THE AIR BAG/ SEAT BELT CONTROVERSY: HOW THE STATES VOTED

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INTRODUCTION

Today, air bags are either standard equipment or a popular option on most automobiles. Voter-approved, mandatory state seat belt laws also span the country. With this apparent strong demand for auto safety, it is hard to remember the grueling regulatory process of the 1970s that attempted to force feed air bags to U.S. consumers, partly at the expense of infrequently used seat belts.[1] It is even more difficult to recall that the states were eventually handed the air bag/seat belt hot potato and required to make an up or down vote on air bags versus state-enforced mandatory seat belt laws. Along the way, air bags became an icon of safety [Peterson, Hoffer and Millner, 1995, 253].

The episode began in 1970 when the National Highway Traffic Safety Administration (NHTSA) announced a rule that required all new autos to have passive restraints by 1 January 1973.[2] The NHTSA rule, which quickly became associated with air bags, raised the ire of members of the auto industry, who had tried mightily, but unsuccessfully, to sell bag-equipped cars in the free market [Rowan, 1975].[3] The rule just as quickly gained the support of auto insurers, who then became major airbag advocates [Kneuper and Yandle, 1994]. A media campaign ensued, sending a publicly-approved message that equated air bags with safety [Gallup, 1984].

The bitter struggle that resulted led to court-imposed delays, legislative intervention, and finally a Reagan campaign promise to bring regulatory relief to the U.S. auto industry. In 1983, a full ten years after the original rule was to go into effect, Reagan administration officials tried unsuccessfully to rescind the airbag mandate. Declaring the rescission to be "arbitrary and capricious," the federal court remanded the decision to the Department of Transportation. In response, then-Secretary of Transportation Elizabeth Dole made an unusual regulatory move that embraced the Reagan Administration's push for federalism while satisfying the safety lobby's demand for federal action [Graham, 1985]. Calling on the states to settle the matter, Secretary Dole announced that all newly-produced cars sold in the U.S. would have to be equipped with passive restraints (air bags) by September 1989, unless two-thirds

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of the country's population was covered by state mandatory seatbelt laws [Federal Register, 1984].[4]

The decision to shift an ongoing regulatory process from the Washington regulator's desk to state legislatures and voters may be unique in the annals of federal regulation.[5] But, more to the point of this article, the voting activity triggered by the Dole decision provides an opportunity to discuss and model the voting outcomes in the light of two public choice theories. The first theory, which for convenience we term "orthodox," models the legislator/voter as pure economic man, carefully comparing the net benefits of responding to organized interest groups. The second theory, termed "expressive" by the originators, Brennan and Lomasky [1993], looks to the polling place, where citizens vote on legislation and representation. Fully aware of the trivial effect of a single vote, the voter discards the narrow benefit/cost calculus and seizes the voting opportunity to express heartfelt support for widely-held social values and popular icons like air bags. The legislator/voter is caught in a theoretical no-man's-land. He must somehow satisfy the special interests while being held accountable on election day.

This article reports the outcome of an evolving research program that focuses on the Dole-induced state voting process, research that spans a 10-year period. The influence of the Brennan-Lomasky expressive voting theory came late in our research program, long after we had built and tested a number of statistical voting models. Our initial modeling effort focused on the special interest (orthodox) theory of government. That part of the research yielded significant insights into the special interest struggle, which we will report. Then, after learning about expressive voting, we reinterpreted our basic model and variables, in an attempt to explain and test elements of the new theory. Given the evolutionary nature of our work, having not set out to examine expressive voting *per se*, we do not make strong claims about the results for expressive voting, which are inconclusive at best. However, we hope that our efforts to integrate expressive voting into the orthodox model and to show how the statistical models perform may be helpful to others who may travel the expressive voting path. In brief, the article provides an integrated theory, solid evidence that supports the orthodox approach, and inconclusive evidence in support of expressive voting.

The article begins with the development of a model that contains elements addressed by both theories. We next discuss variables included in a probit-based empirical analysis of mandatory seatbelt votes. Since the laws debated and passed by the various states are not identical, we then provide an analysis of the differences. The last part of our statistical study shows how the estimates might be used to explain the strategy of a seatbelt lobbyist.

THE THEORETICAL AND EMPIRICAL MODEL

The Theory of Legislative Votes

Public choice analysis of regulatory outcomes, which for convenience we term orthodox, focuses on the special interest theory of government in which well-specified economic agents are described as though they were involved in a political struggle to

purchase a particular legislative package [Tollison, 1988]. The stylized politician/broker responds by providing favors to the highest bidder. The mass of unorganized, rationally ignorant voters who elect politicians play only a passive role in the struggle; well-organized interest groups carry the day when legislation is written and passed.

Recently, Brennan and Lomasky [1993] have challenged the underpinnings of this orthodox explanation, arguing that the votes of ordinary people must still be accounted for, especially in general referenda. The enriched model posited by Brennan and Lomasky identifies two kinds of political preferences held by individuals involved in a political struggle: (1) instrumental preferences that are conditioned by opportunity cost, because the legislative outcome directly affects the individual's wealth; and (2) expressive preferences that map into socially-approved values and popular icons like auto safety. Expressive preferences, which unguided can run counter to the wishes of special interest groups, dominate when wealth is not affected. The disinterested, expressive voter is seen to relish the opportunity to make value statements in the voting booth; doing so carries zero opportunity cost.

Brennan and Lomasky point out that orthodox public choice can explain "those aspects of policy that depend on relative costs" but "cannot explain the 'demand' side of electoral politics, and hence it cannot explain ... why overall policy is what it is" [ibid., 88]. In short, Brennan and Lomasky challenge the public-choice analyst to deal with two important elements of the electorate: those who have a direct economic stake in an outcome and other active voters who may express values that affect outcomes.

In analyzing the positions taken in response to the Dole decision, we examine mandatory seatbelt outcomes across the 50 states through August 1987. Our estimating model blends orthodox and expressive considerations to see whether legislators are indirectly affected by expressive voting. We argue that successful legislators — those who are reelected — are capable brokers who balance the competing demands of special interests while signalling their commitment to important social icons. That is, the legislator's vote reflects a balancing of wealth transfers filtered by compatible voter preferences that could be expressed in the unconstrained setting of the voting booth [McCormick and Tollison, 1981, 18-22].

In the expanded model, the successful legislator maintains voter support through a costly process that transforms campaign contributions, C, into compatible expressive messages, E, that continuously attract broad voter supporter: $E = E(C)$. The legislator must satisfy the orthodox voters who are the source of contributions and have a well-defined economic interest in the politician's actions while appealing simultaneously to social values that can be expressed in the polling place. In equilibrium, the legislator must cover the marginal cost of his brokering activity, which we assume constant, $MC = B$.

The legislator's utility function is written in terms of expected lifetime income, the discounted value of net campaign contributions that determines wealth, W. Utility is written $U = U(W)$. As indicated, W is determined by the legislator's ability to gain funds net of marginal cost, F, while transforming the contributions of balanced economic interests into votes cast by expressive voters, $W = W(F)$. Therefore, the legislator's utility function is written: $U = U(F \mid E)$.

A majority outcome among legislators is characterized by an equilibrium in which the marginal cost of transforming contributions into compatible expressive votes is equal to the summed marginal benefits of special interest group net winners. Of course, it is possible that all net gains, other than for the political brokers, will be dissipated in the struggle [Tullock, 1967; Wenders, 1987].

The Empirical Model

We apply the empirical counterpart of the theoretical model to legislative seatbelt votes taken in the mid- to late 1980s.[6] Our estimating model uses a simple zero-one dependent variable that marks the outcome of mandatory seat belt votes across all 50 states from period July 1984 to August 1987, the post-Dole period. In all, 31 states passed mandatory belt laws during that period, and 19 states debated but failed to pass statutes.[7] The former were designated with a one and the latter with a zero.[8] We assume legislative majorities that acted to pass or reject legislation reflect the theoretical model just presented.

The general form of the statistical model, estimated as a probit, contains proxies for instrumental and expressive voting, which indirectly determine legislator wealth. Table 1 describes the variable. The general model is written:

$$LAW = F(AUTO, INSUR, AIR, EDUC, INC, FATAL, NOF, HIGH, PHYS).$$

The first three variables are proxies for narrow special interest groups that sought to influence the vote outcome. The coefficient on *AUTO*, which is the per capita number of auto industry employees by state, is predicted to be positive, supporting the stated position of the auto industry.[9] The bulk of the evidence suggests that, at the time of the votes, airbags were costly and not valued sufficiently by consumers to yield passage while mandatory belt laws would shift compliance costs to state governments.

The coefficient on *INSUR*, the per capita number of people employed in the insurance industry by state, is predicted to be negative on the basis of the regulatory record [Kneuper and Yandle, 1994]. Insurers have historically been pro-bag. One explanation for their special interest motivation is that air bags simplify actuarial estimation, since drivers no longer have the choice to use (or not use) physical safety protection, and air bags provide special protection against neck and head injuries, which are often settled in expensive and difficult-to-predict legal battles. State seat belt laws, on the other hand, were predicted to be more effective vis-à-vis a national passive restraint rule aimed at reducing fatalities and injuries, particularly since seat belt laws would immediately apply to the entire population of cars, while a passive restraint mandate would be phased in over time and affect only newly produced autos.[10]

AIR is a yes-no dummy variable that proxies for the political influence generated by airbag producers who have plants in particular states, making it less costly for their lobbyists to influence legislators. The coefficient is predicted to be negative.

TABLE 1
Description of Variables

AUTO	The number of individuals employed by U.S. motor vehicle manufacturers by state, divided by each state's population (in thousands).
INSUR	The number of individuals employed by Fire, Marine and Casualty Insurance Companies (SIC = 6331) by state, divided by each state's population (in thousands).
AIR	A dummy variable designating four states that contain plants for major air bag manufacturers.
PHYS	The number of physicians per 100,000 persons by state.
NOF	A dummy variable for states that have some form of no-fault auto insurance.
EDUC	The percentage of each state's population that has received at least a high-school education.
HIGH	State spending on highways per mile traveled.
INC	Per capita income by state.
FATAL	The average annual number of traffic deaths per 100,000,000 vehicle miles traveled by state (1980-4).
ADA	The average ranking for each state's Congressmen by Americans for Democratic Action.
PARTY	The percentage of Democratic legislators by state.

The data were obtained from the following sources: 1986 *Statistical Abstract of the United States* (Education levels by state [1980]); 1987 *Statistical Abstract of the United States* (Population in thousands [1985], Per Capita Income in nominal dollars [1985], The Rate of Physicians per 100,000 persons [1983], State Disbursement of Highway Funds [1984] and Composition of State Legislatures [1984]); The Motor Manufacturer Association's Handbook on Facts & Figures for 1986 (U.S. Motor Vehicle Manufacturers' Employment [1985], Total Highway Miles Traveled [1984]); U.S. Department of Labor (Employment for SIC Code 6331 [1985]); *Insurance Facts* (No-Fault Laws as of 1985); *Accident Facts* (Number of Traffic Deaths per 100,000 Miles Driven [1980-84]).

EDUC, the percent of the population with at least a high-school education, also reflects orthodox voting behavior. Numerous studies of seatbelt use show more highly educated drivers are more frequent users [Robertson, 1976; 1977; 1984; Wilson, 1979], findings that are logical on human-capital grounds. More to the point, mandatory seatbelt laws are costless to those who already use them, and in a collision, belted drivers can be liable for injuries sustained by unbelted occupants of other vehicles. Mandatory state seatbelt laws require those who previously were unbelted to change their behavior, a result that is inversely related to levels of education. We predict the sign on *EDUC* to be positive.

State per capita income, *INC*, forms another instrumental variable. As with education levels, evidence suggests that higher income people buckle their seat belts more frequently [Wilson, 1979, 3.8]. Mandatory seatbelt laws are costless to those

who already use belts. On the other hand, mandatory passive restraints impose cost on those who already "buckle up." We predict the coefficient on *INC* to be positive.

FATAL, the annual fatality rate per mile driven, proxies another activity in which voters have a stake. While we expect voters in high fatality states to be more expressive about auto safety than in other states, we also recognize that the same voters face an opportunity cost. Economic gains lie in the balance. States with a perceived fatality "problem" could be addressed either by federally mandated passive restraints or state-mandated belt laws. If consumers in high fatality states assign a relatively high value to marginal reductions of the probability of death and injury in highway accidents provided by automobile safety devices, the differential effects on fatalities between a national passive restraint rule and mandatory state seat belts favor the latter. Gains in safety would be immediate and larger, unless belts were used in combination with bags.[11] Quite possibly many consumers do not see the two safety devices as alternatives, but think of them as working in tandem. We predict the coefficient on *FATAL* to be positive.

Special interest *and* expressive voting predict a negative sign on the coefficient of *NOF*, a dummy variable that adjusts for states with no-fault insurance laws. As we see it, *NOF* accounts for preferences that relate to the income/safety tradeoff. Studies have found that the restricted or removed liability provisions associated with no-fault states have resulted in an increase in the highway fatality rate [Landes, 1982; McEwin, 1989; Devlin, 1990], increases in payments per insured motorist [*Compensating Auto Accident Victims*, 1985], and decreases in the number of associated court cases [*Compensating Auto Accident Victims*, 1985]. A vote against state-mandated belts, which would be effective immediately, is consistent with revealed preference of *NOF* states to substitute lower court costs and increased insurance payments for increased fatalities. Expressive voting that sees air bags as a symbol of enhanced future auto safety also calls for the same negative coefficient on *NOF*.

HIGH, state highway expenditures per mile of road, which accounts for popular support for public highways as indicated by expenditures on alternative public safety efforts, also enters the model ambiguously. The theory of expressive voting and special interest theory predict the same sign for the coefficient. Consider the special interest story. Research by Schwing [1979] provides a basis for identifying voter opportunity cost and a special interest argument. He reports the marginal gains in life expectancy generated by various highway safety programs, including mandatory seat belts and air bags. Schwing finds mandatory belts to be cost effective, but reports that ambulances, expressway lighting, and emergency helicopters have much higher safety payoffs. In this sense, *HIGH* accounts for substitutes for belts and bags.

If cost-effective increases in life expectancies are the objective, the voter must consider the cost of implementing and enforcing mandatory seatbelt laws borne by state taxpayers. That cost is positive for mandatory belts, which calls for a negative sign on the coefficient. Now, consider the expressive vote that simply favors the rhetoric of airbag safety. The sign on the coefficient favoring air bags should be negative on expressive grounds as well.

PHYS is the number of physicians per capita and the one variable that we consider to be a pure reflection of expressive voting. That is, we have no special interest theory to offer that would explain general voter behavior.[12] We argue that voters who demand more health-care services, as reflected by *PHYS*, will be more expressive about auto safety in the voting booth. Politicians, aware of this, will condition their voting accordingly. While the scientific debate about air bags versus mandatory belts indicated the latter were more effective, a strong air bag campaign seemed to take the safety high ground. Expressive voting predicts a negative sign on *PHYS*.

In summary, the statistical models contain four categories of variables:

1. those that reflect narrow special interest groups,
2. those that reflect special interest effects for categories of voters,
3. those where the expressive versus special interest effect is ambiguous,
4. one that reflects pure expressive voting.

The Estimates

The results of two estimates are reported in Table 2, where we call particular attention to Equation (1). The coefficients on *AUTO*, *INSUR*, *AIR*, *EDUC*, *INC*, *FATAL*, and *HIGH* are significant and carry the predicted signs.[13] *PHYS*, the proxy for expressive voting, is positive, but not significant. In an unreported experiment, we found *PHYS* to be significant and positive when *INC* was excluded, which suggests *PHYS* is partly proxying for income. We note that the coefficients on NOF and HIGH are correctly signed for expressive *and* instrumental voting. In short, the evidence for expressive voting and against special interest voting is ambiguous.

Equation (2) reports the estimate without *INSUR*. We call attention to the higher level of significance for *FATAL*, which implies a strong preference for the safety features of belts and suggests a linkage between the number of insurance personnel per capita and average fatalities. (We note that the coefficient on *INSUR* remains negative and significant with or without *FATAL* in the equation.)

A Look at State Seat Belt Laws with Special Provisions

In an extension of our work, we applied the explanatory power of the statistical model to the content of some of the state seatbelt laws.[14] The laws had a number of different features including the level of fines, the degree of enforcement and the number of exemptions. In fact, the laws of five states actually provided that they could not be counted towards the national total, while four states' laws would be rescinded if the two-thirds goal were not met.

States that passed seatbelt laws with provisions excluding them from the overall count would appear to have a preference for both bags and mandatory belts. In these states, if the special interest arguments we tested are valid, one would expect to see a relatively strong insurance lobby, a relatively weak automobile lobby, and an overall strong preference for safety. The opposite condition should exist in states with the provision for rescission if the two-thirds goal is not met, since these legislatures would

TABLE 2
Probit Regression Estimates

Dependent Variable: State Seat Belt Votes

Independent Variables	Equation 1	Equation 2
Intercept	-18.32860 -(2.810)[a]	-15.80691 -(2.811)[a]
AUTO	0.101344 (1.869)[a]	0.110078 (2.099)[a]
INSUR	0.977792 (1.875)[a]	
AIR	3.797704 (2.425)[a]	-3.546145 -(2.273)[a]
PHYS	0.016941 (1.096)	0.019052 (1.1424)
NOF	-1.033979 (1.596)[b]	-0.797463 -(1.351)[b]
EDUC	0.153294 (2.870)[a]	0.140040 (2.904)[a]
HIGH	-168.6536 (3.089)[a]	-135.3084 -(2.914)[a]
FATAL	1.220264 (1.503)[b]	1.548398 (2.026)[a]
INC	0.000661 (1.625)[b]	0.000208 (0.772)
Percent Predicted Correct	0.94	0.88

a. Significant at the 5 percent level.
b. Signifcant ath the 10 percent level.

appear to want mandatory belts only as a means of overturning the national passive restraint law. In both of these cases, the interests of the unorganized constituency correlate with the relative strengths of special interests, creating a decided preference for or against government-mandated safety devices.

Examination of Table 3 shows the five states excluded from the count (California, Hawaii, Kansas, Massachusetts and Minnesota) had an average level for *AUTO* that was below the 50 state average and an average level for *INSUR*, *EDUC* and *INC* that was above the 50 state average. In contrast, the averages for the other four states (Michigan, Missouri, North Carolina and Tennessee) were above the 50 state average for *AUTO* and below the 50 state average for *INSUR*, *EDUC* and *INC*. These results further support the arguments outlined in the previous section and lend credence to the choice of *AUTO* and *INSUR* as appropriate special interest proxies.

The Benefits from Lobbying for Mandatory Belt Laws

As a final step in our empirical work, we computed derivatives for each of the independent variables with respect to the probability of a yes vote. (The results are

TABLE 3
Seat Belt Laws With Special Provisions

State	AUTO	INSURE	EDUC	INC
Belt Laws Not Counted Towards Total Percentage				
California	0.38	1.96	73.5	16,065
Hawaii	0	1.25	73.8	13,814
Kansas	2.48	2.39	73.3	13,775
Massachusetts	0.66	2.78	72.2	16,380
Minnesota	0.58	2.49	73.1	14,087
AVERAGE	0.82	2.17	73.2	14,824
Belt Laws Rescinded if Two-thirds Goal is Not Met				
Michigan	37.76	1.83	68.0	13,608
Missouri	6.02	2.12	63.5	13,224
North Carolina	0.59	1.37	54.8	11,617
Tennessee	1.17	1.17	56.2	11,243
AVERAGE	11.39	1.62	60.6	12,423
50 STATE AVG	2.35	1.69	67.5	13,151
50 STATE STD DEV	6.07	0.97	7.6	2,063

reported in Table 4.) These can be used to estimate the marginal benefits from lobbying by narrow special interest groups. For example, according to our voting estimates, Pennsylvania is one of the most likely states to pass a seatbelt law. For purposes of illustration, suppose a particular automaker wanted to calculate the marginal benefits of promising Pennsylvania a new automobile plant that would increase the number of automobile manufacturer employees in that state by 11,863 (an increase of one automobile manufacturer employee per 1000 Pennsylvanians) if the state legislature will consider passing a mandatory seat belt law.

According to Table 4 the higher automobile employment level would increase the probability of a yes vote in Pennsylvania by approximately 3.2 percent, which translates into an expected increase in the mandatory seat belt covered population of about 0.16 percent (Pennsylvania contains about 5 percent of the total U.S. population.) From this, one could estimate the increase in the probability of meeting the two-thirds threshold and multiply that by the monetary savings from having the passive restraint rule rescinded. The result would be the expected marginal benefits from locating the plant in Pennsylvania which could be compared to the marginal costs from not locating elsewhere (i.e. higher labor costs, less productivity, etc.).

The same approach could be applied to insurance companies and airbag manufacturers. For instance, an insurance company could estimate the expected marginal

TABLE 4
Derivatives from the Probit Model by State

State	AUTO	INSURE	AIR	PHYS
Alabama	0.0325	-0.3134	-1.2173	0.0054
Alaska	0.15 E-4	-0.0001	-0.0006	0.26 E-5
Arizona	0.0244	-0.2357	-0.9153	0.0041
Arkansas	0.0151	-0.1458	-0.5663	0.0025
California	0.83 E-12	-0.80 E-11	-0.31 E-10	0.14 E-12
Colorado	0.42 E-4	-0.0004	-0.0016	0.71 E-5
Connecticut	0.31 E-6	-0.30 E-5	-0.12 E-4	0.51 E-7
Delaware	0.0396	-0.3824	-1.4854	0.0066
Florida	0.60 E-4	-0.0006	-0.0023	0.10 E-4
Georgia	0.0310	-0.2991	-1.1618	0.0052
Hawaii	0.0014	-0.0139	-0.0538	0.0002
Idaho	0.0087	-0.0835	-0.3244	0.0014
Illinois	0.0334	-0.3227	-1.2532	0.0056
Indiana	0.0039	-0.0374	-0.1452	0.0006
Iowa	0.0230	-0.2220	-0.8621	0.0038
Kansas	0.0265	-0.2561	-0.9946	0.0044
Kentucky	0.0002	-0.0019	-0.0076	0.34 E-4
Louisiana	0.0396	-0.3820	-1.4835	0.0066
Maine	0.0184	-0.1779	-0.6909	0.0031
Maryland	0.0011	-0.0111	-0.4303	0.0002
Mass.	0.0021	-0.0206	-0.0801	0.0004
Michigan	0.0292	-0.2820	-1.0952	0.0049
Minnesota	0.0371	-0.3575	-1.3890	0.0062
Mississippi	0.0077	-0.0740	-0.2874	0.0013
Missouri	0.0046	-0.0440	-0.1709	0.0008
Montana	0.0224	-0.2161	-0.8393	0.0037
Nebraska	0.0397	-0.3832	-1.4884	0.0066
Nevada	0.10 E-8	-0.10 E-7	-0.49 E-7	0.22 E-9
New Hamp.	0.0134	-0.1289	-0.5005	0.0022
New Jersey	0.0014	-0.0130	-0.0506	0.0002
New Mexico	0.0046	-0.0439	-0.1705	0.0008
New York	0.19 E-5	-0.18 E-4	-0.72 E-4	0.32 E-6
N. Carolina	0.0394	-0.3800	-1.4759	0.0066
N. Dakota	0.0008	-0.0074	-0.0288	0.0001
Ohio	0.0071	-0.0690	-0.2679	0.0012
Oklahoma	0.0036	-0.0352	-0.1367	0.0006
Oregon	0.0078	-0.0750	-0.2915	0.0013
Penn.	0.0317	-0.3056	-1.1869	0.0053
Rhode Is.	0.0206	-0.1985	-0.7708	0.0034
S. Carolina	0.0290	-0.2800	-1.0875	0.0049
S. Dakota	0.0014	-0.0139	-0.0540	0.0002
Tennessee	0.0403	-0.3886	-1.5091	0.0067
Texas	0.0107	-0.1031	-0.4006	0.0018
Utah	0.0280	-0.2697	-1.0475	0.0047
Vermont	0.0077	-0.0746	-0.2897	0.0013
Virginia	0.0281	-0.2707	-1.0514	0.0047
Washington	0.0019	-0.0180	-0.0701	0.0003
W. Virginia	0.20 E-10	-0.19 E-9	-0.70 E-9	0.33 E-11
Wisconsin	0.0158	-0.1522	-0.5913	0.0026
Wyoming	0.0401	-0.3869	-1.5026	0.0067

private benefits of efforts to overturn an existing state seatbelt law. An airbag manufacturer might want to calculate the marginal benefits from a threat to relocate.

FINAL THOUGHTS

This article examined a rare voting opportunity that came with the airbag/seatbelt struggle of the mid- to late-1980s. The shift of a federal regulatory proceeding to state legislatures provided an opportunity to explore counterforces generated by the special interest groups that fought pro and con and to observe the effects less-organized consumer/citizen interest groups had on the outcome. The new theory of expressive voting was combined with the older special interest theory as we built statistical voting models. Our statistical estimates demonstrated the power of auto, insurance, and airbag interests in influencing the state votes. We note that the coefficients are considerably larger for insurance employees and airbag facilities than for auto employees. We also find that the instrumental preferences of ordinary people, proxied by demographic and other characteristics, weigh heavily in the political balance. We note that the coefficient on highway expenditures, which entered the model as an expressive variable on ambiguous grounds, is especially large. Quite possibly, expressive and orthodox voting combined here to yield a stronger outcome. Only one variable in our model is seen as a pure proxy for expressive voting, and it is not significant.

While we believe our research offers useful insights for those who seek to understand protracted regulatory episodes, we do not consider our work a strong test of expressive voting. We hope that our richer theoretical model and results of our statistical models will prove helpful to future researchers.

NOTES

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1. Mannering and Winston [1995] show access to information about the effectiveness of airbags as a major force explaining the increased willingness to pay for air bags. Their evidence is based on hours of TV watching and contacts with other owners of bag-equipped cars. Additional forces favoring purchase of bags include the prevalence of lighter, less crashworthy cars, the lower relative cost of airbags, as a percent of auto prices, and improved airbag technology. (We acknowledge the assistance of an anonymous referee for calling this to our attention. For additional background, see Robert Kneuper and Bruce Yandle [1994].)
2. The passive restraint mandate could be satisfied by motorized belts, bags, or any device that would automatically, without driver action, provide restraint during a collision. Practically speaking, the air bag soon won out as the preferred device.
3. Early on, automakers were sharply divided on the air bag issue. General Motors, an early supporter of air bags, had encountered disaster when the firm tried to market bag-equipped cars in the early 1970s [Rowan, 1975]. No matter how the firm advertised and subsidized, consumers would not buy air bags. GM then joined other producers who fought the rulemaking from the beginning.
4. The Dole decision created the incentive needed to force state action. Between 1972-77, more than 110 mandatory seat belt laws had been introduced in state legislatures, but none had passed [Wilson,

1979, 1.3]. Following the 1984 Dole announcement, through August 1987, mandatory seatbelt laws were debated in every state, and 31 states passed mandatory seat belt laws.

5. On a number of occasions, the federal government has handed over its regulatory authority to the states. For example, the McCarran-Ferguson Act exempted insurers from federal antitrust regulation and encouraged state regulation of insurance activities. But never before had state legislators been given the opportunity to rescind a federal regulation.
6. Some of the 31 states that passed seat belt laws reflected in our analysis introduced strategic options that presented complications. For example, some of the states ruled that a vote favoring mandatory seat belts could not be counted in the requirement to obtain two-thirds coverage of the nation's population. These states apparently hoped to gain combined belts and bags, which form a technically superior package. Other states mandated that their law would be rescinded if the two-thirds goal was not met. A more thorough discussion of these qualifications is contained in a later section.
7. As of May 1993, 46 states had passed some form of mandatory seatbelt legislation. Kentucky, South Dakota, Massachusetts and New Hampshire had yet to pass legislation. Serious questions remained whether decisions in Maine and North Dakota would survive Maine's governor veto powers and a North Dakota popular referendum. In our analysis of the earlier period, which yields a more meaningful separation of data than the current period, we recognize that a vote that fails by legislative vote is not a perfect substitute for a bill that fails to emerge from legislative committee or one that is vetoed by the governor. Because of the complexity of this set, we chose to view all such outcomes as a failure to pass. (We express appreciation to the Motor Vehicle Manufacturers' Association for helping us in tracking the votes.)
8. All of the votes were passed by state legislatures although the electorate in Massachusetts and Nebraska later repealed their laws by popular referendum. Since the model is aimed at estimating legislative behavior, these states are designated with a 1.
9. Immediately after her July 1984 ruling was announced, Department of Transportation Secretary Dole announced that the government would launch a $40 million annual ad campaign, half funded by the automobile industry, to promote mandatory seatbelt legislation ["Middle Lane," 1984, 47]. Research on that program and other educational efforts suggests the effort to be in vain [Adler and Pittle, 1984].
10. Department of Transportation (DOT) estimates of the incremental reduction in fatalities and serious injuries for air bags, automatic belts and mandatory seatbelt laws indicated that mandatory belts would generate immediate fatality reductions for the covered fleet. (See *Federal Register*, 1984, 28866-28869.) With 40 percent enforcement and use, the mid-point estimate of annual fatalities reduced was 3,220; 70 perent yielded 6,720. (Estimates of enforcement effectiveness based on other countries' experience range from 50 to 80 percent [Lund, 1987].) With 12.5 percent use of belts *and* air bags, the mid-point estimate of annual fatalities avoided was 6,830. However, the bag-equipped fleet would not have complete coverage until the year 2000. Assuming a fatality avoided today is worth more than a later avoidance and using either a 5 percent or 10 percent discount rate, mandatory belt laws prove superior. Also, Evans [1991] shows belts to be far more effective than reported by DOT. (For additional discussion, see Comptroller General of the U.S. [1976].) Following Peltzman [1975], Peterson, Hoffer and Millner have reported evidence that "risk to drivers of cars equipped with air bags in single car crashes is not diminished, that the percentage of occupants killed in single-car air bag crashes is unusually high, and that drivers of air bag-equipped cars initiate an unusually large percentage of such crashes" [1995, 262].
11. We call attention to work that questions consumer decision making in the face of engineering estimates that show belts and bags to be cost-beneficial. Consumer behavior simply does not jibe with the work reported, which suggests improvements are needed in the economic models developed in this area. (For reports that show the benefit-cost ratio to be positive, see Arnould and Grabowski [1981] and Winston and Mannering [1984]. For reports and surveys that suggest consumer rationality see, Blomquist [1979], Thaler and Rosen [1978], and Bailey [1980].) There is also an insurance linkage to consider in conjunction with highway fatalities. It is easier to sell insurance where fatality rates are higher, which means there will be fewer insurance personnel per capita in higher fatality rate states. Our statistical examination of this relationship proved that the stated relationship was strong. Fewer insurance personnel, which is an included variable, mean less lobbying strength in opposition to mandatory belt laws. Higher fatality rates, neglecting the insurance effect, should go with support for mandatory belt laws, since belts bring immediate benefits and avoid the possibility of a Peltzman [1975] effect.
12. From a strict rent-seeking perspective, health-care providers should oppose regulations that reduce the demand for medical services. Since mandatory seat belt laws were predicted to reduce more fatalities and serious injuries than air bags, this would mean that physicians should, on net, favor air bags, unless air bags are used in conjunction with belts, which implies a negative sign on *PHYS*.
13. We tried several alternative specifications of *FATAL* in our effort to model legislative behavior. In other experiments, we used the coefficient of variation for a 10-year and 5-year series of state fatalities, thinking that legislators were sensitive to unusual variability. We also used the percentage change in fatalities for 10- and 5-years' data and the mean of a 10-year series of fatalities. The reported specification gives a superior statistical fit and is assumed to reflect better the behavior of state legislators. We did not attempt to estimate a 30- or 40-year time series of fatalities for each of the 50 states using multivariate models and then using the residuals of the estimate as a proxy for *FATAL* in a 50-state multi-period pooled cross-sectional analysis. Aside from the formidable nature of the task, since it involved crossing numerous institutional changes across decades analyzed, we do not believe that state legislators behave as if they estimated such residuals. Based on their short time horizon, we believe they focus on fatalities over a short period of time. Along these lines, we note work reported by Crandall, Gruenspecht, Keeler et al. [1986] on highway fatalities who used national time series and 50 state cross-sectional analysis for three years.
14. In addition to the work to be discussed, we performed tests on the accuracy of the model to predict outcomes. First, we compared the predictions by state with the date of passage, assuming that states with a strong preference for mandatory belts relative to mandatory air bags would pass legislation quickly. Using both a Spearman Rank Test and a simple means test we found no significant relationship between speed of passage and degree of preference (as expressed in the model). We did, however, find a significant relationship between the current status of state seatbelt votes in zero-designated states and their prediction level. States in which seatbelt laws were still alive, meaning that a seat belt bill was pending in the legislature, had a significantly higher prediction level then those in which seat belt laws where dead. This distinction between laws was taken from a 16 July 1987 Safety Belt Use Bulletin put out by the Motor Vehicles Manufacturer's Association.

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