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THE REGULATION OF AUTOMOBILE INSURANCE IN CALIFORNIA

By

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The Regulation of Automobile Insurance in California*

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1. Introduction

In this paper, we evaluate the effects of regulation in California's automobile insurance market. Auto insurance is a critical consumer service, so regulation in this market has an important direct impact on consumer welfare.¹ In addition, because regulation in this industry takes place at the level of the state, auto insurance provides a particularly useful laboratory for evaluating the more general effects of regulation and deregulation.

The study of the effects of regulation is frequently contentious, so we note immediately that our conclusions differ substantially from the other papers in this volume. These studies systematically conclude that regulation has created serious damage and/or that deregulation has been highly successful. In contrast, we conclude that although auto insurance has been highly regulated in California since 1988, the effects of this regulation have been benign, our study finding none of the traditional negative effects of regulation.

Our analysis is based on the passage of California referendum Proposition 103. This ballot initiative was passed on November 7, 1988, dramatically altering the regulatory environment of the property and casualty insurance industry in the state. Prior to that, California was ranked among the states with the least degree of auto insurance regulation. The passage of Proposition 103 transformed California to a state among those with the greatest degree of auto insurance regulation in the US.

Although Proposition 103 has components directed at all lines of property casualty insurance in California, by far its major impact has been on auto insurance. Proposition 103 thus represents a benchmark for state auto insurance regulation in much the same way that the state's

¹ By way of background, we recommend two recent review studies of the auto insurance market, Cummins and Tennyson [1992] and Harrington [2000].

earlier Proposition 13 (which limited local government expenditures to a fixed amount of property tax revenue), represents a benchmark for local funding of public expenditures.

In this paper, we use the passage of Proposition 103 to carry out an “event study,” which allows us to contrast the performance of the state’s auto insurance market in low and high regulatory regimes.² On the surface, Proposition 103 seems ideal for this purpose. More than a decade has passed since the passage of the Proposition, allowing us to observe both the transitory and continuing effects of the introduction of the new regulatory environment. On closer inspection, however, unraveling the effects of this change is complicated by the presence of a number of confounding factors. For one thing, at about the same time the regulatory regime changed, a major California Supreme Court decision, *Moradi-Shalal v. Fireman’s Fund* (henceforth “Moradi”), substantially limited the conditions under which insurance companies could be sued. For another thing, changes occurred in California’s auto safety regulations over the post Proposition 103 period, the most important being the strict enforcement of seat belt and driving under the influence laws. Our analysis in this paper therefore attempts to separate the influence of these factors from the effects of Proposition 103 itself.

The paper can be summarized as follows.

In Section 2, we describe the regulatory regime that Proposition 103 introduced. The description covers not only the actual Proposition, but also (a) the operating regulations created by the state’s Department of Insurance under the new elected office of Commissioner, (b) additional legislation passed by the State legislature, and (c) the stream of legal challenges and decisions, still ongoing in the state’s courts.

² Homeowner insurance in California also faced a major recent crisis, brought about by the Northridge earthquake in 1994, an event which leveled a large area near downtown Los Angeles, creating approximately \$12 billion in insured losses. In a recent paper, Jaffee and Russell [2000], we discuss the regulatory impacts of the Northridge quake on homeowner and earthquake insurance in California. Thus, in this paper, we focus on auto insurance.

In Section 3, we discuss the established economic theory concerning the expected impact of regulations such as those created by Proposition 103. Using the excellent recent study by Harrington [2000] as our benchmark, we enumerate various costs and market failures that are expected to occur as a result of such regulation. From this we derive a number of predictions of the likely effects of Proposition 103. Following Section 3, the remainder of the paper evaluates the actual impact of the Proposition.

In Section 4, we look at the first prediction, that firms would exit the market for auto insurance in California. We show that there has been no significant exit from California's auto insurance market since Proposition 103.

In section 5, we look at the second prediction, that the assigned risk pool in California would expand as a result of Proposition 103. We demonstrate, however, that California's assigned risk pool has dramatically declined, reflecting the adoption of a policy of market-based pricing for the pool. Nothing in Proposition 103 precluded the adoption of this price adjustment.

In Section 6, we examine the third prediction, that the premium freeze, and prior approval more generally, would lower profitability in California, and thereby lower the supply of auto insurance, in this way harming consumers. To the contrary, we conclude that Proposition 103 has been highly beneficial for consumers and insurance firms alike. The basis for this finding is that at the same time that California consumers benefited from the sharpest decline in auto insurance premiums in the country, profit rates for auto insurance firms in California ran significantly above the national average. Falling premiums and rising profit rates can coincide only if incurred losses or underwriting expenses also fall. We will show this is exactly what did occur in California.

In Section 7, we examine the factors that explain the decline in auto insurance premiums in California. Some of these factors are directly linked to Proposition 103, whereas others are independent of the Proposition. As a roadmap to our analysis, Figure 1 illustrates the various factors we will be examining and indicates how they are connected to auto insurance premiums. Factors related to Proposition 103 are so noted, whereas all other factors are independent of the Proposition. A detailed discussion of all these factors is provided in Section 7. In addition, in Section 7, we examine the hypothesis that regulation inhibited the willingness of firms to pass through the benefit of lower costs to consumers as lower premiums.

<<All Figures will be found at end of paper>>

Section 8 provides our conclusion, namely that none of the negative effects of auto insurance regulation, as predicted by economic theory, occurred in California following the passage of Proposition 103. In this sense, the California data and experience are sufficiently unique to suggest that even if most regulation is harmful, benign or good regulation is not an oxymoron.

2. Proposition 103: The New Regulatory Framework

Although Proposition 103 passed in November 1988, a series of judicial challenges requiring administrative orders delayed its full implementation for several years. By January 1995, however, a date at which coincidentally a new pro-industry Insurance Commissioner (Charles Quackenbush) took office, the key features of the new regulatory environment were all in place.³ In this section, we briefly review the provisions of the Proposition as modified by subsequent judicial and administrative actions.⁴

a) **Premium Rollback.** Given the fact that property casualty insurance was generally viewed as a competitive industry in which policy-holder owned firms held a significant market share, perhaps the most surprising provision of the Proposition was its requirement for a premium roll back and freeze. Specifically, for a period of one year, November 1988 – November 1989, all automobile and other property/casualty insurance rates were frozen at a level of 80% of their level on November 8, 1987.⁵

This provision was immediately but unsuccessfully challenged in the courts, and after a number of legal findings and administrative law rulings, in August 1991 the Insurance Commissioner John Garamendi issued emergency orders limiting the rebate requirement to those firms which earned in excess of a “fair profit”, defined to be a 10% rate of return. This rate of return standard replaced the original Proposition wording which exempted firms only if a rebate

³ Mr. Quackenbush left office in the Fall 2000 facing various accusations, including charges that he had misdirected insurance industry contributions to a nonprofit entity that he may have controlled. None of these issues directly involved Proposition 103 or auto insurance.

⁴ This section draws on “Proposition 103—Main Provisions and Status (no date),” found on the web page for The Foundation for Taxpayer and Consumer Rights” <http://www.consumerwatchdog.org/insurance/fs/fs000324.php3>. See also Harvey Rosenfield [1998] for a law review article focused on Proposition 103. Rosenfeld is president of The Foundation for Taxpayer and Consumer Rights, a major sponsor of Proposition 103.

⁵ Since rates had been rising, the 1987 benchmark would have required a de facto rate rollback of more than 20%.

“substantially threatened ...(them)...with bankruptcy”. The Garamendi orders were again challenged in court but in August 1994, the California Supreme Court essentially upheld the Garamendi formula.⁶ On November 22, 1994, the process of ordering rollbacks finally began.

To date over \$1.2 billion in rebates have been paid. Of the 600 companies affected by the Proposition, all but a handful have now settled.⁷ Of the state’s 10 largest insurers (by market share), 9 gave rebates (i.e. made payments with interest to their customers of 1988/1989). In 2000, the largest auto insurer, State Farm, was excluded under the Garamendi rate of return formula.

As a side effect of the Proposition, by administrative order all insurance companies which challenged the rollback had their rates frozen. This in effect froze most property casualty insurance premiums in California for the 5-year period from late 1989 (most firms had updated their year-ahead premiums just before the November 1988 election) through 1994.

b) Prior Approval of Rates. Before 1988, rate changes in California were at the discretion of the insurer. After Proposition 103, rate increases and decreases were required to be justified to the Insurance Commissioner before they took effect. Subject to certain conditions, rate filings were deemed approved 60 days after public notice. Public hearings were made discretionary for increases of less than 7% and 15% for personal and commercial auto insurance respectively. The process includes an important role for “public interveners” who argue on behalf of consumers, with their fees paid by the insurance companies. A “fair return” or other rate of return limit is not applied in these prior approval decisions—the rate of return criterion was applied only in the initial Proposition 103 rollback of premiums. No regulations have yet been issued to govern the

⁶ In the *20th Century v Garamendi* case, the California Supreme Court ruled “not only is the rate making formula not inconsistent, it is not confiscatory, discriminatory or demonstrably irrelevant to legitimate policy”.

⁷ Details may be found on the Department of Insurance web page <http://www.insurance.ca.gov>.

prior approval process, so applications are handled on an ad hoc basis. However, the newly installed Commissioner in 2000, Harry Low, has announced that a set of proposed regulations will soon be released for comment.

c) Rate Setting Formula Established. Prior to the passage of the Proposition, insurance companies based auto insurance rates on a number of factors including the address of the insured. This led to perceived rating anomalies, including cases in which drivers living on opposite sides of a street sometimes faced premiums which differed by a factor of 2. Proposition 103 replaced territorial-based or “zip code” rating with a formula based on 3 factors, 1) the insured’s driving record, 2) the number of miles driven, and 3) the number of years of driving experience. Other factors were allowed, but only if they could be shown to be statistically associated with risk.

This provision was also subject to legal challenge and eventually administrative interpretation. In September 1996, a set of regulations was issued to govern the setting of rates. The basic spirit of Proposition 103 was preserved, though the regulations were far from easy to apply. The exact mechanics of the rating process can be obtained from the Dept. of Insurance.⁸

⁸ Those tempted to visit the relevant web page (http://www.insurance.ca.gov/LGL/Arf_regs.htm) might be interested in this short preview:

1632.8 Factor Weights

(d) The weights of the factors, as calculated in subdivision (c), must align in decreasing order of importance as follows: driving safety record must have the most weight followed by annual miles driven followed by years of driving experience followed by the weight for the optional factor. If the weights are not in the order as specified herein then the insurer must correct the relativities of the rating factors as follows:

- (1) Select the rating factor to be modified.
- (A) Compute the weighted average of the initial relativities for the factor over the data set selected in subdivision (b) herein;
- (B) Subtract the weighted average from each initial relativity;
- (C) Multiply the result of step (B) by a correction factor;
- (D) Add the result of step (C) to the weighted average.

Most recently, on December 28, 2000, the use of zip codes was reallocated by the decision of the California 1st District Court of Appeals. In this decision, the judges held that where a driver lives (not how he drives) is the most important factor in gauging risk, and that ignoring this factor makes rates arbitrary. This decision has been appealed to the California Supreme Court, so that even now, 13 years after passage of the Proposition, the question of how to set premiums has not been settled.

d) Good Driver Discount. The Proposition required that good drivers be offered a discount at least 20% below the rate the driver would otherwise have been charged for the coverage; it also required that all good drivers be offered policies. The criteria to be a “good driver” include at least three years of driving experience, no more than one violation point during the previous three years, and no fault in an accident involving death or damage great than \$500. While this may all sound fairly innocuous, the “must take all good drivers” requirement has a substantial thrust, since it limits the ability of the companies to circumvent the three-factor rating plan by refusing to provide insurance to certain consumers.

e) Elected Insurance Commissioner. The Proposition required the Insurance Commissioner to be elected for a term of 4 years. Previously the Commissioner had been appointed.

The formula for this correction is:
 $NR = ((IR - WA) * CF) + WA$, where:
NR = New Relativity
IR = Initial Relativity
CF = Correction Factor
WA = Weighted Average

(2) Repeat process of subdivision (d)(1)(A) through (D) if it is necessary to correct the weight of any of the rating factors.

(3) The weight of a corrected rating factor may not exceed the corrected weight of the succeeding rating factor, in decreasing order of importance, by more than 0.25.

f) Legal Status of Insurance Companies. Proposition 103 removed the exemption of the insurance industry from the State's anti-trust laws. California civil rights and consumer protection laws were extended to the industry. In addition banks were allowed to sell insurance; over 100 banks are now authorized to do so.

g) Cancellation of Policies. Presumably to prevent firms leaving the State, insurers were forbidden to cancel policies except under certain specified conditions. The California Supreme Court later ruled that this did not prevent a company from exiting the State *in toto*.

h) Miscellaneous. Finally the proposition enacted a further series of changes:

- i) allowing brokers to discount commissions in order to rebate premiums,
- ii) allowing groups to negotiate a rate reduction, and
- iii) requiring the Commissioner to provide a comparison shopping data base.

With respect to the latter, California's Department of Insurance has responded with an outstanding web page, that can be viewed at <http://www.insurance.ca.gov>. The web page includes detailed information regarding insurance firms doing business in California, a complaint database, and a comparison shopping quote page that far exceeds in quality anything else available on the web. Figure 2 shows sample output for a quote request in Berkeley CA.

<<Please insert Figure 2 here>>

Taken together, the provisions of Proposition 103 amount to a major shift in the regulatory environment. In the next sections, we discuss the consequences which might be expected to flow from such a dramatic increase in the degree of regulation and compare this with the changes which actually took place. We begin by examining how mainstream economics views these changes.

3. Predicted Effects of Proposition 103

As we have seen, Proposition 103 made widespread changes to the regulatory environment in California. Thus, the behavior of insurance firms was likely to be altered in a number of ways. In this section, we concentrate on two major provisions of the Proposition,

- a) the premium rollback and subsequent 5-year rate freeze, and
- b) the change from an open rate setting environment to one of prior approval.

In analyzing the effect of these two changes, we do not assume that the insurance industry “captured” the regulatory environment as discussed by, for example, Stigler [1971], Posner [1974], and Peltzman [1976)]. The intensity with which the industry opposed Proposition 103--\$60 million was spent during the election--suggests that they saw little opportunity to use the new regulatory environment to their advantage, at least in the short run, and the election of the pro-consumer John Garamendi as Insurance Commissioner made early capture even less likely. For this reason, we analyze the changes taking them at face value.

a) Price Rollback and Freeze

We begin by examining the price rollback and freeze. Basic economic analysis suggest that the effect of a price rollback depends on the competitive structure of the industry. If firms are earning rents, a price rollback would redistribute these rents to consumers, the classic justification for price controls. A priori, however, there is no obvious reason why the industry should have been earning rents.

Table 1: Market Concentration Indices for California Auto Insurance

	CR ₄ ¹	CR ₈	CR ₂₀	HHI
Private Passenger Auto Line	56.9	79.2	89.0	1,027
Homeowners Line	59.8	72.6	87.3	1,197

¹ CR_x is the combined market share, based on written premiums of the top x insurer groups. HHI is the sum of the squared market shares of all insurer groups. The US Department of Justice guidelines consider a market with an HHI of 1000 or less to be unconcentrated.

Source: Klein [1995].

Table 2 Firms and Groups Selling Auto Insurance in California⁽¹⁾

Year	Firms				Groups: ⁽²⁾			
	Entering During	Exiting During	Existing Year End	Exiting Market Share	Entering During	Exiting During	Existing Year End	Exiting Market Share
1984			296				113	
1985	34	33	297	4.61%	17	18	112	3.953%
1986	19	37	279	0.94%	13	19	106	0.63%
1987	22	29	272	0.90%	10	15	101	0.16%
1988	21	28	265	1.80%	9	17	93	0.44%
1989	13	31	247	3.53%	7	6	94	1.93%
1990	15	12	250	0.27%	5	1	98	0.13%
1991	16	44	222	2.93%	14	21	91	0.26%
1992	22	32	212	0.67%	11	9	93	0.004%
1993	24	28	208	1.35%	10	14	89	0.64%
1994	29	23	214	0.71%	10	7	92	0.50%
1995	20	25	209	0.54%	5	5	92	0.001%
1996	14	15	208	0.26%	4	5	91	0.003%
1997	20	19	209	0.16%	6	5	92	0.15%
1998	31	3	237	0.07%	15	1	106	0.000%
1999	0	9	228	1.05%	8	4	110	0.42%
Annual Avg	20	25	241	1.32%	10	10	98	0.62%

(1) Bold indicates years after 1988 with above average number of exiting or entering firms or groups

(2) A group is one or more firms under common ownership. Each firm is in precisely one group.

Source: NAIC data

We have seen that 600 firms were subject to the rebate requirement, with about half of them writing auto insurance. Moreover, even in 1993, several years after the passage of the Proposition when, if anything, one would expect the industry to become more concentrated, Klein [1995] concludes that “An analysis of the structure and performance of the personal auto and homeowners markets suggests that both of these markets are fairly competitive at the national and state level,” (p. 17). Klein’s market share and Herfindahl/Hirschman Indices (HHI) for California are shown in Table 1.

This conclusion is echoed by Harrington [2000] who states “Economists generally agree that market structure and ease of entry are highly conducive to competition in auto, homeowners, workers’ compensation, and most other property-liability insurance lines” (p.16), and goes on to say that “Most academic economists would agree that those levels of concentration would make noncompetitive pricing behavior a remote possibility, ...” (p.17).

If we agree that the structure of the industry approximated that of textbook perfect competition, firms in the industry would be making close to a normal rate of return at pre-Proposition 103 prices. A price rollback would therefore be expected to lower price below long-run average cost, and in this way to cause exit from the industry. In the textbooks, where firms are identical, all firms would exit. This, of course, is too extreme. In any real world version of long-run equilibrium, some adjustment is always taking place, and some firms, being more efficient than others, will earn rents. These rents would cushion the effects of the price cut and if they were large enough, would allow these firms to stay in the industry. Moreover, there are many opportunities for cross- subsidization across lines and states, and this might allow firms to stay if they felt their long-term prospects were good. Finally, as Harrington has noted, state

specific investments would be lost by immediate exit, and this, together with other exit costs, could delay leaving, Harrington [2000] (p.35).

This said, however, price cuts of the magnitude of more than 20% would be expected to cause at least the weaker brethren among insurers to leave the state, especially since the prospects for future rate increases, once the initial challenge to the rollback was rejected, must have seemed rather bleak. The first prediction of standard economic analysis is therefore a decline in the number of firms writing property/casualty insurance in the state.

The predicted effect of the subsequent price freeze depends on the future path of market prices in the absence of the freeze. Often this counterfactual evidence is not available, but in this case market prices in the US outside California do provide one proxy for market prices in California. As we show later, these US prices were rising. By this proxy, price controls would be expected to lead to availability problems, though as we discuss later, it is also important to analyze the comparative loss experience in California and the rest of the US.

In the context of the auto insurance industry, availability problems are reflected, often dramatically, in an increase in the number of driver forced to purchase insurance through the state's assigned risk pool. The second prediction of standard economic theory is therefore an expansion in the size of the state's assigned risk pool. The price freeze would, of course, also create forces which would be expected to lower the observed rates of return for insurance firms in California. This is the third prediction of economic theory.⁹

⁹ Falling profit rates should be reflected in a decline in stock returns for publicly traded insurance firms with California property casualty earnings exposure. Some event studies related to Proposition 103, carried out by Fields, Ghosh, Kidwell and Klein [1990], Fields, Ghosh, and Klein [1998], Shelor and Cross [1990], and Szewczyk and Varma [1990], find that this was the case. More recent studies, carried out by Grade, Rose, and Karafiath [1995] and Brockett, Chen, and Garven [1999], however, fail to find evidence of a declining rate of return.

b) The Change to Prior Approval

Compounding these negative effects of price controls, the move to prior approval as enforced by a pro-consumer, elected, Commissioner would be expected to have similar effects.

As Harrington notes p.32, prior approval with a regulatory lag can be expected to impose

“direct costs of administration and costs of compliance; delays in adjusting rates to trends in losses and expenses; greater variation in availability over time; greater variation in insurer profits over time and increased uncertainty for insurers.”

These costs must eventually be paid by consumers, but in the context of Proposition 103, rates were frozen, so there was no way for firms to pass on them on.

In summary, we have three predictions based on economic theory:

- i) firms will leave the industry,
- ii) availability problems will lead to an increase in the size of the assigned risk pool, and
- iii) rates of return will fall.

We turn now to an examination of what actually happened.

4. Proposition 103: Firm Entry and Exit

Although the original 20% rollback provision was somewhat blunted, over \$1.2 billion in rate reductions were eventually made under Proposition 103. As just noted, these price cuts were expected to drive marginal firms out of the market and in this way to reduce the size of the industry. In looking at the number of firms and size of the industry following the passage of the Proposition, however, there seems little evidence that this was in fact the case.

Table 2 shows data from 1984 to 1999 for the number of insurance firms (left panels) and insurance groups (right panels) with positive insurance premiums in California. The number of insurance firms declines from 265 in 1988 to 208 in 1993. There are a number of reasons,

however, why this result is not an indication of firms fleeing California in response to

Proposition 103:

- 1) Most of the departing firms were members of insurance *groups*. The groups themselves, however, remained active in the California market. For example, from 1988 to 1993, only 4 groups left the California market on net. Furthermore, Proposition 103 itself provided a motivation for groups to consolidate the number of member firms.¹⁰
- 2) From 1988 to 1993 a sizeable number of groups also *enter* the California market, and indeed for 1991 and 1992 the number of entrants is above average. Large numbers of new entrants seems unlikely if Proposition 103 were seen as a harsh regulatory regime being imposed on a competitive industry.
- 3) The market share of the exiting groups is quite small. For example, from 1989 to 1993, the accumulated market share of the exiting groups is only 2.96%, and this does not consider the offset from the new entrants over the same period.
- 4) There were economy-wide trends during the late 1980s and early 1990s that caused a number of large insurance groups to leave the auto insurance market in a number of states, not just California. Thus, some of the exits should not be attributed to Proposition 103.¹¹
- 5) As shown in Table 3, the market shares of the top firms was very stable.

¹⁰ The motivating factors were the Proposition 103 requirements that (1) "good drivers" receive a discount of at least 20% relative to what that firm would have otherwise charged the driver and (2) all firms must offer insurance to all good drivers (a take all comers requirement for good drivers). Furthermore, since as many as 80% of the state's drivers met the "good driver" standard, even the "high-risk" subsidiary of an insurance group was likely to have many "good drivers" amongst its customers. Following Proposition 103, these drivers could insist that they be transferred to the "low risk" subsidiary of the same group, thereby benefiting from the lower premiums in that firm. Some groups attempted to avoid the "take all good drivers" requirement, but they soon faced law suits from the Department of Insurance. In the end, the only alternative was to consolidate the "high-risk" and "low-risk" subsidiaries, so that higher premiums for the previously "low-risk" customers could offset some of the reduction in premiums for the previously "high-risk" customers.

¹¹ For example, Travelers, withdrew from the California auto insurance market, but it also withdrew from 8 other states at the same time. Also, while Aetna was threatening to leave California's auto insurance market, it was actually leaving other states such as Arizona.

Table 3: Written Premium and Market Share by Year

Company Name	-----Premium, \$Million, (Market Share %)								
	1987	1988	1989	1990	1991	1992	1993	1994	1995
State Farm Auto	915 (15.7)	1141(15.9)	1258(16.30)	1319(16.7)	1398(18.1) ¹	1381 (18.8)	1355(18.4)	1329(18.3)	1349(17.8)
Cal State Auto Ass	588 (10.1)	735(10.2)	818(10.6)	877(11.1)	806 (10.5)	765 (10.4)	762(10.4)	763(10.5)	776(10.3)
Farmers	579 (9.9)	661 (9.2)	749 (9.7)	825 (10.4)	834 (10.8)	756 (10.3)	740 (10.1)	879(12.1)	931(12.3)
Allstate	575 (9.9)	676 (9.4)	841(10.9)	824 (10.4)	789 (10.2)	683 (9.3)	625 (8.6)	500 (6.9)	461(6.1)
Auto Club of SC	544 (9.3)	526 (7.3)	558 (7.2)	589 (7.4)	562(7.3)	547(7.4)	544 (7.5)	553 (7.6)	598 (7.9)
Twentieth Century	304 (5.2)	365 (5.1)	332(5.3)	440(5.6)	475 (6.1)	509(6.9)	544 7.4)	542(7.5)	641(8.5)
Mercury Casualty	163 (2.8)	206 (2.9)	202 (2.6)	208(2.6)	178 (2.3) ²	130 (1.8)	124 (1.7)	108(1.5)	105(1.4)
United Services Auto	157 (2.7)	167 (2.3)	171 (2.2)	172(2.2)	186(2.4)	184(2.5)	177(2.4)	170 (2.3)	164(2.2)
State Farm F and C	79.7(1.4)	164 (2.3)	178 (2.3)	175(2.2)	-----	-----	-----	-----	-----
GEICO	78.6 (1.4)	77 (1.1)	94(1.2)	79(1.0)	62(.8)	60(.8)	37 (.5)	54 (.7)	55 (.7)

¹ For this year forward State Farm Fire and Casualty became merged with State Farm Mutual.

² From this year forward Mercury Casualty was split into Mercury Casualty and Mercury Ins.

Source: California Dept. of Insurance.

Overall, our conclusion is that the pattern of exit and entry in the California auto insurance market following Proposition 103 is well within the normal entry and exit pattern of a competitive industry. The hypothesis that a price rollback and freeze would reduce the number of firms and the size of the industry seems to be rejected by the data, all of which point to the perhaps unexpected conclusion that despite Proposition 103, after 1988 it was “business as usual”. A similar conclusion can be found in Viscusi and Born [1999].

5. The Assigned Risk Pool for California Auto Insurance

Since auto insurance is generally required to drive a car, all states have created some form of assigned risk pool, residual market, or joint underwriting agency, to provide auto insurance to consumers who have been rejected by the voluntary market. When regulations force automobile insurance premiums below their cost, it is predictable that insurance firms will refuse to sell such insurance to customers. These customers will then be forced to become uninsured or to enter the residual market. The link between rate suppression and assigned risk pools is made very clear in Harrington [2000], page 20, in which he concludes:

“In short, the best way to ensure availability and therefore a small residual market is to deregulate rates”

California has long had a large and active assigned risk pool (ARP), and the above analysis would predict that the pool should have expanded following the passage of Proposition 103. The evidence is provided in Figure 3, in which the dashed line shows the percentage of all insured cars in California that are in the ARP. The percentage starts at 5.7% in 1988, peaks at 8.4% in 1989, and then declines steadily, reaching its low point of 0.3% at the most recently available observation in 1998. In short, starting with over 1 million cars at the time Proposition 103 was passed, the pool now has shrunk to approximately 50,000 cars.

<<Please insert Figure 2 here>>

We are not suggesting that Proposition 103 created this result; two other factors explain most of this decline. First, there was a nationwide downtrend in the size of ARPs: between 1989 and 1998 the national percentage of all insured cars in ARPs fell from 6.9% to 2.3% (while California's percentage fell 8.4% to 0.3%). Second, California significantly raised the average

annual premium for its ARP in 1991, by about 85% (from \$724 to \$1,340), as shown in Figure 3 by the solid line. Prior to that rate increase, a substantial number of California's drivers were finding that premiums in the ARP were actually lower than in the voluntary market, so they "volunteered" to join the residual market. After the premium increase, this was no longer true, and the percentage of drivers in the ARP declined sharply, to under 1% of the total by 1993.

However, even if the decline in the ARP cannot be claimed as a benefit of Proposition 103, there is no evidence of the opposite. In particular, Proposition 103 was already in effect when the premiums in the ARP were almost doubled in order to reach parity with the voluntary market—not evidence of a clumsy and premium constraining regulatory mechanism.¹²

Most recently, on October 10, 1999, California's Governor Gray Davis signed bills creating a pilot Low Cost Automobile Insurance Program, which is administered by California's ARP. The program is designed to provide auto insurance to low income drivers, possibly with the additional benefit that it would reduce the number of uninsured drivers in the state.¹³ As of the end of October 2000, only 434 low-income policies had been issued, although tens of thousands of policies were initially expected. And many of these drivers have only switched from higher-cost policies in the standard market. This represents further evidence that California's voluntary insurance market appears to be meeting the needs of most drivers.

¹² Richard Manning, Director of California's ARP, in an interview in October 2000, indicated moreover that almost all the drivers now remaining in California's ARP would be considered "uninsurable" on almost any standard, due to their records for driving under the influence, multiple accidents, etc. Thus, there is no evidence that otherwise insurable risks are being placed in the ARP due to suppressed premiums in the voluntary market.

¹³ California ranks among the states in the US with the highest proportion of uninsured drivers. Jaffee and Russell [1998] discuss the welfare benefits that can occur when insurance premiums are suppressed in order to reduce the number of uninsured drivers

6. Auto Insurance Premiums in California

The third prediction of economic theory is a decline in the rate of profits during the period in which the price freeze was binding. An immediate question, of course, is whether or not the price freeze in California was binding in this period. To answer this question, we begin by looking at the growth in average auto insurance premiums in California relative to comparable premiums for the rest of the US (denoted as USX). Figure 4 shows summary data for the average insurance expenditure per insured car.¹⁴ For the period prior to Proposition 103, 1982 to 1989, the annual growth of California's average premium was 11.70%, compared to the average growth in USX of 8.76%, indicating a *relative premium growth* for California of +2.94%. For the decade immediately after the passage of Proposition 103, 1989 to 1998, California's relative premium growth is -3.69%, meaning that California auto premiums rose significantly less than for USX.

<<Please insert Figures 4 to 7 here>>

Figures 5 to 7 show comparable graphs for each of the 3 components of personal auto insurance: liability, collision, and comprehensive. Each of these graphs starts in 1987, since that is the earliest year for which premium data by component is available. In each case, prior to Proposition 103, the California premium is substantially higher than the equivalent premium for USX. Following the date of passage of Proposition 103, the California premiums show significant negative growth relative to the USX premium. Indeed, by 1998, the difference between the California and USX premiums is negligible.

¹⁴ The source is State Average Expenditures data from the National Association of Insurance Commissioners. The average expenditure is derived by computing the total expenditures on all forms of auto insurance (liability, comprehensive, and collision) and then dividing by the total number of insured cars.

Table 4 Hypothetical Auto Premium Savings

Table 4 Hypothetical Auto Premium Savings				

A: Liability	Actual CA	No Prop	Insured	Prop 103
Component	Premium	Premium *	CA Cars	Savings
	\$	\$	# Millions	\$ Millions
	[1]	[2]	[3]	= ([2]- [1])*[3]
1990	501.34	554.15	13.22	698
1991	522.95	587.32	13.64	878
1992	510.71	624.75	13.54	1,544
1993	508.05	659.06	13.45	2,031
1994	502.76	673.36	13.87	2,367
1995	514.53	686.57	13.89	2,390
1996	511.14	705.37	14.32	2,781
1997	504.00	709.87	16.45	3,386
1998	452.23	692.15	17.83	4,277
Total Liability Savings				\$20,352

B: Collision	Actual CA	No Prop	Insured	Prop 103
Component	Premium	Premium	CA Cars	Savings
	\$	\$	# Millions	\$ Millions
	[1]	[2]	[3]	= ([2]- [1])*[3]
1990	245.19	241.43	8.48	-32
1991	246.35	246.69	9.54	3
1992	250.32	248.03	9.73	-22
1993	257.50	243.72	9.77	-135
1994	241.68	246.85	10.49	54
1995	240.93	256.25	10.54	161
1996	238.91	268.87	11.00	330
1997	246.33	285.45	11.87	464
1998	249.97	298.41	12.61	611
Total Collision Savings				\$1,435

C: Comprehensive	Actual CA	No Prop	Insured	Prop 103
Component	Premium	Premium	CA Cars	Savings
	\$	\$	# Millions	\$ Millions
	[1]	[2]	[3]	= ([2]- [1])*[3]
1990	125.80	125.01	9.75	-8
1991	122.58	127.42	10.18	49
1992	125.15	135.00	10.39	102
1993	131.76	138.10	10.43	66
1994	130.41	140.48	11.07	111
1995	131.30	143.45	11.20	136
1996	128.91	148.32	11.59	225
1997	121.04	153.89	12.45	409
1998	120.90	158.84	13.10	497
Total Comprehensive Savings				\$1,589

Total Savings				\$23,375

* For 1990, the No Prop 103 premium equals the growth rate of the corresponding USx premium component times the actual CA premium in 1989. For all following years, the No Prop 103 premium equals the growth rate of the corresponding USx premium times the computed No Prop premium of the preceeding year (as in a dynamic simulation).				
Source: NAIC, State Average Expenditures & Premiums for Personal Automobile Insurance, 1990, 1996, and 2000 editions.				

The clear implication of Figures 4 to 7 is that the auto insurance costs for California consumers fell sharply relative to US average costs following the date of passage of Proposition 103. This coincidence in timing does not, of course, necessarily imply a causative link, an issue which we take up in the following section. A quantitative measure of this consumer gain can be derived by comparing the actual premiums that occurred in California with an estimate of what California premiums would have been had they followed the same pattern as the US average. These computations are presented in Table 4

More precisely, Table 4 is based on the assumption that, starting with the actual 1989 California premium for any component, the hypothetical premium in each succeeding year is determined by applying the actual annual premium growth rate for USX for that component.¹⁵ In each successive year, the USX growth rate is applied to the computed California premium for the preceding year, in the manner of a dynamic simulation. The initial year of the computation is 1990.¹⁶ The computations are made for the 3 main auto insurance components—liability, collision, and comprehensive.

As shown in the bottom line of Table 4, total savings for the full 9 year period are over \$23 billion. The annual saving in 1998 alone is \$5.4 billion, which represents over 42% of the actual total auto insurance premiums in California in that year (= \$12.8 billion). The liability component represents by far the major part of the accumulated savings (over \$20 billion) because (a) basically all insured cars have liability insurance and (b) the premium savings per

¹⁵ A similar methodology was employed in National Insurance Consumer Organization [1992], and was updated from time to time in reports circulated by The Foundation for Taxpayers and Consumer Rights.

¹⁶ This was the first year for which Proposition 103 was likely to have had a strong influence on premiums—by the time the proposition passed in November 1988, many companies had already set their premium schedules for 1989, and most firms initially refused to lower their premiums in 1989 as called for in the Proposition.

insured car for this component were significantly higher both proportionately and in absolute size. Coincidentally or not, the consumer activist groups that promoted Proposition 103 focused on the liability component of auto insurance costs, since this is the component of auto insurance that is legally required to drive a car.

But where did the transfer of \$23 billion come from? For a competitive industry, this transfer, acting as if it were a tax, should lower the rate of return, at least relative to a baseline such as the rate of return in the overall US auto insurance industry. Figures 8 and 9 show the return on net worth for the liability and physical damage components of auto insurance, as computed in NAIC's Annual Statement data. Figure 8 shows impressive *increases* in the profit rate for liability coverage since 1990 for both California and USX, with an equally impressive *relative increase* for the California industry. Figure 9, for physical damage coverage, shows a major downturn in profit rates since 1990 for both California and USX, but still no significant *relative decline* for California.¹⁷ These data thus fail to confirm the third prediction of standard theory, namely a declining relative rate of return, especially for the important liability component of auto insurance.¹⁸ We now turn to a detailed analysis of the factors that allowed, simultaneously, auto insurance premiums to decline and insurance firm rates of return to rise.

<<Please insert Figures 8 and 9 here>>

¹⁷ Consistent with our finding for California, Bajitelsmit and Bouzouita [1998] find no effect of regulation on profit rates for the US auto insurance industry.

¹⁸ We commented earlier in footnote 9 that several event studies indicated that, at the time that Proposition 103 passed and at other key dates, stock market values fell for auto insurance firms with significant business in California, presumably on the expectation of falling profit rates. The results presented here indicate that, in fact, profit rates did not fall.

7. Alternative Forces Determining Insurance Premiums in California

Our discussion in the previous section showed that, following the date of passage of Proposition 103, California auto insurance premiums declined sharply, both absolutely and relative to the levels in USX. We now investigate a variety of factors that may have caused this decline. The framework for our approach is illustrated by Figure 1, which we introduced earlier. Earned premiums, the variable to be explained, is shown at the far right of that figure. One step back (to the left) are the proximate determinants of earned premiums—incurred losses, underwriting expenses, and underwriting profits. A further step back (in the two left-most columns) are the fundamental factors, meaning those forces that have created the observed trends in the proximate determinants. We now analyze the proximate determinants and the fundamental factors in turn.

a) The Proximate Determinants of Auto Insurance Premiums

An identity links incurred losses, underwriting expenses, and underwriting profits with auto insurance premiums. We apply this on a per insured car basis:

(1) Premiums = Losses + Expenses + Profits, where:

Premiums = earned premiums per car,
Losses = incurred losses per car,
Expenses = underwriting expenses per car,
Profits = underwriting profits per car, computed as the residual.

Table 5 shows the results of applying equation (1) as a first difference from 1990 to 1998.¹⁹

¹⁹ Data for earned premiums are from NAIC's, "State Average Expenditure and Premiums for Personal Automobile Insurance. Incurred losses and underwriting expenses are from NAIC's, Annual Statement data, which are formatted as ratios to earned premiums. The Annual Statement data allow us only to distinguish the liability and physical damage components of auto insurance, but not the collision and comprehensive components of physical damage.

Later, with regard to Figure 11, we discuss some aspects of the annual time series data from Table 5.

Table 5: Auto Insurance Premiums and Proximate Determinants						
CA and USX, 1990 to 1998						
(\$ per insured car and percent)						
[1]	[2]	[3]	[4]	[5]	[6]	[7]
Liability	1990	1998	Change	Change	% Change	% Change
Component			'90 to '98	CA - USX	'90 to '98	CA - USX
Earned premium						
CA	\$501	\$452	-\$49	-\$133	-9.8%	-34.7%
USX	\$339	\$423	\$84		24.9%	
=						
Incurred lossess						
CA	\$381	\$239	-\$142	-\$133	-37.3%	-34.1%
USX	\$280	\$271	-\$9		-3.2%	
+						
Underwriting expenses						
CA	\$189	\$183	-\$5	-\$48	-2.8%	-36.6%
USX	\$127	\$170	\$43		33.8%	
+						
Underwriting profits						
CA	-\$68	\$30	\$98	\$48	nc	nc
USX	-\$69	-\$18	\$50		nc	
Physical						
Damage	1990	1998	Change	Change	% Change	% Change
			'90 to '98	CA - USX	'90 to '98	CA - USX
Earned premium						
CA	\$288	\$306	\$18	-\$55	6.3%	-18.8%
USX	\$291	\$364	\$73		25.1%	
=						
Incurred lossess						
CA	\$165	\$197	\$32	-\$17	19.4%	-7.4%
USX	\$183	\$232	\$49		26.8%	
+						
Underwriting expenses						
CA	\$92	\$112	\$20	-\$16	22.1%	-17.4%
USX	\$92	\$129	\$36		39.5%	
+						
Underwriting profits						
CA	\$31	-\$3	-\$34	-\$22	nc	nc
USX	\$16	\$3	-\$12		nc	
nc = not computed, because some of the underlying profit values are negative, rendering the percentage change without meaning.						
Sources:						
Earned premiums, NAIC, "State Average Expenditures"						
Incurred losses, NAIC, Annual Statement						
Underwriting expenses, NAIC, Annual Statement						

The top half of Table 5 shows the liability component of auto insurance. The relative result (CA – USX) shows that California consumers benefited from lower liability premiums while, at the same time, the California auto insurance industry achieved higher profits. Lower premiums and higher underwriting profits coincided because the two determinants of insurance costs, incurred losses and underwriting expenses, were both falling. The bottom half of Table 5 shows the physical damage component of auto insurance. Here too California consumers benefited from lower insurance premiums, although physical damage relative underwriting profits are falling slightly. Incurred losses and underwriting expenses are both falling, but in smaller amounts than for liability insurance costs.

In Table 5, the decline in incurred losses is the quantitatively most important cost determinant of the declining relative insurance premiums. We next consider what fundamental forces may have created this substantial decline in incurred losses.

b) Collisions and Incurred Losses: California and USX

Changes in the number of collisions is the most obvious factor that may explain changes in incurred losses, see Table 6. The top half of Table 6, reproduced from Table 5, shows the percent changes in incurred losses, over the period 1990 to 1998, for CA and USX. The bottom half of Table 6 provides data on the number of collisions for California and USX, for the same period, for three categories of collisions. The first category is collisions with fatalities. Between 1990 and 1998, the number of such collisions per insured car declined 51.1% in California and 14.9% for USX, so the excess percentage decline in California is 36.2%. For collisions with only injuries, the excess percentage decline in California is 25.6%. For collisions with only property damage, the excess percentage decline in California is 17.2%.

Table 6: Incurred Losses and Vehicle Collisions				
1990 and 1998, CA and USX				
Incurred Losses	1990	1998	% Change	% Change
(\$ per insured car)			'90 to '98	CA - USX
Liability Component				
CA	\$381	\$239	-37.3%	-34.1%
USX	\$280	\$271	-3.2%	
Physical Damage				
CA	\$165	\$197	19.4%	-7.4%
USX	\$183	\$232	26.8%	
Type of Collision	1990	1998	% Change	% Change
(number per 1000 insured cars)			90 to '98	CA - USX
With fatalities				
CA	0.353	0.172	-51.1%	-36.2%
USX	0.287	0.245	-14.9%	
With injuries				
CA	17.895	10.602	-40.8%	-25.6%
USX	15.606	13.242	-15.1%	
With fatalities or injuries (subtotal)				
CA	18.248	10.775	-41.0%	-25.8%
USX	15.894	13.487	-15.1%	
With only property damage				
CA	23.516	16.297	-30.7%	-17.2%
USX	33.093	28.632	-13.5%	
Total collisions				
CA	41.764	27.072	-35.2%	-21.2%
USX	48.987	42.119	-14.0%	
Source:				
US Dept. of Transportation [1998],				
California Highway Patrol [1998], and Table 6.				

Overall, these results demonstrate a significant improvement in California's relative driving safety. The data are consistent with a simple model in which relative percentage improvements in driving safety, as measured by reductions in vehicle collisions, are a fundamental force creating comparable reductions in relative percentage incurred insurance losses. The data also suggest that the improvement in California driving safety was even more evident in reducing the most severe accidents, firstly involving fatalities, and secondly involving injuries. The relative percentage change in the combined category of collisions with either fatalities or injuries is 25.8%.

Collisions with fatalities or injuries generally create liability claims. It is thus interesting that the percent decline for incurred liability insurance losses (-34.1%) actually exceeds the percent decline in fatality or injury collisions (-25.8%). This suggests that, while driving safety may have been a major factor leading to lower incurred losses, other factors may also have played a role. We consider some alternative factors below.

In addition to liability claims, collisions generally create physical damage, so the value for total collisions shown at the bottom of Table 6 is relevant for comparison with incurred losses on physical damage insurance. Here, in contrast to the liability component, the percent change in relative incurred losses (-7.4%) is substantially less than the relative percentage decline in total collisions (-21.2%). However, approximately one-third of physical damage losses relate to comprehensive coverage (such as car theft), which is independent of driving safety. Thus, we would only expect about two-thirds of the percentage decline in collisions to be reflected in physical damage insurance premiums. Although this helps reconcile the decline in physical damage premiums with the greater decline in collisions, other factors must have also played a role, for example, a rising relative cost of repairs for those collisions that still did occur.

The next step is to consider what fundamental factors might have led to the observed improvements in California's driving safety. Two factors seem important. The first factor is the rising rate of seatbelt use and similar improvements in safe driving (such as fewer accidents created by driving under the influence and better road construction). This factor is independent of Proposition 103. The second factor is the premium structure created by Proposition 103, in particular, the mandated "safe driver" discount, which provides a potentially important financial incentive for safe driving. We consider these in turn.

The Role of Seat Belts for California's Safe Driving Experience

Over the same time period for which we are evaluating Proposition 103, California was creating and enforcing the most stringent seat belt laws in the US. In this section, we first look at the extent to which the seat belt regulations may have created the decline in incurred losses, and in this way contributed to the decline in auto insurance premiums.

Facts concerning California's seat belt use laws include:²⁰

- California's first seat belt use law went into effect on January 1, 1986. Only 8 other states had implemented laws earlier (all during 1985).
- California was the first, and remains one of 15 states, with primary (also called "standard") enforcement, meaning that car occupants can be ticketed just for not using seatbelts.
- California is one of 15 states that requires all occupants in the car to wear seatbelts.
- California is one of 10 states with no exempt classes of vehicles.
- As of 1998, 88.6% of California drivers wore seatbelts, compared to a national average of 68.7%, a 20 percentage point differential. California had the highest ratio in the country, a position it had maintained since the data were first collected (National Highway Traffic Safety Administration [1999b])

²⁰ See National Highway Traffic Safety Administration [1998] and other materials available on their web page at <http://www.nhtsa.dot.gov/people/> .

We now carry out a “back of the envelope” computation to provide a rough estimate of what percentage of California’s low relative collision rate can be attributed to its high relative rate of seat belt use. The established rate of seat belt effectiveness in reducing fatalities and injuries in the US is about 50%.²¹ As noted just above, California’s seat belt usage rate is approximately 20 percentage points higher than the national US average (88.6% versus 68.7%). Therefore, we can attribute about 10 percentage points of reduced injury and fatality rates to California’s intensive use of seat belts. As shown in Table 6, in 1998 the number of collisions with fatalities or injuries in California was below the USX average by about 20 percentage points (= 1- [10.6/13.2]). Thus about 50% (i.e. 10 percentage points out of 20) of California’s reduced rate of collisions with fatalities or injuries can be attributed to its greater use of seat belts.

A variety of other factors may explain the remaining 50% of California’s reduced rate of collisions. For one thing, California has also been a leading state in reducing driving under the influence of alcohol and for another, the state made significant improvements in the safety of its roadways during the 1990s.²² These factors, however, are not easily evaluated with a “back of the envelope” computation.

Instead, a pooled, cross-state, time-series, regression analysis is the proper method for evaluating the impact of all aspects of improved driving safety (including greater seat belt use) on incurred insurance losses. Such a study, of course, would have to control for all other systematic influences on incurred losses (including regulatory regime, number of miles driven per car, and so on). Although cross-sectional auto insurance studies do exist—for example,

²¹ An excellent source of effectiveness statistics is National Highway Traffic Safety Administration [1999a]. For example, the “official” effectiveness rate for fatalities is 45% (p. 12), for moderate injuries is 53% (p. 15), and for serious injuries or greater is 67%. (p. 17).

²² We do not consider air bags because cars in all states share the same air bag features, and thus the effects of air bags should be reflected in the US data that we are using as our base line. In fact, to the extent that California’s benign climate creates an older stock of autos, the air bag effect might actually work in reverse.

Cummins and Weiss [1991] and [1992], Grabowski, Viscusi, and Evans [1989], and Harrington [2001]--they are not in a form that can answer our specific questions. We hope to carry out such a study in the near future.

Premium Structure Created by Proposition 103

As noted in Section 1, Proposition 103 required that auto insurance be provided to all drivers who meet its “good driver” criteria, and that the premium charged such good drivers be at least 20 percent less than the premium the insurance firm would have otherwise charged them. Thus, as a result of this premium incentive, Proposition 103 might well have the effect of creating safer drivers. It is noteworthy in this respect that previous studies by Blackmon and Zeckhauser [1991] and Jaffee and Russell [1998] do find that drivers are sensitive to insurance premiums when deciding whether to own a car, or if they own a car, whether to insure it.²³ More directly, Cummins and Weiss [1999] and Dionne, Gourieroux, and Vanasse [1999] provide direct empirical support that financial incentives encourage safer driving. More complete conclusions with regard to the effects of the specific Proposition 103 incentives toward driving safety, however, would require a new pooled, cross-state, time-series, regression analysis, as just described.

Of course, incentives for safer driving created by regulatory actions are not necessarily welfare enhancing. The problem is that while consumers will respond to the good driver premium incentives by driving more safely, the benefit in reduced insurance claims may not be worth the disutility that safer driving creates. On the other hand, there may also be social

²³ Further evidence is available in California, as well as in some other states, since drivers that receive a moving violation may have the option to attend 8 hours of “driver education” in order to remove the violation from the driving record that is made available to insurance companies. Through direct observation, the authors can confirm that many individuals with apparently high hourly opportunity costs attend these classes, suggesting that they expect to avoid a significant increase in their auto insurance costs as a result.

externalities to safer driving—for example, fewer innocent, third-party, injuries and fatalities. Thus, from a technical perspective, it is an open issue whether the safe driver components of Proposition 103 are welfare enhancing. Nevertheless, it seems fair to conclude that the general public is likely to judge any increases in driver safety that may have been induced by Proposition 103 has unequivocally beneficial.

c) The Benefit of Reducing Auto Insurance Fraud and Dissipative Expenses

We next turn to a second set of factors, different from driving safety, that may explain the absolute and relative declines in California's incurred insurance losses during the post-Proposition 103 period. Rosenfield [1998, p. 121], for example, argues that Proposition 103 created a significant decrease in the payment of losses on fraudulent claims and in dissipative expenses. His key assumption is that, prior to Proposition 103, auto insurance premiums were based on a "cost pass-through" system, in which the costs of fraud and dissipative expenses were simply passed through to insurance premiums. Then, when Proposition 103 placed a ceiling on premium levels, the firms had to control fraud and their expenses in order to maintain their profits levels.

Rosenfield reinforces his case with reference to the observed profit rates of the insurance industry in California and USX. We have already seen in Figures 8 and 9 that no significant decline occurs in the relative rate of return earned by California's auto insurance industry, and, in fact, a significant absolute and relative increase in the rate of return occurs in the liability component of the industry. These results are particularly consistent with significant savings being created by anti-fraud activity if fraud occurs primarily with regard to liability claims. This is plausible, since it is much easier for an insurance firm to verify physical damage than to verify, say, a fraudulent pain and suffering liability claim.

It is essential for this argument, of course, to understand why insurance firms did not find it in their best interest to control fraud and expenses even before the passage of Proposition 103. A possible mechanism for this effect is based on the consumer ill-will that an insurance firm may create when it falsely accuses a customer of fraud. In this case, there may be a “bad equilibrium” in which all firms in the industry ignore insurance fraud, in order not to create a reputation as a firm that falsely accuses its customers. In this situation, it is possible that a major regulatory change such as Proposition 103 may push the system toward an alternative “good” equilibrium, in which all firms in the industry fight fraud and reduce dissipative expenses.

Data on the amount of auto insurance fraud would, of course, provide a quantitative estimate of the effectiveness of anti-fraud activities, but we are unaware of any direct measures. The available empirical studies provide evidence concerning fraudulent claims by looking at indirect or proxy measures of fraud.²⁴ For example, the ratio of the number of bodily injury claims to the number of property damage claims is sometimes proposed as a fraud index; see Cummins and Tennyson [1996]. The idea is that fraud most commonly arises with bodily injury (BI) claims, while physical damage (PD) claims provide a base line for the number of real accidents.

Figure 10 shows this ratio for California and the US. The BI/PD ratio for the US rises slowly during the 1980s and early 1990s, then stabilizes in the late 1990s. The California BI/PD ratio, in contrast, rises steeply until about 1991, then declines equally sharply, reaching about the same value in 1999 as the value at which it started in 1983. It is tempting to associate the decline in California’s BI/PD ratio after 1991 with the passage of Proposition 103, but there are two confounding factors that make the proper interpretation of Figure 10 difficult. First, California’s

²⁴ See Abrahamse and Carroll [1999], Caron and Dionne [1999], Crocker and Tennyson [1999], Cummins and Tennyson [1996], and Weisberg and Derrig [1996].

rising rate of seat belt use during the 1990s would also create a declining pattern for the BI/PD ratio, since seat belts sharply reduce bodily injuries, but do not reduce property damage. Second, in Figure 10, both the rising pattern in the 1980s and the falling pattern in the 1990s, are fully consistent with a California Supreme court decision (“Moradi”), which had its effect just about 1990, and which eliminated a whole class of bodily injury law suits against insurance companies. We discuss the Moradi case in the next section. Thus, the BI/PD ratio can provide useful information on anti-fraud activity only if it were used as the dependent variable in a cross-section regression analysis, in the form we suggested earlier, with proper controls for the other factors that may have influenced the ratio.

<<Please insert Figure 10 here>>

At this time, we can only rely on anecdotal evidence, but it is strongly suggestive that auto anti-fraud activities in California have significantly reduced the amount of auto insurance fraud in the last ten years. For example, the largest category of press releases on the web page of California’s Department of Insurance refer to cases of auto insurance fraud that have been apprehended. Given the possibility that auto insurance fraud has significantly declined, it is certainly plausible that Proposition 103 may have played a role here.

In addition to the possible effect in controlling fraud, Proposition 103 may also have contributed to an across the board cost cutting exercise within the insurance industry. Faced with a *de facto* freeze on premiums, the control of costs became essential to the preservation of profits. As Table 5 shows, underwriting expenses decline sharply in relative terms between 1990 and 1998.

The view that firms do not always operate at minimum cost was first suggested by Leibenstein [1966]. More recently, Borenstein and Farrell [1999] have found evidence consistent with the “x-efficiency” view that firms grow fat (with respect to costs) when they grow wealthy. In this view, firms cut costs when they are in economic distress, and to the extent that a freeze in premiums created economic distress, we would expect firms to try hard to control both underwriting expenses and to control fraud.

d) Third-Party Law Suits and Related Legal Issues

We next turn to a third factor that may explain the absolute and relative declines in California’s incurred auto insurance losses since 1988. In 1988, in the *Moradi-Shalal v. Fireman’s Fund* case (“Moradi”), the California Supreme Court reversed its earlier 1979 decision (in *Royal Globe Insurance Company v. Superior Court*), and denied third parties the right to sue insurance companies for bad faith damages.²⁵ Furthermore, Moradi continues in force today, although challenges from the consumer activist community also continue. For example, two referendum proposals were offered in the March 2000 election (Propositions 30 and 31), but both failed, each receiving only about 25 percent of the votes. Unfortunately for researchers, the timing of the Moradi case coincides almost exactly with the passage of Proposition 103, raising the issue of the role each of these forces may have played in creating declining incurred losses for auto insurance in California.

In a recent paper, The Foundation for Taxpayer and Consumer Rights [undated] (FTCR) has actively argued that the Moradi-Shalal case has sharply reduced liability claims paid by auto

²⁵ The injured third party always has the right to sue the primary party that created the injury. Given that the insurance firm has much deeper pockets, the right to sue the insurance firm directly is much more valuable.

insurance companies in California.²⁶ The ratio of bodily injury to property damage claims in California, as we just saw in Figure 10, shows the thrust of the evidence, namely that bodily injury claims are sharply falling since about 1990. Data on the frequency of claims, the average size of claims, and the number of auto insurance law suits all show a very similar pattern. This evidence is certainly consistent with the view that while the Global case in 1979 opened the flood gate to more and larger bodily injury claims, this gate was closed by the Moradi case in 1988. The problem, however, is that the same evidence is broadly consistent with a reduction in bodily injury claims due to either (1) safer driving or (2) fewer fraudulent claims.

It is a also major matter of debate in California whether the Moradi decision represents good public policy. The Foundation for Taxpayer and Consumer Rights argues that Moradi allows the insurance industry to “low ball” or reject claims unfairly, consistent with Figure 10, and similar evidence. The insurance industry, in contrast, argues that Moradi has acted as a strong deterrent against fraudulent claims, consistent with the same evidence.

Our interest in the current context, however, is focused on whether or not the Moradi decision represents a third major factor, along side safer driving and fewer fraudulent claims, which can explain the sharp relative decline in California’s incurred insurance losses, and thereby the decline in California’s auto premiums. Hamm [2000] has recently carried out a pooled, cross-state, time-series, regression analysis to provide evidence on behalf of the insurance industry against referendum Propositions 30 and 31 referred to earlier. This study used average liability premium as the dependent variable, and found reductions in average premiums up to 14.5% could be attributed to the existence of Moradi. On the basis of this evidence, our preliminary conclusion is that Moradi does represent an important third factor. We

²⁶ The paper, “The Low-Balling of the California Auto Insurance Claim,” is most readily available on the web page of The Foundation for Taxpayer and Consumer Rights, at <http://www.consumerwatchdog.org> .

hope to obtain further information on this issue from our own cross-state regression analysis, planned for the near future, which will also focus on incurred losses and accidents as dependent variables.

e) **Profit Margins**

So far in this section, we have discussed a series of factors, such as improved driving safety and constraints on third-party law suits, that reduced the costs faced by auto insurance firms. We now consider the extent to which the cost reductions were actually passed through to consumers in the form of lower premiums.

To the extent that the prior approval provisions of Proposition 103 slowed down the pass through of reduced costs, profit margins in the industry would rise. Since profit margins are one of the proximate determinants of premiums, (see Figure 1), an increase in profit margins would cause premiums to fall by less than they would have fallen if the industry had remained unregulated. This possibility that regulation causes margins to increase during a period of falling costs has been noted by a number of authors, see for example Harrington [1984], Cummins and Outreville [1987], Tennyson [1993] and Fung et al [1998]. An excellent review may be found in Harrington and Niehaus [2000].

The margin increasing mechanism noted by these authors is based on the time lag between rate filing and rate approval, a lag which holds up prices during a period of falling costs. A more strategic mechanism would make firms reluctant to reduce premiums by the full amount when costs are falling, since if costs rose in the future it might be difficult to obtain regulatory approval to increase premiums.^{27, 28}

²⁷ This cost averaging requires a non-competitive industry in the short run. Given the costs of entry and exit, it is certainly possible that firms would not have incentive to take advantage of the short term rents.

The evidence supporting the regulatory lag hypothesis is mixed. As noted by Harrington and Niehaus [2000] p. 681, Tennyson [1993] finds evidence that current inverse loss ratios for automobile insurance have a larger dependence on lagged values in states with prior approval, but Stewart [1984] found that prior approval regulations had little or no effect on loss ratios in commercial lines.

The evidence for California is presented in Figure 11. As can be seen, consistent with the regulatory lag hypothesis, dollar profit margins (defined as earned premiums minus costs (incurred losses plus underwriting expenses) per insured car) rose more in California than in the US throughout the period after prior approval.²⁹ By 1998, the relative profit margin in California was higher than in the rest of the US by approximately \$50.

Taken at face value, Figure 11 is consistent with the hypothesis that Proposition 103 created a positive regulatory component in California auto insurance premiums, raising the premiums approximately \$50 per insured car, which is more than 10% of the average premium paid in 1998. The problem is that the regulatory lag hypothesis is not the only force which can explain these data. As Venezian [1985] noted, the behavior of profit margins in the US insurance industry is also consistent with an extrapolative forecasting model in which recent past losses are used as a basis for forecasting future losses. Venezian's model uses an estimation period of 3 years and an extrapolation period of 2 years, and shows that this generates a second order

²⁸ This possibility is relevant only to the liability component of California auto insurance, since underwriting costs for the physical damage component were steadily rising during the 1990s.

²⁹ It has not been necessary to include investment income, since our primary focus is to compare California and the rest of the US profit margins, and investment income would not be a differentiating factor.

Profit margins are also commonly computed as $(\text{price} - \text{average cost})/\text{price}$, that is, a percentage profit margin. The percentage profit margin must be used when computing an aggregate profit margin for a multi-product firm, since dollar profit margins are not comparable across different products. We believe that the dollar profit margin is the appropriate measure for our current case with average auto insurance premiums. We have, however, carried out comparable computations based on the percentage profit margin and obtain very similar results.

autoregressive process for margins with a period of about 6 years.³⁰ When industry forecasts of losses are extrapolative, a state such as California with a fall in costs relative to the average will see its profit margins rise.

How much of the increase in profit margins is due to regulatory lag and how much is due to industry forecasting methods is still an open question. With enough years of data, a regulatory change such as Proposition 103 provides the perfect experiment to measure this, since, under the regulatory lag hypothesis, the passage of Proposition 103 would be expected to change the value of the coefficients in the second order auto regression scheme which is known to characterize the time series behavior of the profit margin. In the absence of these data, and given the very limited understanding of why insurance margins behave cyclically in the first place, we see no scientific basis at this time for any quantification of the effects of Proposition 103 on margins.

f) Lower Quality Auto Insurance

Before concluding, we should consider a reduction in the quality of auto insurance in California as an alternative means to reconcile the implications of the economic theory of regulation with the apparently successful changes that actually occurred in California's auto insurance market. The case here is that declining premium levels and rising industry profit rates are mutually consistent with increased regulation if the quality of the underlying insurance product is itself falling at the same time. Unfortunately, we are unaware of any dependable direct measure of insurance quality. The data we do have available, however, do *not* confirm any significant decline in auto insurance quality over the last decade.

³⁰ To be sure, this forecasting methodology fails to satisfy the canons of full information rational expectations forecasting. It may be worth pointing out, however, that naive extrapolative forecasting models seem to describe forecasting behavior even of professional forecasters of corporate earnings, see Darrough and Russell (forthcoming).

First, on the anecdotal level, little or no public attention appears to be directed to the issue of declining insurance quality. For example, the web page of The Foundation for Taxpayer and Consumer Rights³¹—the major consumer activist group opposing the auto insurance industry-- allocates a great deal of space to the level of auto insurance premiums and to legal limitations such as Moradi, but makes no reference at all to insurance quality.

Second, while data on industry expenses in California, such as in Table 5 above, do indicate declining absolute expenses (for the liability component) or at least declining relative amounts (for the physical damage component), the magnitudes are small compared to the declines in direct losses incurred. Furthermore, we have no grounds for attributing the declining expenses to lower insurance quality rather than, as suggested in the previous section, to a reduction in dissipative expenses.

Third, the complaint counts on the special web page maintained by California's Department of Insurance (DOI) for auto insurance complaints are remarkably low. Specifically, the DOI publishes a "justified complaint ratio", meaning the number of annual complaints that the DOI has judged to be justified divided by the number of exposures (policies). For the 50 largest auto insurance companies in 1998, the aggregate complaint ratio was .000053, which is to say .0053%, or 5.3 complaints per 100,000 exposures.³¹ This appears to be a very low complaint ratio, certainly consistent with the general lack of public attention to this issue.

Overall, we do not feel that a declining level of auto insurance in California is a significant factor in understanding the sharply declining auto premiums and incurred losses (both absolutely and relatively) in California over the last ten years.

³¹ This has been computed by adding up the total number of complaints for the 50 companies and dividing by the total exposure of these companies. The DOI shows only the 50 largest companies in a single table, although the complaint ratio can be called up for any specific firm writing auto insurance in California.

g) Summary: Forces Determining Insurance Premiums in California

In this section, we have investigated an extensive list of factors that may be responsible for the significant decline in both absolute and relative auto insurance premiums in California during the 1990s. We focused on the sharp decline in incurred losses on auto liability insurance as the primary proximate determinant of the declining premiums, and then considered what factors may have created the sharp decline in incurred losses.

Our analysis identified two key factors that are independent of Proposition 103, namely greater driving seat (with a focus on increased seat belt use) and the elimination of 3rd party law suits against insurance companies for bad faith (the Moradi case). Back of the envelope calculations attributed about 50% of the relative decline in collisions with injuries or fatalities to greater seat belt use, and up to 14.5% of the relative decline in auto insurance premiums to the Moradi case. At this time, we are not able to quantify the impact of other forms of increased driving safety, such as reductions in driving under the influence, and more safely designed roadways.

Our analysis also identified two key factors that are directly linked to Proposition 103 and that could explain at least some part of the decline in incurred liability insurance losses. The first factor is the “good driver” discount required by Proposition 103, which provides a strong financial incentive for safer driving. The second factor is the incentive created by the Proposition for insurance firms to carry out more aggressive anti-fraud programs and otherwise to reduce dissipative expenses, in order to main their profit rates in the face of constraints on premium levels.

Finally, our analysis identified one factor, an increase in profit margins that would tend to raise, not lower, auto premiums in California. This factor may be linked to the prior approval provisions of Proposition 103, but there is as of yet no quantitative assessment of this effect.

8. Conclusion

There is a widespread presumption among economists that, good intentions aside, regulation of a competitive industry frequently distorts market incentives and for this reason ends up doing more harm than good. In the context of insurance markets, the harm to consumers is thought to arise from a number of factors. For example, by holding prices down, prior approval regulation is thought to cause firms to exit the market, reducing availability and forcing consumers into incentive challenged assigned risk pools. Prior approval is also thought to increase costs in other ways ultimately leading to increases not decreases in premiums.

Contrary to the standard view, in this paper we have shown that none of the commonly predicted negative effects of regulation seem to have resulted from the 1988 passage of Proposition 103 in California. Indeed taking post Proposition 103 industry performance at face value (in comparison with the average U.S. performance), the regulatory regime introduced by the Proposition seems to have been remarkably benign.

The problem, however, is that industry performance after a regulatory shift cannot be taken at face value. Regulatory shifts take place within a general economic environment, and changes in this environment can easily have just as much impact on industry performance as the regulatory shift. For example, the partial deregulation of the electricity industry in California in 1996 was followed by a period of unexpectedly large input price increases. Within this new environment the failure to deregulate the retail price of electricity undid the benefits of the partial

deregulation. Had input prices fallen, as most industry experts expected, the deregulation experiment might well be judged very positively today.

As we have shown, the regulation of auto insurance in California took place against a background of sharply falling loss costs, an input environment exactly the opposite of that in energy. In this case, the regulation of premiums by prior approval becomes quite consistent with declines in premiums and increases in profits, and the *ceteris paribus* predictions of economic theory no longer hold.

And thus we have the fundamental scientific challenge. How do we separate the effects of the regulatory regime shift from the effects of the simultaneous change in the economic environment. In this paper, we have isolated two major contemporaneous changes in the insurance industry in California. As we have shown, at approximately the same time the industry was adapting to Proposition 103, there were major improvements in California's record of driver safety, improvements brought about by strict enforcement of seat belts, DUI legislation, and possibly other factors. Secondly the legal environment changed significantly when the Moradi decision ended the right of third parties to sue insurance companies for bad faith settlements.

Both of these environmental changes had the effect of reducing loss costs, the safety improvements directly because of the reduction in the frequency and severity of accidents, the Moradi decision by facilitating the control of fraud. As we have noted, it would require a careful cross state analysis of the determinants of premiums and losses to disentangle the effects of all these factors. In this paper, we have conducted a partial analysis of the relative effects of the regulation and the environment, and based on this we can report the following findings:

1) We find no evidence of the “traditional” adverse consequences from the Proposition, such as firm exit, an expanding assigned risk pool, or declining industry profit rates.

2) We find the Proposition may have had a positive effect by (a) encouraging safer driving (though the incentives created by the required safe driver discount for insurance premiums) or by (b) causing the firms to control fraud and dissipative expenses (improving x efficiency) by limiting their ability to pass such costs on to their customers.

3) We find the Proposition may have had a detrimental effect on auto insurance premiums by increasing profit margins.

Taken together, these findings suggest that drivers in California have little to regret from the passage of Proposition 103 and the regulatory regime it introduced.

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Figure 1: Fundamental Factors, Proximate Determinants and Earned Premiums

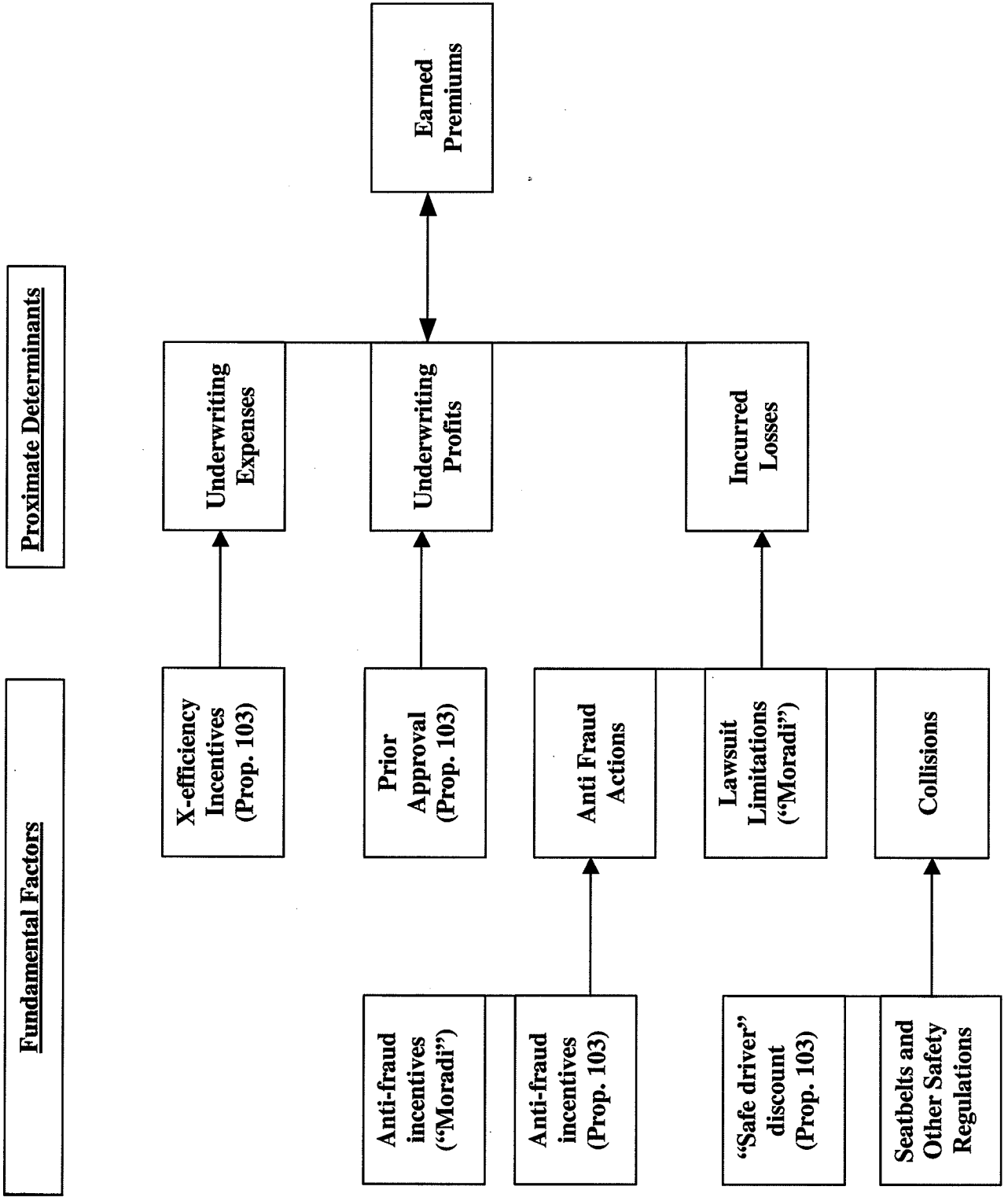


Figure 2: Auto Insurance Survey: <http://www.insurance.ca.gov>

1999 Automobile Insurance Survey



RESULTS

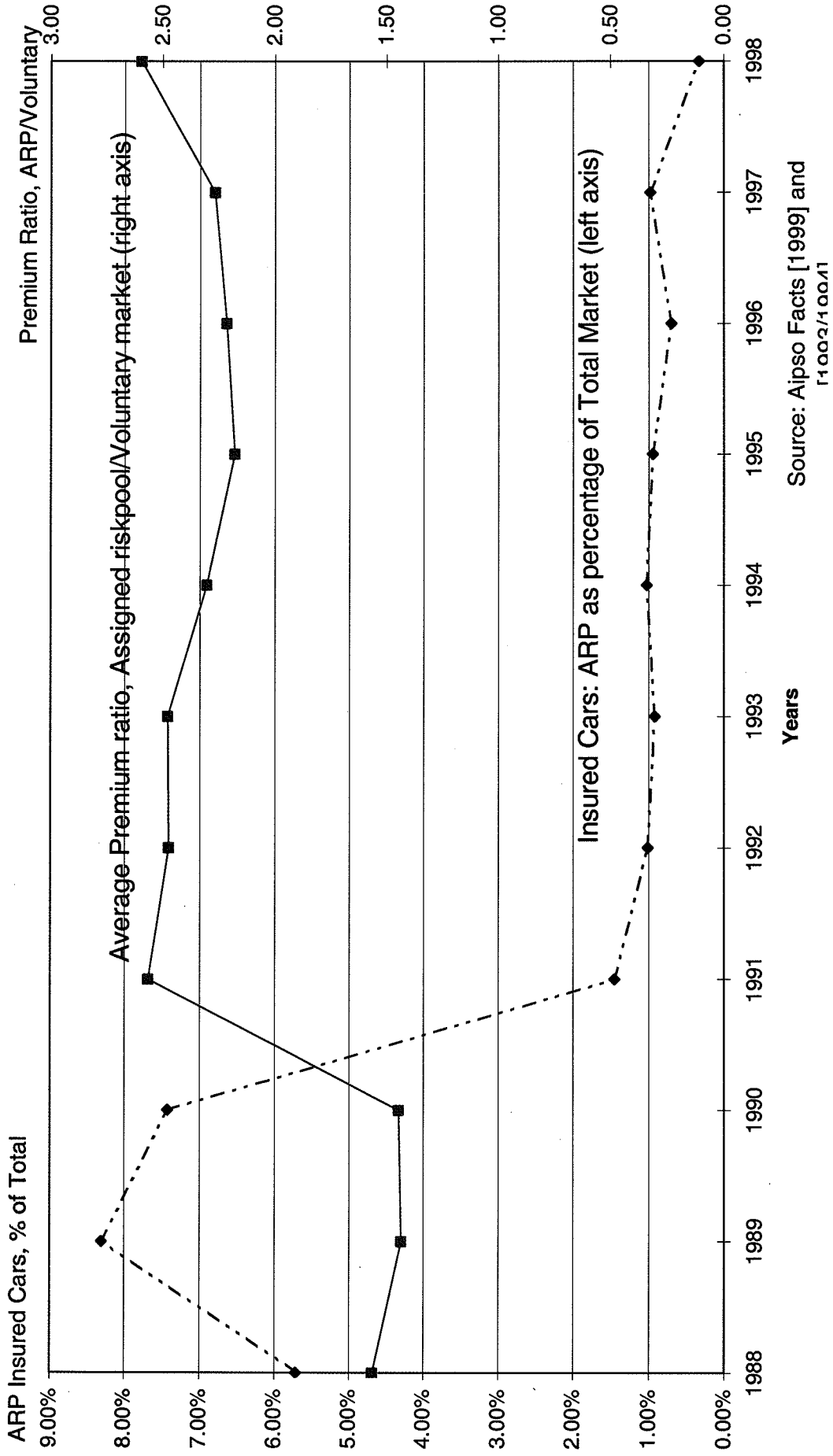
Based on the information you entered, the following profile and results most closely resemble your situation. Please contact a company representative for an actual quote. Please note: THIS IS NOT A PREMIUM QUOTE.

Standard Coverage Married Couple (no children driving),
Husband & Wife have no violations or accidents,
Berkeley

<u>Company Name</u>	<u>Annual Premium</u>	<u>Company Name</u>	<u>Annual Premium</u>
<u>21st Century:</u>	1,846	<u>Hartford:</u>	2,252
<u>AAA:</u>	2,464	<u>Infinity:</u>	6,996
<u>Allstate:</u>	2,248	<u>Liberty Mutual:</u>	3,395
<u>California Capital:</u>	2,686	<u>Mercury:</u>	2,672
<u>Civil Service Employee:</u>	2,100	<u>Millers Ins:</u>	3,813
<u>Clarendon:</u>	6,132	<u>National General:</u>	3,338
<u>CNA Personal:</u>	2,839	<u>Nationwide:</u>	2,324
<u>Coast National:</u>	2,494	<u>Pacific Specialty:</u>	N/A
<u>Colonial Penn:</u>	2,314	<u>Progressive:</u>	2,243
<u>CSAA:</u>	2,496	<u>Safeco:</u>	1,893
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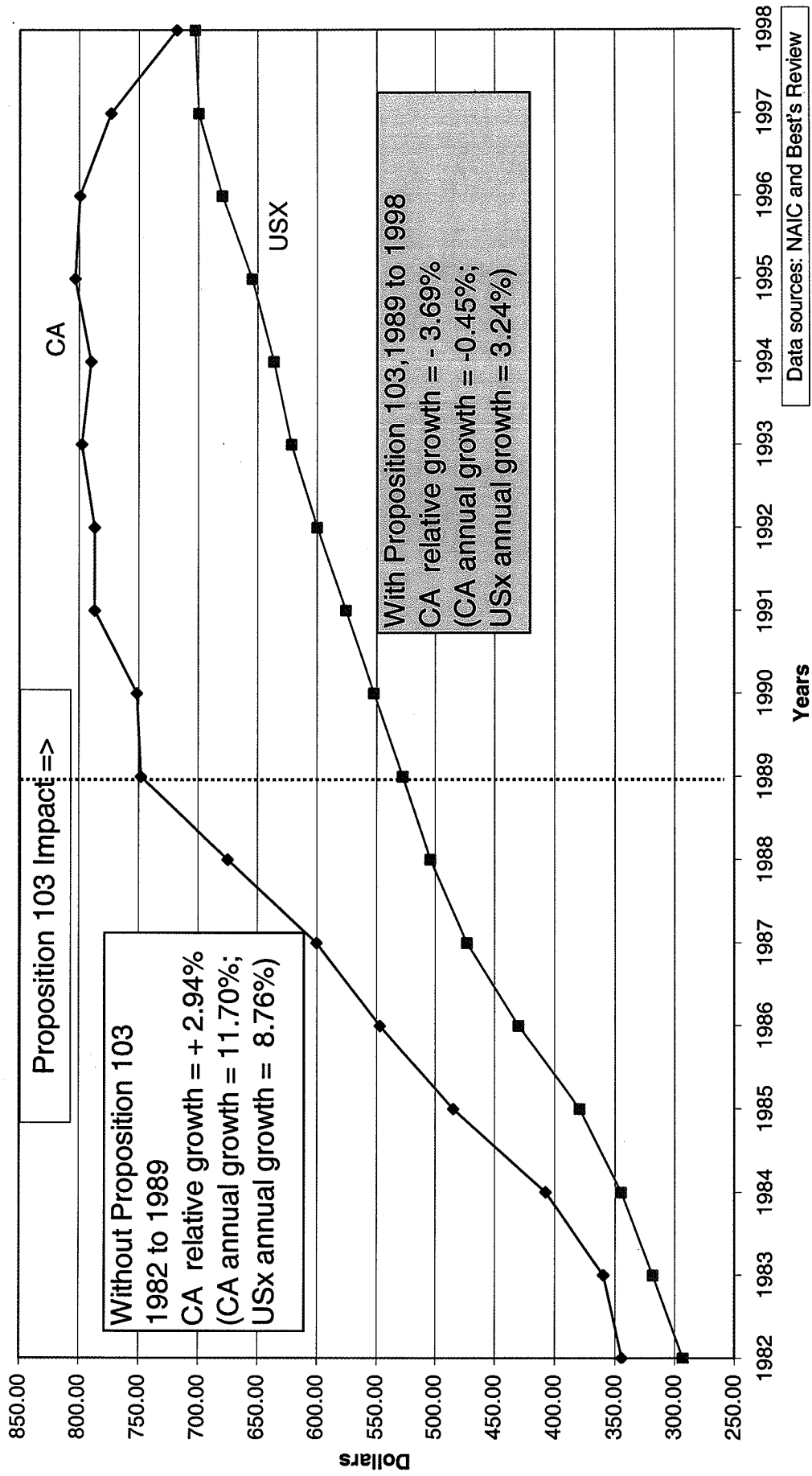
Profile (32A)

Figure 3: California's Assigned Risk Pool (ARP)



Source: Aipso Facts [1999] and
11002/10041

**Figure 4: Average Insurance Expenditure (per personal auto)
California (CA) and US without CA (USX)**



**Figure 5: Average Liability Premium (per personal auto)
California (CA) and US without CA (USX)**

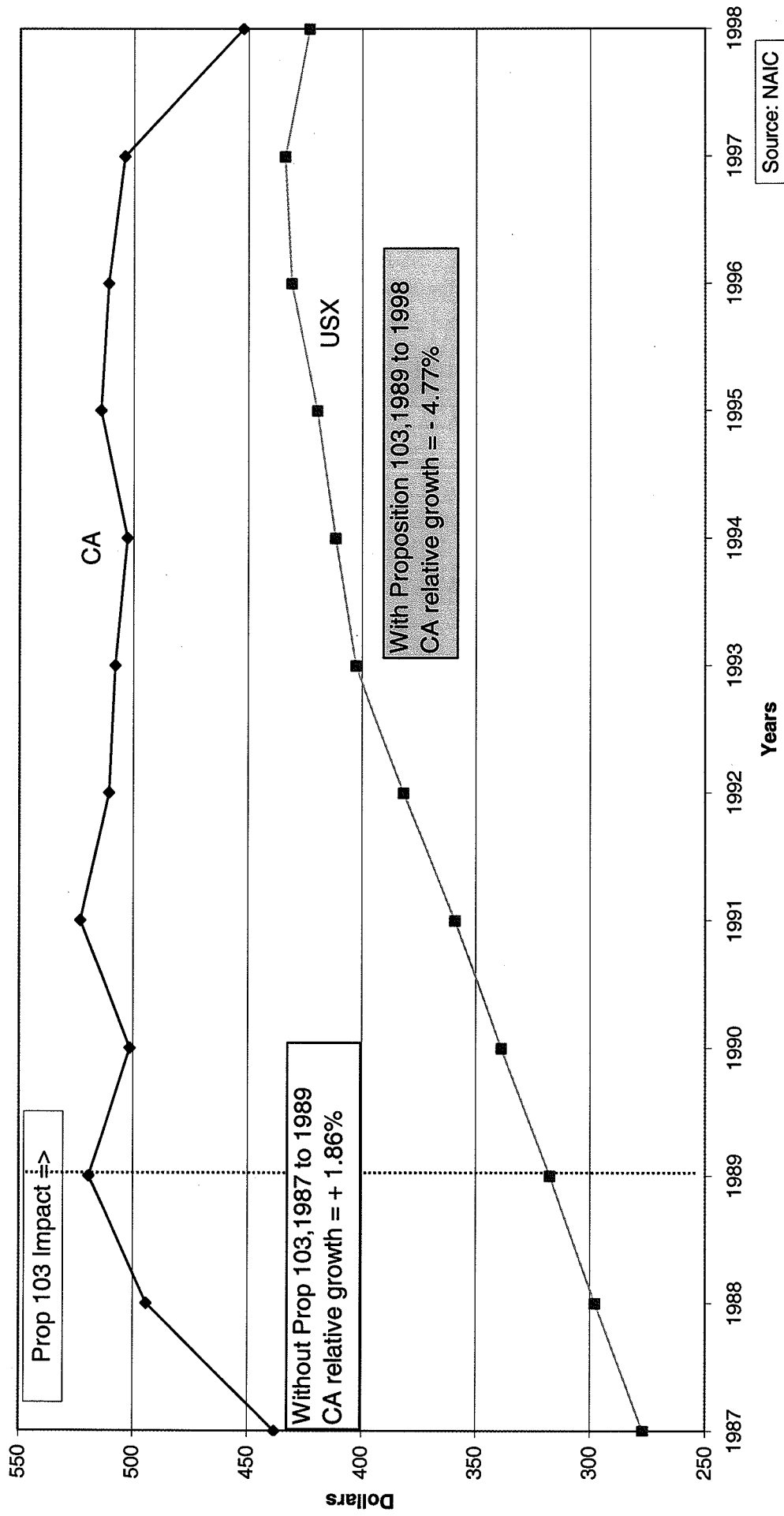
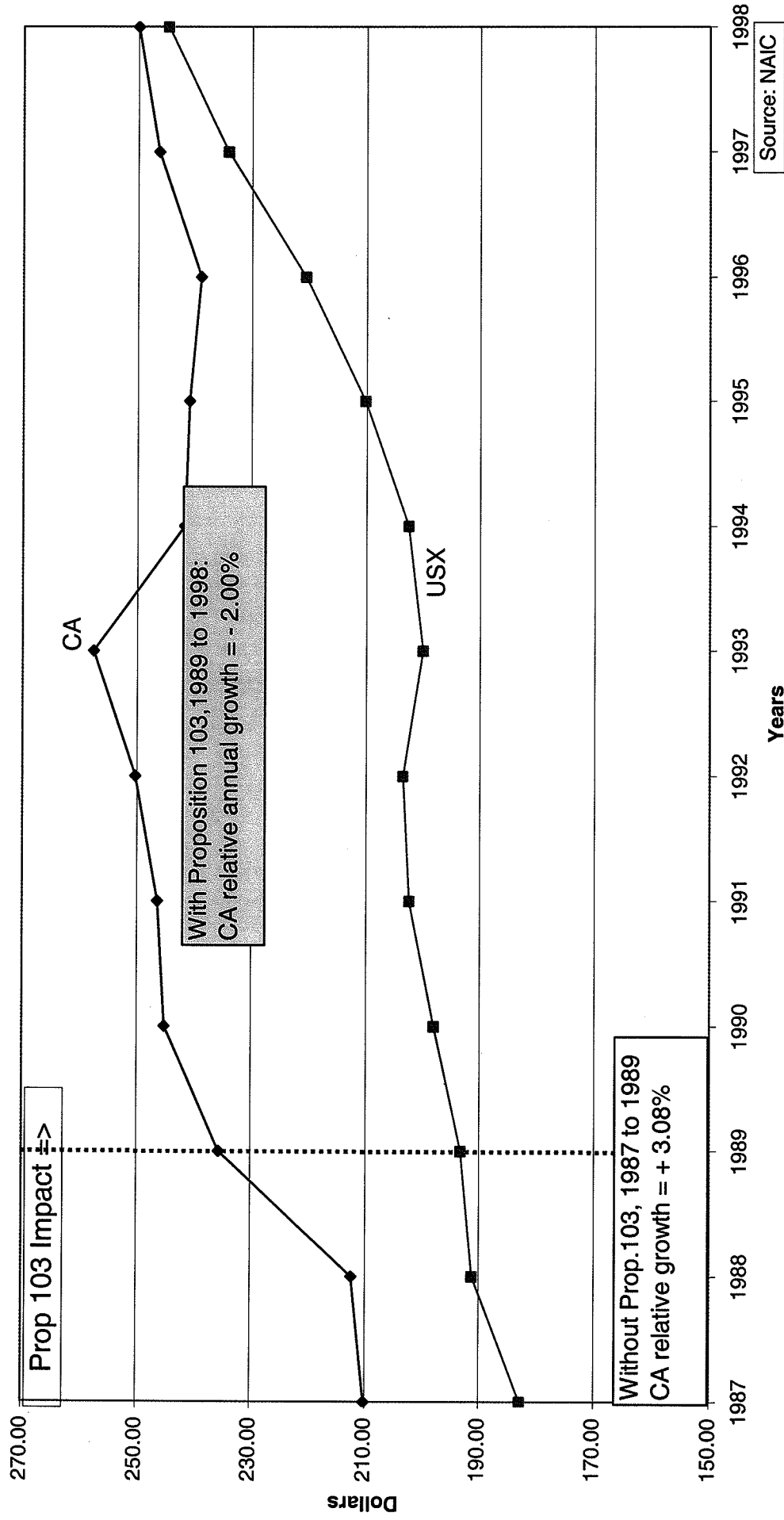
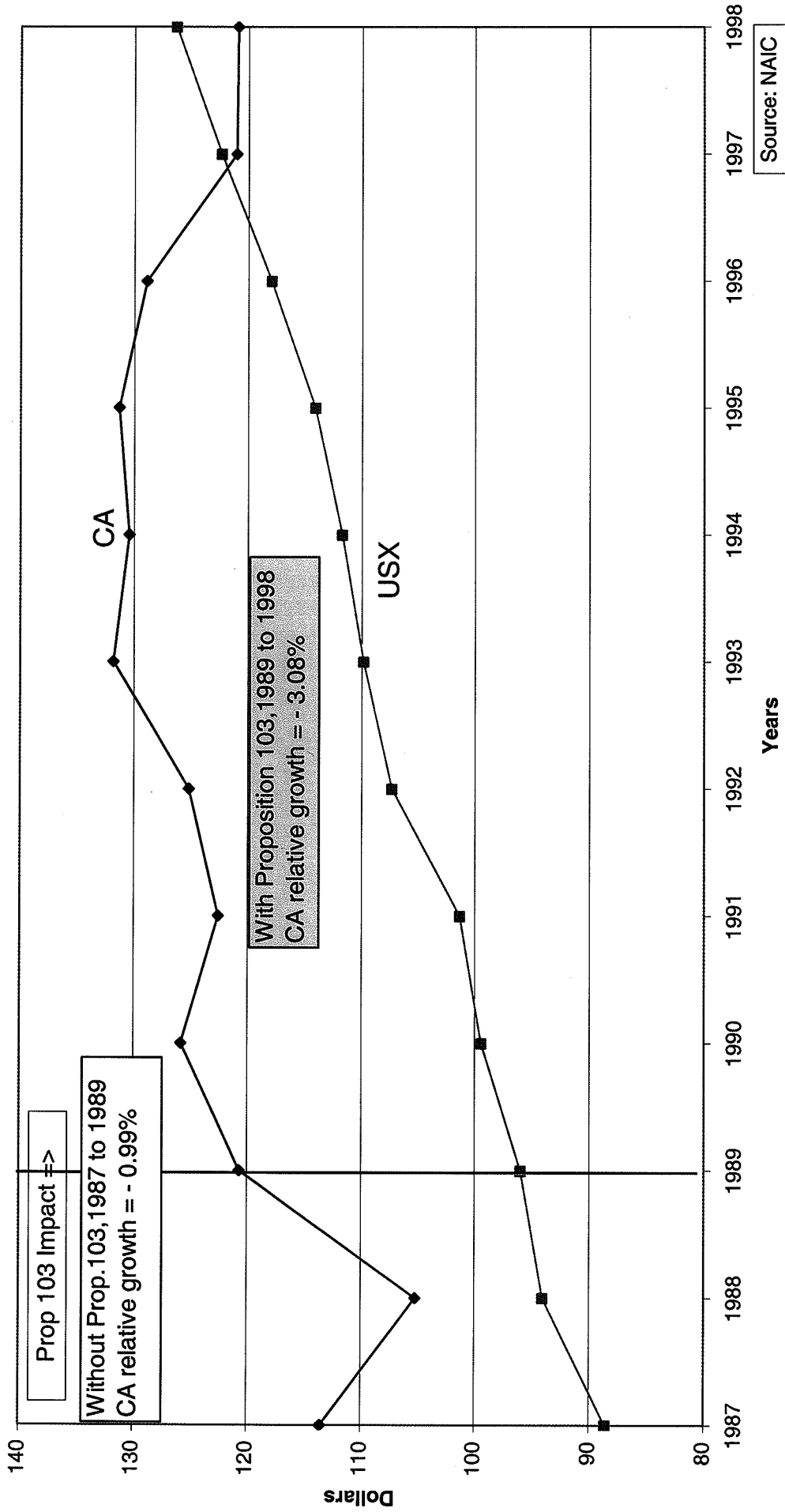


Figure 6: Average Collision Premium per Personal Auto
California (CA) and US without CA (USX)

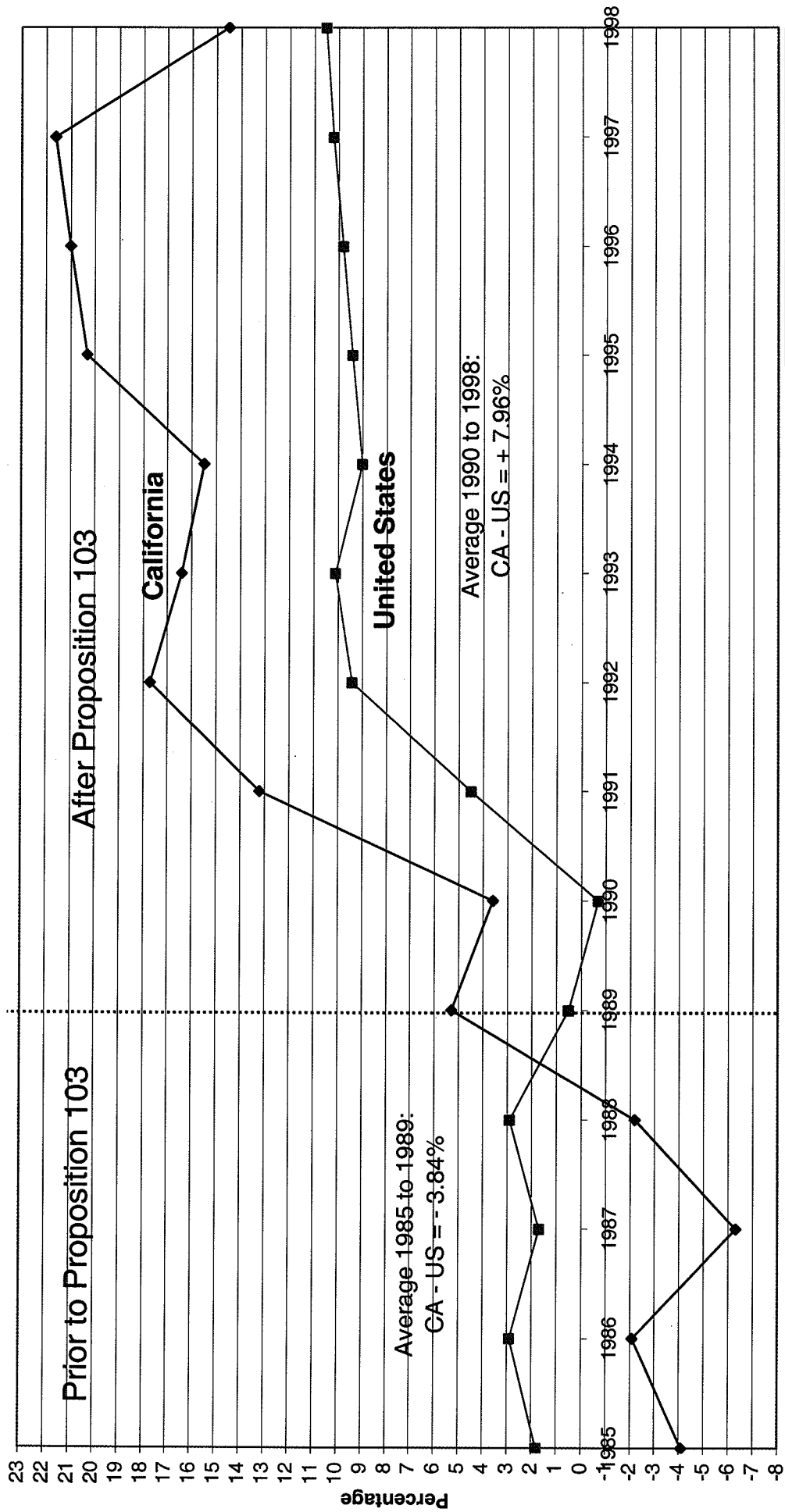


**Figure 7: Average Comprehensive Premium (per personal auto)
California (CA) and US without CA (USX)**



Source: NAIC

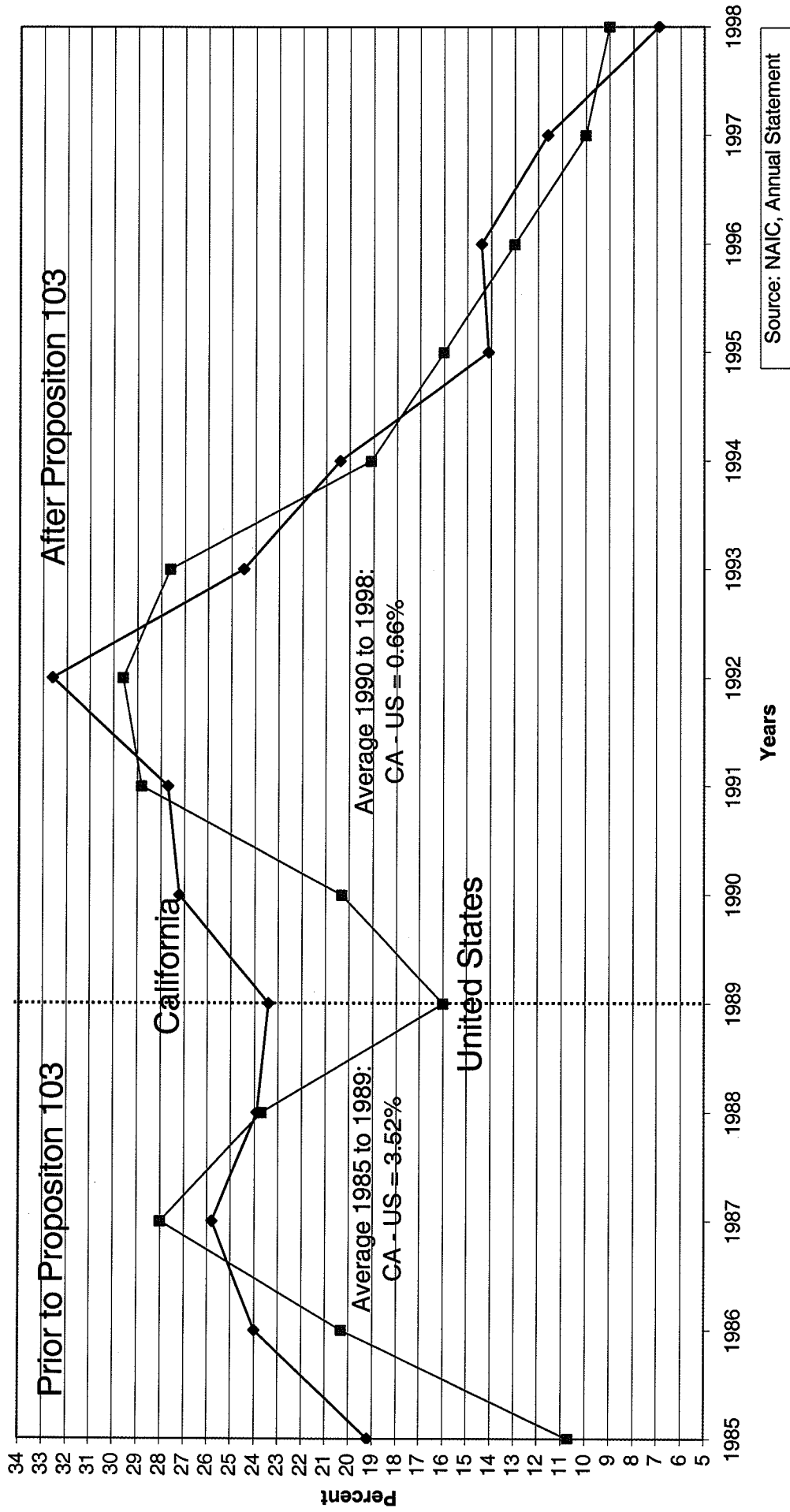
Figure 8: Return on Net Worth for of Private Passenger Auto Insurance Liability Component



Source: NAIC, Annual Statement data

Years

**Figure 9: Return on Net Worth for Private Passenger Auto Insurance
Physical Damage Component**



**Figure 10: Ratio, Bodily Injury to Physical Damage Claims (per 100 insured cars)
California (CA) and US Except California (USX)**

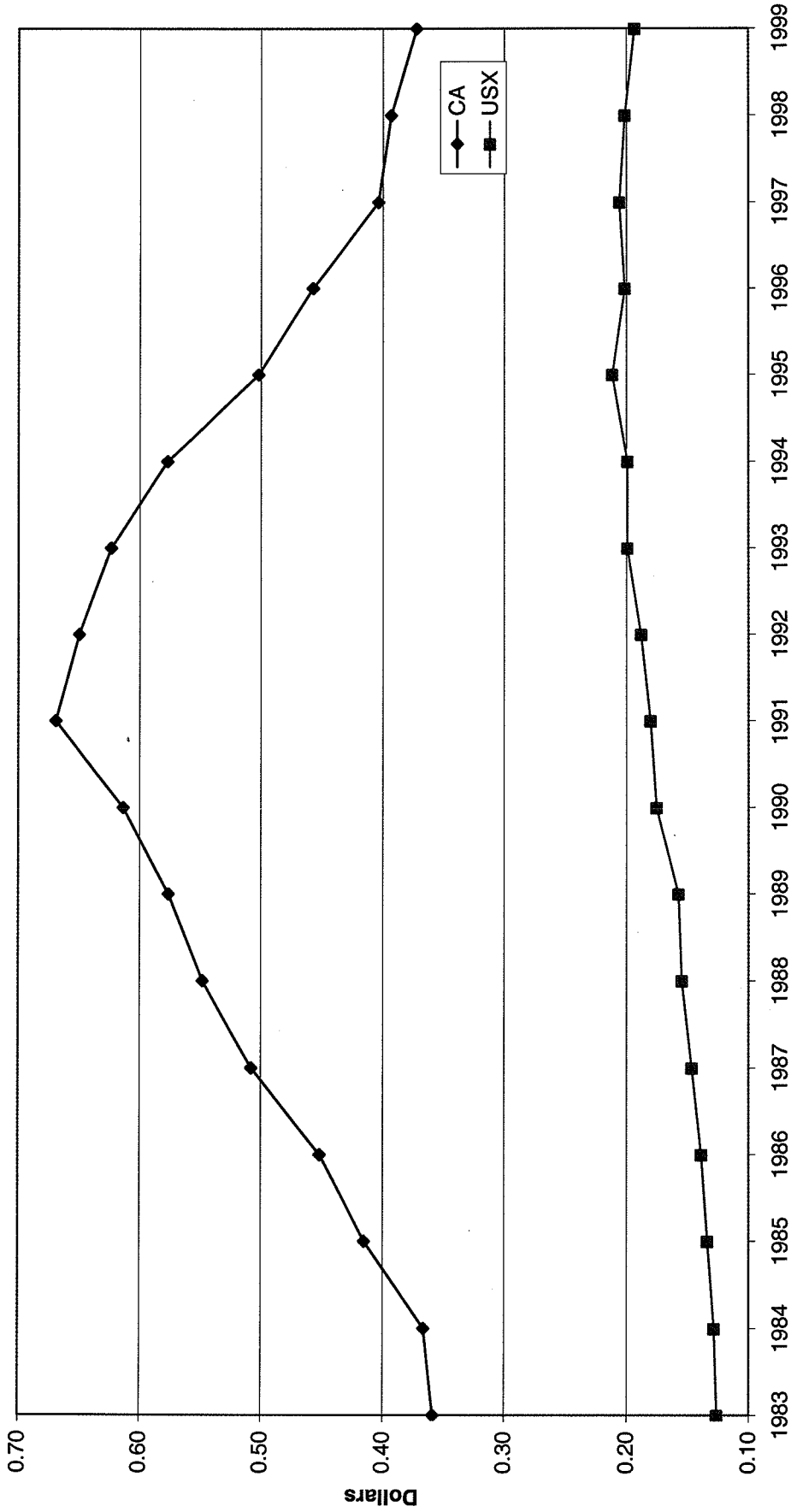


Figure 11: Dollar Profit Margins (Premiums - Expenses) per Insured Car Liability Component, 1990 to 1998, CA, USX, and CA - USX

