of data have been accumulated to determine which inexpensively measurable vari-

¹⁷ Kenneth S. Abraham, *Distributing Risk, Insurance, Legal Theory and Public Policy* (New Haven: Yale University Press, 1986), pp. 77-78. See also I. Ehrlich and G. S. Becker, "Market Insurance, self-insurance, and self-protection," *Journal of Political Economy*, vol. 80 (1972), p. 623.

ables are good predictors of claims. These experimental exercises are performed by insuring carriers themselves and by service organizations and rating bureaus that they employ.

A large number of variables have turned out to be good predictors. They include age, gender, marital status, the use, value and age of the automobile, and the location of garaging of the automobile, which is a proxy for the owner's residence.

In light of efficient pricing theory, how does one understand the Commissioner's 1978 decision to reject the use of age, gender and marital status as predictive variables? The Commissioner outlined his reasoning in his Opinion, Findings and Decision on 1978 Automobile Insurance Rates. In this document, he announced the use of auto insurance rate regulation as an instrument of social policy. He stated, "Most important, a proposed classification with impacts contrary to established public purposes deserves tighter scrutiny than one with implications consistent with public policy," and "a proposed classification which...takes a small increment from (each of) many to lighten the load of a designated few" is less "suspect" than its opposite.¹⁸ This says, in substance, that an acceptable classification system must have preferred income redistribution effects.

In order to make the 1978 decision, the Commissioner had his employees and consultants prepare a number of research reports on the equity and accuracy of certain classification variables. One of these papers, cited by the Commissioner in his decision, sug-

¹⁸ Division of Insurance, *Automobile Insurance Risk Classification: Equity and Accuracy*, pp. 165-166.

gested four criteria to be fulfilled by a classification variable — separation, homogeneity, reliability, and admissibility. Admissibility was said to require that, "all classification distinctions ... meet a minimum standard of social acceptability."¹⁹ In his decision, the Commissioner stated, "Ultimately, the choice of recommendations depends heavily on the test of admissibility."²⁰ This was an explicit acknowledgement that he sought the design of an automobile insurance system that would serve political purpose.

Because the Commissioner and the legislature used such reasoning to reject several efficiently predictive variables, the Massachusetts system today is based essentially on the garaging location of the car. This is called territorial classification.²¹

There are 26 territories. Some encompass as many as 50 or 60 towns in the state, others as few as half a dozen cities, and still others comprise a single city or a neighborhood of Boston.

Each territorial class decomposes into a small number of driver classes distinguished from one another mainly by years of driving experience. Since drivers fall overwhelmingly into one of those classes — licensed for at least 6 years and not a senior citizen —

¹⁹ *Ibid.*, p. 4.

²⁰ *Ibid.*, p. 178.

²¹ The use of location of garaging as a variable in risk classification is an old practice of the automobile insurance market. It was first used early in this century when there were two territories: Greater New York, Boston, and Chicago, and the rest of the country. All-Industry Research and Advisory Council, Research Report A82-1, *Geographical Differences in Automobile Insurance Costs* (Oak Brook, Ill.: 1982), p. 2.

driver classification in Massachusetts has only a small influence on the structure of premium rates.

Premium rates vary among territories because expected losses and claims vary among them.

Rates within territories for individual policyholders are modified by a so-called "safe driver insurance plan." This plan imposes premium surcharges when there are paid claims in which the policyholder is at fault or when he is convicted of violation of certain traffic laws. Premium credits are granted when neither of those events has occurred for a number of years. The enlargement or reduction of a policyholder's premium rate on the basis of his claims experience and driving record in the recent past is called "experience rating."

Further Distortion of Prices: Tempering and Capping

These relative rates, or so-called 'relativities', are further modified by elements of the Massachusetts system of rate regulation called "tempering" and "capping." Tempering is the explicit dampening of differences in the premium rates that are generated by the claims experience of different risk classes of policyholders. Capping imposes limits on the magnitude of year-to-year changes in rates that occur for any risk class when new claims experience exhibits that rates should change.

Tempering and capping press premium rates more closely toward uniformity for different classes than would be true if the rates were proportional to the costs different classes impose on the system. Thus, rates are flattened across classes so that prices no longer accurately reflect the differences in risk posed by these different classes. Combined with the truncated system of risk classification that produces under-pricing and over-pricing within

risk classes, tempering and capping further distort prices by causing whole groups of drivers to be under- or overcharged for their insurance.

The consequence is that a non-trivial fraction of high-risk drivers in Massachusetts find their automobile insurance underpriced. Thus they are led to purchase an excess of insurance coverage and to engage in less loss preventing precaution than they would if their insurance were priced to reflect risk. As a result, accidental damage to persons and property and rates of auto theft are made to be larger.

Regulation in Disarray

How has regulatory practice in Massachusetts arrived at such a state of affairs? The answer to this question can be found by again examining the Commissioner's 1978 decision upon which current practices rest. Underlying this decision is a confusion of two different phenomena: voluntary risk-pooling in the insurance market and government-directed cross-subsidization.

The essential purpose of insurance is to pool risk. Risk classes are defined, and all in a risk class pay the same premium for a given insurance coverage. Premium rates are determined by the expected loss of that class, the incidence of which is randomly distributed among members of the class. It is not known *ex ante* which members of the class will suffer accidental losses and which will not. During the policy period, some have accidents and receive compensation for their losses. Others do not and receive no payments out of the pooled funds into which they paid premiums. Yet, each policyholder has made a certain premium payment to buy protection against loss.

In this system, if risk classes are homogeneous, those who have been accident-free make money payments to those who have had accidents. Those who have had accidents and suffered loss are made whole. Accidents produce death, personal injury and property damage so, taken all together and on average, members of the class are worse-off than they would have been if there had been no accidents. Their aggregate real income is diminished. Accidental losses are jointly shared by all members of the class through money income transfers, but *real* income transfers do not occur. The commodity bundles acquired by members of the class are smaller because, given that there is risk of accidental loss, each has bought some number of units of protection against loss and, therefore, less of other commodities. The sizes of those commodity bundles are, however, unchanged relative to one another. Thus, money income transfers do not imply subsidization of some by others.

Cross-subsidization arrangements are a different story; there real income transfers *do* occur. In this case, the incidence of loss is not randomly distributed among risk classes and it is known *ex ante*. Some classes are known from previous loss experience to be more accident-prone than others. The premium rates paid by members of the different classes are pressed together by the regulators and are made to be more alike in magnitude than they would be if the different expected losses of the different classes governed in determining the premium rates. Policyholders of some classes pay more and others pay less in premiums than would be true if expected loss experience instructed the determination of prices. Those who pay more make payments to those who pay less; real income transfers occur. Those transfers *do* imply subsidization of some by others.

Cross-subsidization also occurs when different, definable risk classes are combined into a single class. If one group known to be very accident-prone is combined with another group known to be less accident-prone into a single class, all the members of which pay the same premium rate based on the average accident proneness of the whole combined group, some members will make payments to other members and real income transfers will occur. But, in this case, who makes payments and who receives them is not randomly distributed. The direction of flow is known *ex ante*. In this case, too, there are subsidies.

It is true that risk classes cannot be made completely homogeneous because some variables predicting the differences in accident-proneness among individuals cannot be measured or are too expensive to measure. In that case, some pay higher premiums and some pay lower premiums than is implied by the true expected losses they impose on the pooled funds of the class. Real income transfers do occur there, but they cannot be avoided.

To serve a preferred flow of income redistribution, the Commissioner engaged in a rhetorical sleight-of-hand. Since money income transfers occur in any case, because this is an inevitable consequence of the pooling of risk, and real income transfers occur because class heterogeneity cannot be completely avoided, he reasoned that *subsidized* income transfers produced by foreclosing the use of variables with loss-experience predictive power in defining risk classes and *subsidized* income transfers produced by pressing together premium rates for different risk classes could be justified. The Commissioner equated money income transfers with real income transfers and also equated unavoidable real income transfers with deliberately-contrived

real income transfers. They are, in fact, different. His reasoning was fundamentally flawed.

A Growing Residual Market

As noted earlier, one element of the current crisis in Massachusetts is the explosive growth of the automobile insurance residual, or shared, market. The growth of the shared market is inexorably linked with regulatory control of insurance pricing.

There are shared markets for automobile insurance in all states. Insurance companies that write automobile policies may keep the policies they underwrite. If they do, they keep the whole of the premium payments and they make payments to their policyholders from their accumulated funds against warranted claims. Applicants whose policies insurance companies do not wish to carry, because they believe that the risk of claims from those applicants are high relative to the premium rates that they pay, appear in the shared or "residual" market. Policies that are retained by the company are said to appear in the "voluntary" market.

In most states, policies in the residual market are randomly assigned to insurance companies in proportion to the quantity of business written by such companies in the relevant state. These are called "automobile insurance plans," or "assigned risk plans."

In Massachusetts, the residual market is a variant of a pooling system called a "joint underwriting association." The General Court has established an agency called Commonwealth Automobile Reinsurers (CAR). For policyholders of a given risk classification, premium rates in Massachusetts are required to be uniform across the voluntary and residual markets, although

drivers whose policies are ceded to CAR make many more claims than drivers whose policies are in the voluntary market.

The processing of claims made by those insured in the residual market are handled by some 25 firms designated as "servicing carriers." Carriers that cede policies are permitted to keep a portion of premium payments to cover their expenses. Servicing carriers are reimbursed their claims adjustment expenses. Premium payments, less those expense allowances, go to CAR. Claims payments are made from the accumulated CAR funds.

If CAR suffers losses, as it does invariably, its losses are assessed against all companies that write automobile insurance policies in the state approximately in proportion to their market shares in 1982. The assessments are spread among all policyholders and are reflected in the premium payments everyone is charged.

That is to say, premium rates fixed by the Commissioner are adjusted to take account of the payments that must be made to CAR by carriers to cover CAR's deficit. That cost is by law spread equally over classes and territories. This is not unimportant. On average, over one-fifth of premium charges for automobile insurance is attributable to the cost of covering the deficit of the residual market.²²

The method required by the regulators to spread CAR losses among policyholders has the effect of flattening rates across risk classes, thus accentuating the flattening effects of tempering and

²² MARB, *Subsidies in 1989 Rates*, Actuarial Notice 89-2 (Boston, April 1989), p. 2.

caping and of the rule requiring uniform rates for policies in the voluntary and the residual markets. In fact, the Massachusetts Automobile Rating and Accident Prevention Bureau found that in 1986, "the flat loading of the residual market deficit is the single most important source of...cross subsidies."²³

In the country as a whole, the shared market is truly a residual market. In 1986, premiums of policies in the shared market were 8.3 percent of all premiums for automobile insurance.²⁴ In Massachusetts, 62 percent of all insured passenger cars were ceded to CAR in 1988,²⁵ 65 percent in 1989. This is a higher percentage than in any other state. In 1986, *premium volume in the shared market in Massachusetts alone was over one-fifth of the shared market premium volume in the United States as a whole.* The residual market share of automobile insurance policies has grown inexorably in Massachusetts year after year. The residual market had 23 percent of all insured cars in 1977, 47 percent in 1982, and 57 percent in 1987.²⁶

It is clear that automobile insurance regulation in Massachusetts has made many policies commercially unattractive. Law and regulatory policy, by pressing together the premium rates of high- and low-risk drivers, have made insurers unwilling

²³ MARB, *Subsidies in 1986 Rates*, p. 5.

²⁴ AIPSO, *Aipso Facts 1987/88, A Handbook of Auto Shared Market Facts and Figures* (Johnston, R.I., undated), p. 19.

²⁵ Commonwealth of Massachusetts, Commonwealth Automobile Reinsurers (CAR), *Fifth Annual Report, October 1, 1987 to September 30, 1988* (Boston, November 1988), p. 22.

²⁶ MARB, *Subsidies in 1989 Rates*, p. 14.

to carry the whole burden of possible claims payouts for a massive fraction of the policies they have written. The increase in the number of policies that are ceded to CAR has grossly inflated the pool for which the excess of claims payments over premium revenues is shared by all companies and all policyholders.

Large-scale cessions of policies to CAR occur, despite a rule for the sharing of CAR losses among companies that gives the companies incentives to keep policies in the voluntary market rather than ceding them in territories where claims costs are relatively high. This is additional evidence that state regulators have mispriced insurance.

Cessions to the residual market vary greatly among the territorial classes. In recent years, about one-half of cars insured in the smaller towns of the state have been retained in the voluntary market and one-half have been ceded to the residual market. By contrast, only one in every four or five cars insured in South Boston, Brighton, Charlestown and East Boston, Roxbury, Dorchester, and Jamaica Plain has been kept in the voluntary market; overwhelmingly insurance written on automobiles located in those places have been ceded to the shared market.

Cessions to the residual market also vary greatly by driver class. In 1987, 94 percent of insured cars in which youthful males were the principal operator were ceded as were 82 percent of all insured cars operated by youthful female drivers; on the other hand, only 52 percent of adults', and 40 percent of senior citizens' insured cars were ceded.²⁷

²⁷ *Ibid.*, Exhibit 4.

It can be read that insurance is underpriced for those classes for which a large fraction of policies are ceded to CAR, and policyholders of those classes are in effect subsidized by other insured persons.

The excess of claims payments over premium receipts is far larger for policies in the residual market than for those in the voluntary market, and the residual market in Massachusetts suffers immense losses. For fiscal year 1987, earned premiums on policies ceded to CAR for passenger car coverage totaled \$1.16 billion. Loss payments on claims of policyholders alone exceeded this and totaled \$1.26 billion. After commission expenses to agents who wrote policies ceded to CAR and expense allowances to servicing carriers, CAR's deficit for the year was \$593 million. For fiscal year 1988, the projected CAR deficit for the passenger car pool was \$612 million.²⁸

Cross-subsidies in Massachusetts Automobile Insurance

Since automobile insurance regulatory policy in Massachusetts seeks explicitly to diminish the variance in premium rates among owners and drivers who impose different costs upon the insurance system, it follows inexorably that some insured persons subsidize others for their insurance costs.

The subsidies are not small. The Massachusetts Automobile Rating and Accident Prevention Bureau finds, for 1989, that for a standard package of coverages, owners of 1.8 million cars in Territories 1-7, a con-

TABLE 5
1989 Cross Subsidies by Territory*
for standard package of coverages

Territory	Number of Cars Insured	\$ Overcharge or undercharge (-)	% Overcharge or undercharge (-)
1	108,989	73.43	15.1
2	116,032	59.22	11.1
3	317,452	53.98	9.6
4	293,366	40.23	6.8
5	304,659	26.61	4.2
6	394,798	26.59	4.1
7	259,906	27.53	4.2
8	290,654	5.71	0.8
9	196,676	- 1.32	- 0.2
10	208,601	- 15.50	- 1.9
11	154,659	- 22.42	- 2.8
12	179,686	- 71.14	- 7.6
13	125,733	- 69.21	- 7.2
14	26,665	-443.29	-32.1
15	47,435	- 89.14	- 8.8
16	28,553	-179.81	-14.7
17	14,249	- 8.23	- 1.1
18	12,389	- 88.46	- 8.6
19	12,665	-135.26	-11.9
20	13,290	-117.16	-10.8
21	41,067	-372.25	-22.8
22	8,190	-452.76	-25.3
23	25,219	-139.19	-11.8
24	20,135	- 67.04	- 6.8
25	7,927	-144.62	-12.1
26	13,141	-251.74	-18.2

Source: MARB, *Subsidies in the 1989 Rates*, Actuarial Notice 89-2, Exhibit 1.

* For listing of towns, cities and neighborhoods in each territory, see the Appendix.

glomeration of 295 small towns and rural areas, pay in premiums an average of up to \$73 dollars more for each car (15 percent of their premiums) and owners in other territories pay less in premiums an average of up to \$453 for each car (25 percent of premiums) because the state's insurance regulation flattens rates.²⁹ Residents of Territory 22, Roxbury, pay \$453 less (25 percent of their premiums); Territory 26, Charlestown and East Boston residents, pay \$252 dollars less (18 percent of their premiums). Territory 14, Lawrence residents pay \$443 less (32

Table 6
Description of Driver Classes

Class #	Description
10	Experienced Operator
15	Senior Citizen
17	Inexperienced Principal Operator - 3+ yrs. exp.
18	Inexperienced Occasional Operator - 3+ yrs. exp.
20	Inexperienced Principal Operator - 0 to 3 yrs. exp.
21	Inexperienced Occasional Operator - 0 to 3 yrs. exp.
25	Inexperienced Principal Operator - 0 to 3 yrs. exp. with Driver's Ed.
26	Inexperienced Occasional Operator - 0 to 3 yrs. exp. with Driver's Ed.
30	Business Use

Source: MARRB, *Massachusetts Private Passenger Automobile Insurance Manual* (Boston, 1989), p. 13.

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MARRB, *Subsidies in 1989 Rates*, pp. 5-6.

TABLE 7
1989 Cross-subsidies by Driver Class for standard package of coverages

Class #	Number of Cars Insured	\$ Overcharge or undercharge (-)	% Overcharge or undercharge (-)
10	2,352,207	34.83	5.3
15	397,562	28.58	6.0
17	153,499	-132.99	-10.8
18	38,269	7.41	1.0
20	48,848	-651.30	-29.3
21	21,527	-108.67	-9.2
25	88,272	-527.45	-27.3
26	72,447	-78.65	-7.7
30	49,513	41.74	6.6

Source: MARRB, *Subsidies in the 1989 Rates*, Actuarial Notice 89-2, Exhibit 2.

percent of premiums); Territory 21, Dorchester and Mattapan residents pay \$372 less (23 percent of premiums).³⁰

In addition to territorial cross-subsidies, the system of regulation generates within territories large subsidies by experienced drivers of inexperienced drivers. Each experienced adult driver pays up to \$42 more and each inexperienced driver pays up to \$651 less than would be implied by cost-based pricing.³¹

Also, because the experience classifications do not fully capture the difference in loss experience among age groups and age is not permitted to be a variable used in differentiating risk

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Ibid., Exhibit 1.

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MARRB, *Subsidies in 1989 Rates*, p. 6.

TABLE 8
1989 Cross-Subsidies within Driver Classes

Statistical Class	% Overcharge or Undercharge (-) Relative to other statistical Classes within Rating Class	
	Liability	Collision
3 + Years Experience		
Adult	13.7	16.7
Youthful Male Occas. Operator	- 11.2	- 13.0
Youthful Male Prim. Operator	- 51.3	- 57.5
Youthful Female	- 18.9	- 21.7
Less than 3 Years Experience		
Adult	38.5	26.5
Youthful Female Occas. Operator	42.8	25.8
Youthful Male Prim. Operator	- 35.5	- 42.5
Youthful Female	31.3	27.2

Source: MARB, *Subsidies in the 1989 Rates*, Actuarial Notice 89-2, Exhibit 3.

classes, there are significant cross-subsidies between young and old within experience groupings. For example, within the group comprised of drivers with more than three years experience, adults paid 13 to 17 percent more, so that experienced youthful males could receive subsidies of 11 to 58 percent.³² Youthful females within the experienced class received subsidies of 19 to 22 percent.

³² *Ibid.*, p. 8.

Within the inexperienced class (those who have been driving less than three years) women subsidize men. Women paid 27 to 31 percent more, while men received subsidies of 36 to 43 percent.

There are also sizable subsidies between policyholders in the voluntary and residual market. In 1989, those insured in the voluntary market pay \$196 more, so that those insured by policies held by CAR can receive subsidies of \$155.³³

Cross-subsidies in the Massachusetts automobile insurance system are pervasive. In general, insurance regulators have caused residents of small towns and rural areas to subsidize residents of the metropolitan centers and larger cities. Experienced drivers subsidize inexperienced drivers. Adult drivers subsidize youthful drivers, and women subsidize men.

Indeed, an essential effect and an explicitly-announced purpose of insurance regulation in the state has been the redistribution of income and wealth. This has been true despite the fact that much more efficient redistributive instruments are available to public policy than the regulation of this market.

³³ MARB, *Subsidies in 1989 Rates*, p. 8.

Conclusion

Proponents of the regulation of the automobile insurance market often offer three defenses for regulation:

- 1) regulation assures that there will not be “destructive price competition” among insurers that will render them insolvent and incapable of paying warranted claims of policyholders;
- 2) regulation assures that premium rates will be only high enough to cause premium revenues for insurance companies to just cover payments they must make on claims plus administrative costs; and
- 3) regulation assures that rates will not be “discriminatory” in the sense that it causes relative premium rates for different classes of policyholders to reflect the claims costs that different classes impose upon pooled premium funds.

If there were a competitive market for automobile insurance that worked well, company managers would make informed decisions, and market discipline would prevent the occurrence of inappropriate or discriminatory premium rates, in the foregoing

senses. Capital adequacy requirements can protect policyholders from company insolvencies.

The defenses for regulation, thus, rest upon the belief that there is something in competitive automobile insurance markets that causes systemic market failure. Yet, the experience of the many states where competition prevails, because regulation touches the market only lightly, file-and-use premium rate rules apply, and companies may define their own risk classes, does not suggest that there is failure in this market. Company insolvency is rare; the ratio of payment on claims to premium receipts is not higher than in more intensely regulated states; and relative premium rates of different risk classes do tend to just reflect the claims costs of the different classes. In those states the competitive market works well.

What is ironic about the experience of Massachusetts is that the adverse effects that are thought to be characteristic of market failure are precisely what have been brought into existence by state regulation. Average premium rates fixed by the Commissioners have produced revenues that are not sufficient to cover claims payments and administrative costs. This is made evident by the losses companies have suffered on their automobile insurance lines, by the withdrawal of companies from the market, and by the massive cessions of policies to CAR. Also, relative premium rates fixed by the Commissioner have been discriminatory. They do not reflect the relative claims costs imposed on the pooled funds by different classes of policyholders. This is made evident by the subsidization of some by other policyholders, and by the differences in the proportions of policies ceded to CAR for different territorial and driver classes.

What is more important, still, is that state regulation of automobile insurance in Massachusetts has deformed the structure of private incentives motivating the behavior of automobile owners. Insurance is underpriced for the subsidized fractions of the driver community. Drivers underinvest in precautionary behavior. The frequency of accidents and of thefts is increased as is the severity of damage done in accidents. It is not adventitious that automobile accident and theft rates are higher in Massachusetts than in other states.

The public welfare would be well-served if the Commonwealth withdrew from strong intervention in the automobile insurance market, permitted the freedom to choose to prevail in that market and permitted competition to establish an efficient set of risk classes and prices.

In such a market, insurance companies would be free in defining risk classes to use any variable they think to have the power to predict risk, and companies would be free to establish the premium rates for insurance coverage for each defined class. The competition for customers would cause premium rates to be just sufficient to cover claims payments and administrative costs. If for any reason they should rise higher than this, competition will drive them back to that level.

Competitive companies would have a profit incentive to be constantly on the search for "niches." That is, distinguishable subsets of policyholders would be separated out of non-homogeneous risk classes because company profits would be served by the identification of such subsets and by the pricing of insurance in conformity with the expected loss experience of each risk class. Cross-subsidization would not occur; under- and over-pricing would not occur. Each policyholder would be signaled by

a proper insurance price in his decision on the allocation between loss prevention and insurance in minimizing the summed cost of protecting against risk. For those who now have under-priced insurance in the regulated system, accident and theft rates can be expected to decline.

Such a competitive automobile insurance market now exists in substantial form in the states that have file-and-use systems and that do not foreclose the use of any criteria and variables to distinguish risk classes one from another.

The automobile insurance "reform" legislation that was passed by the General Court late in 1988 missed the central problem. The crisis of the market in Massachusetts is produced by the intensity of its regulation by the state. The resolution of the crisis requires the dismantling of regulation and the restoration of competition in the market so that a set of proper automobile insurance prices will give signals and incentives that will generate properly prudent behavior.

Instead, as it has over many decades, the General Court tinkered with the regulatory arrangements in its 1988 legislation. Direct payments to policyholders for auto body repairs, the end of "stacking" for multiple car owners in accidents with underinsured drivers, uncoupling uninsured and underinsured coverage, raising tort threshold levels, and the other components of the 1988 legislation leave the heart of the problem untouched and the problem itself unresolved.

With an eye to the political viability of change and in the context

of the long history of over-regulation in Massachusetts, some have suggested gradualist approaches to the deregulation of the market. The danger of the strategy of gradualism is, of course, that it offers sequential opportunity for the process of deregulation to be stopped in its tracks. In any event, it is clear that the crisis of the automobile insurance market cannot be resolved short of installing competition in the market.

Appendix

Massachusetts Automobile Insurance: Towns, Cities, and Neighborhoods by Territorial Class

<i>Territory 1:</i>	Eastham	Leyden	Plainfield
	Edgartown	Middlefield	Princeton
Alford	Erving	Monroe	Rowe
Ashfield	Gill	Montague	Sterling
Bernardston	Gosnold	Monterey	Tolland
Blandford	Granville	Mt. Washington	Truro
Bolton	Greenfield	Nantucket	Wellfleet
Brewster	Groton	New Ashford	Wendell
Buckland	Hadley	New	West
Chatham	Harvard	Marborough	Stockbridge
Chilmark	Harwick	Northfield	West Tisbury
Colrain	Hatfield	Oak Bluffs	Whately
Conway	Hawlet	Orleans	Williamstown
Cummington	Heath	Peru	Windsor
Deerfield	Leverett	Petersham	Worthington
<i>Territory 2:</i>	Gay Head	New Salem	Shutesbury
Athol	Goshen	Otis	Southampton
Brimfield	Hamilton	Pelham	Sunderland
Charlemont	Hancock	Richmond	Templeton
Chesterfield	Hardwick	Rochester	Tisbury
Clarksburg	Holden	Rockport	Townsend
Concord	Holland	Sandisfield	Warwick
Dennis	Littleton	Sandwich	West Boylston
Egremont	Manchester	Savoy	West Newbury
Florida	Marion	Sheffield	Westminster
	Montgomery	Shelburne	Williamsburg

Territory 3:

East Hampton	Longmeadow	South Hadley
Essex	Mendon	Southborough
Georgetown	Merrimac	Stockbridge
Granby	Monson	Stowe
Great	Needham	Sturbridge
Barrington	New Braintree	Topsfield
Hopkinton	Newbury	Upton
Hubbardston	Northampton	Washington
Huntington	Northborough	Wayland
Ipswich	Northbridge	Wellesley
Lanesborough	Orange	West Brookfield
Lee	Pepperell	Westford
Lenox	Phillipston	Winchendon
Lexington	Rowley	Yarmouth
Lincoln	Royalston	
E. Longmeadow		

Territory 4:

Douglas	Maynard	Seekonk
Dudley	Medway	Sherborn
Duxbury	Millis	Shirley
Falmouth	Milville	Sudbury
Gardner	Norfolk	Sutton
Grafton	North Adams	Uxbridge
Hinsdale	Oakham	Wales
Holliston	Palmer	Ware
Lancaster	Paxton	Wenham
Lunenburg	Plainville	Westhampton
Marblehead	Raynham	Weston
Mattapoisett	Rutland	Wilbraham

Territory 5:

Boxborough	Ludlow	Rehoboth
Chicopee	Mashpee	Russell
Danvers	Medfield	Somerset
Dover	Newburyport	Spencer
East Brookfield	North Andover	Warren
Foxborough	North Attleboro	Westborough
Freelton	North	Westfield
Hampton	Brookfield	Wrentham
Hopevale	Norwell	
Leominster	Reading	

Territory 6:

East	Milford	Swansea
Bridgewater	Milbury	Tyngsborough
Fitchburg	Natick	Walpole
Franklin	Norton	Webster
Groveland	Oxford	West
Hudson	Pittsfield	Bridgewater
Kingston	Plymouth	West Springfield
Lakeville	Plympton	Westport
Lynnfield	Provincetown	Winchester
Mansfield	Shrewsbury	
Middleton	Southbridge	

Territory 7:

Clinton	Hingham	Sharon
Cohasset	Leicester	Southwick
Easton	Marlborough	Wakefield
Fairhaven	Newton	Westwood
Gloucester	North Reading	
Halifax	Norwood	
Hanover	Salisbury	

Territory 8:

Dedham	Middleboro	Tewksbury
Dracont	Scituate	Wareham
Framingham	Stoneham	Weymouth
Hanson	Swampscott	Wilmington
Methuen	Taunton	Woburn

Territory 9:

Avon	Marshfield	Pembroke
BillERICA	Melrose	Walham
Braintree	Milton	Whitman
Holyoke	Peabody	

<i>Territory 10:</i>	Haverhill Nahant Rockland	Salem Stoughton Watertown	Worcester *
<i>Territory 11:</i>	Brookline Chestnut Hill (Brookline)	Holbrook New Bedford Quincy	Randolph Saugus
<i>Territory 12:</i>	Cambridge Lowell	Medford Springfield	
<i>Territory 13:</i>	Brockton Hull	Lynn Malden	Winthrop
<i>Territory 14:</i>	Lawrence		
<i>Territory 15:</i>	Everett	Somerville	
<i>Territory 16:</i>	Chelsea	Revere	
<i>Territory 17:</i>	West Roxbury	<i>Territory 22:</i>	Roxbury
<i>Territory 18:</i>	Rosindale	<i>Territory 23:</i>	Boston Central
<i>Territory 19:</i>	Jamaica Plain	<i>Territory 24:</i>	Brighton – Allston
<i>Territory 20:</i>	Hyde Park – Readville	<i>Territory 25:</i>	South Boston
<i>Territory 21:</i>	Dorchester – Mattapan	<i>Territory 26:</i>	Charlestown – East Boston

Source: Commonwealth of Massachusetts, Division of Insurance.

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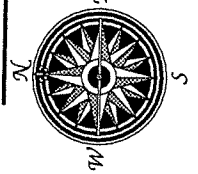
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