Revealed Preferences for Car Tax Cuts:
an Empirical Study of Perceived Fiscal Incidence

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Abstract

Voting in an election in which elimination of the local car tax is the central issue shows how a highly visible universal tax cut can prevail in the electoral process even if benefits are skewed toward upper income households. These results are consistent with positive models of fiscal structure choice in which fiscal systems are the consequence of support maximizing politicians attempting to supply net benefits to easily identifiable interest groups without generating significant opposition from other groups.

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I. Introduction

Taxation of motor vehicles varies widely across states. In 1997, vehicle owners in 12 states and the District of Columbia paid fixed license fees independent of vehicle values. Yet, in other states taxes were based on vehicle value (or age). Some election results in recent years indicate value based taxes can be unpopular. In Virginia in 1997 the winning gubernatorial candidate pledged to eliminate the locally assessed vehicle tax. In Washington in 1999 voters approved Initiative 695, repealing the statewide motor vehicle tax. And in California, Governor Schwarzenegger ended the statewide vehicle tax by executive order in 2003. The motor vehicle taxes in these three states represent some of the highest, value-based assessments in the nation (Beck and Bennett, 2003). [1]

This paper examines the 1997 Virginia gubernatorial election. In this race, Republican candidate James Gilmore proposed to eliminate the local personal property tax on motor vehicles. Since cities and counties have the constitutional right to levy such taxes, Gilmore also proposed using state funds to compensate them for giving up a substantial portion of their tax base. His Democratic opponent (Don Beyer) opposed these changes. The campaign became one centered on what was to become the Gilmore administration's signature issue. Thus, the gubernatorial election became a type of referendum. Riding the coattails of the decisive Gilmore victory, the following year's legislative elections saw his party gain control of state senate and achieve parity (and effective control) in the House of Delegates for the first time in over a century. [2]

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[1] In 1997 seventeen states assessed local value-based fees or taxes (Beck and Bennett, 2003).
[2] This Republican resurgence, mirroring that in other Southern states, took place slowly as Democrats lost ground during the 1980s and 1990s. Thus, in Virginia the Democratic Party's control of the legislature continued two decades after the tax revolt began nationally. The relatively small state government can in part explain this delayed timing in Virginia. Per capita state revenues and

Since the car tax is assessed locally, tax rates and automobile valuations vary considerably within the state, leading to substantial variability in expected tax relief across political jurisdictions. This variation allows us to estimate the electoral impact of the tax cut proposal with some precision. Several important results emerge. The tax cut had a statistically significant -- and politically meaningful -- positive effect on vote shares for the candidate proposing the cut. If we think of the tax cut as a price of votes, at the mean the supply of votes is indeed upward sloping. Yet, in the mean jurisdiction, the expected tax relief per person falls substantially short of the statewide average. The mean jurisdiction is a net loser in the sense that its per capita tax relief falls short of its share of the foregone state revenues that now must be allocated to reimburse localities. Voters seemed to prefer a dollar in hand over a potentially larger dollar amount of unspecified and uncertain cuts in services. They also seemed unconcerned by wide regional disparities in the size of the tax rebate.

Wilson (1987) and Skocpol (1994) offer a framework for understanding this result. Programs that transfer resources to the poor can maintain political support, in their view, only if they are embedded in larger, more universal programs benefiting everyone. Social security is a clear example. In this sense, elements of the tax revolt in the US may be an inversion of this idea of targeting benefits within a universal program.[3] Large transfers to the wealthy can win political support if enough of the benefit is stretched to include the middle class. A tax cut need not be huge in order to be economically meaningful to people in the middle of the income distribution.

expenditures rested at the top of the lower quintile of states. It took the surge of state revenues generated by the extended expansion of the 1990s to make tax cuts attractive. The timing of the tax revolt in Virginia is consistent with the Democratic Party finally losing power because of a revenue shock in the 1990s in the face of a politically innovative tax cut proposal. As Case and Besley (2003, pp. 66-67) emphasize, changes in tax policy (like a car tax reduction) are not independent of current policy effects (here rising state taxes).

[3] Even before the tax revolt, tax breaks that embodied this principle (like the mortgage interest

And if these voters are not significantly motivated by envy of the rich or concern for the poor, a tax cut that involves a net transfer to the rich may be politically sustainable.

II. Model

Consider a two-candidate race in which some voters cast ballots along party lines as in previous elections and others cast ballots on the basis of an issue in the current election. Thus, voting has fixed (historical) and marginal components. The issue determining the behavior of marginal voters is the candidate's position on shifting resources between the private and public sectors. Candidate R proposes to cut taxes and candidate D offers to preserve spending.

Assume the objective of each candidate in a race for the governorship is to maximize his share of total votes. Candidate R proposes to cut local taxes and compensate local governments for lost revenue with transfers from state general taxes. To keep the state's budget balanced, the lost state tax revenue requires a reduction in other spending at the state level. Although candidate R does not identify the state services to be cut, we assume some beneficiaries of state services believe less money will available. The competing candidate (D) does not endorse the tax cut. Thus, *ceteris paribus*, the gubernatorial race is equivalent to a direct voter referendum on the proposed tax cut, assuming the requisite cooperation of the legislature is present.

The number of voters in a particular jurisdiction casting ballots for a candidate is viewed as a function of (a) the net incentive offered by lower taxes (above the disincentive offered by reduced state spending), (b) party characteristics, and (c) jurisdiction characteristics. Let R's vote share be:

$$S = S(T, \mathbf{P}, \mathbf{J}), \tag{1}$$

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deduction) enjoyed substantial political support.

where T is the tax cut, **P** is a vector measuring the propensity to vote for candidate R's party, and **J** is a vector of jurisdiction demographic characteristics that influence the behavior of marginal voters in the election.[4] The function S converts the change in average voter welfare resulting from the tax cut proposal into voting decisions and a vote share in the jurisdiction. The focus here is on the marginal voter's decision, and equation (1) recognizes through the inclusion of **P** that many voters may decide to stick with their preferred party even if there are positive changes in welfare resulting from the other candidate's policy proposal. $S_T > 0$ if the tax cut, *ceteris paribus*, adds to R's share in the jurisdiction.

The vector (**J**) of jurisdiction characteristics includes family income (INC), the percentages of the population young (YNG) and old (OLD), and the percentage of the population living in poverty (POV). We are careful not to over-interpret the impact of these controls. District level demographic characteristics may tell us about how the prospective losses of state services could impact S, but they may also capture partisan or ideological differences. For a given T, rising income may decrease S if state services are a normal good. In this situation, higher income would be associated with higher marginal support for candidate D. The effects of other demographic characteristics on S depend on perceived fiscal effects that are themselves ambiguous. Consider the effect of YNG on S. In an election pitting tax cuts against maintaining state spending, a higher proportion of young residents might decrease S if parents as marginal voters anticipate that candidate R will reduce state funds to subsidize public education. On the other hand, parents may view state subsidies to public schools as politically "safe" and thus beyond the scope of budget cuts.

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[4] The general approach in equation (1) follows Peltzman (1992).

Even if they anticipate cuts in state subsidies to education, parents may believe the local car tax reduction will make possible offsetting increases in other local taxes to fund schools. With either of these two expectations in place, YNG may have no independent effect on S. Analogously, the impact of OLD and POV may hinge on how much of these groups' welfare depends on state (as opposed to federal) funding, whether they believe their particular state programs are safe from budget cuts, and to what extent they believe the locality will increase other local taxes to avoid reductions in their services. Lastly, all of these controls may be capturing some partisan or ideological effects not picked up by the variables in the vector **P** of past voting behavior.[5]

III. Results

The empirical version of equation (1) is:

$$S = S(T, S93, S96, INC, YNG, OLD, POV), \tag{2}$$

where

S   = Gilmore's vote share as a percent of total votes

T   = the reduction in personal property taxes per capita

S93   = the Republican gubernatorial candidate's share in the previous (1993) election

S96   = Dole's share in the 1996 Presidential election

INC   = median family income

YNG = the percent of the population of school age

OLD = the percent of the population age 65 and older

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[5] The vector **J** does not capture the possible effects of voters sorting themselves geographically based on their preferences over the car tax. If this Tiebout sorting is important, for a given T voters in localities with low car tax rates would be more inclined to support the tax cut than their

POV   = the percent of the population below the poverty line.

The vector of party characteristics (**P)** includes S93 and S96; the vector of jurisdiction characteristics (**J**) includes INC, YNG, OLD and POV. In equation (2), T has a positive effect on S if the tax cut proposal adds to Gilmore's share. S93 and S96 control for historical voting patterns and should have positive effects on S. INC likely has a negative effect if state services are a normal good. The impacts of other jurisdiction characteristics (YNG, OLD, and POV) on S are ambiguous, as discussed above.

Our sample of 134 cities and counties comprises all of the 1997 gubernatorial election results. Summary statistics and data sources for the variables in equation (2) are in Table 1. T is equal to the actual state subsidy to a jurisdiction for fiscal year 2002 divided by the jurisdiction's population for that year. The subsidy in 2002 is equal to 70% of the personal property taxes the jurisdiction would have raised with its 1997 tax rate applied to its 2001 tax base for vehicles with market values of $20,000 or less. Jurisdictions continued to tax vehicles at full rates for values in excess of $20,000. In implementing the model from Section I we assume voters could forecast the level of tax reduction at this level of implementation.

Table 2 shows the results of estimating equation (1) using White's consistent estimator of the covariance matrix.[6] Because there is no reason to expect a linear relation between T and the independent variables, squared terms are included when these terms are statistically significant. The only such term is INC^2. The reduction in personal property tax per capita (T) has the expected

counterparts in high tax districts. This effect would bias downward the coefficient on T.
[6] We included in preliminary regressions several additional control variables that were statistically insignificant. These were dropped without affecting the results in Table 2. The variables were: the vote shares Gilmore and Beyer received in their successful 1993 runs for statewide (non-gubernatorial) offices; percent of population black; a dummy for cities; a dummy

positive coefficient and is statistically significant at the 1% level. Thus, *ceteris paribus,* marginal voters responded favorably to the option of shifting resources from the public to the private sector. T has a mean of $88.22, and its coefficient has a 95% confidence level of .0068 to .0429, making a 95% confidence interval for the impact of T on S at its mean .6% to 3.8%. Since Gilmore's average share was 56.87%, the car tax issue did not decide the election. Nonetheless, the added share is politically meaningful. The car tax issue also was instrumental in the Republicans gaining control of the legislature in the following year's elections.

The variables measuring past performance of parties (S93 and S96) have the expected signs and are statistically significant at the 1% level. INC has a negative and statistically significant effect on Gilmore's share. INC^2 enters positively, and is significant as well. As INC increases over its range, marginal support for Gilmore decreases at a decreasing rate. This is consistent with the widespread empirical result that public spending at the state level is a normal good. YNG has a statistically positive effect on Gilmore's share. This finding is consistent with parents either believing a Gilmore administration would not reduce state subsidies to public education or that local government would offset any state reductions with higher real estate taxes on everyone.[7] However, OLD and POV have statistically significant negative effects on S. The old and poor may not have believed their state financed services would be maintained in a Gilmore administration given the expected reductions in total state spending necessary to finance the car tax subsidy. Of the three groups YNG does receive services that are largely locally funded. And, when implementing state budgets cuts required by the car tax reduction and slow economy Gilmore's successor and the

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for the presence of a state four-year university; dummies for seven regions.
[7] Stine (2003) finds repeal of the intangible local personal property tax in Pennsylvania resulted in higher growth in real estate taxes.

legislature did not cut state subsidies to public schools.

To test for robustness of our central result that the car tax cut (T) had a positive and statistically significant impact on Gilmore's vote share, we ran two additional regressions. In the first equation we regressed the change in the Republican gubernatorial candidate's share between the 1993 and 1997 on T. In the second we regressed the change in Gilmore's own vote share between his 1997 run for the governorship and his 1993 run for lieutenant governor. The estimated coefficients (t-scores) for T are .0299 (3.86) in the first regression and .0248 (2.73) in the second. These results are quantitatively quite similar to those in Table 2. In fact, the coefficient in the second equation is identical to the result in Table 1. Lastly, we checked to see if our results were influenced by the fact that the dependent variable is a proportion, and thus bounded by zero and one. We re-estimated the model after transforming the dependent variable using a logit "odds ratio" (S/(100-S)). The results are essentially unchanged.

Consider why Gilmore chose to make the car tax repeal the central issue in his campaign. First, and perhaps most obviously, the repeal of the local car tax yielded the greatest benefits to voters in jurisdictions with the largest number of registered voters. The simple correlation between T and the number of voters registered in 1996 (one year prior to the election) is .35. Thus, the car tax repeal generated increased vote shares for Gilmore where they counted most - in jurisdictions with large numbers of potential voters. The mean number of registered voters in the 10 jurisdictions receiving the largest (smallest) per capita subsidies (T) was 68,288 (12,152).

But the proposed tax cut also had profound distributional consequences both regionally and at the individual level. For instance, these same 10 jurisdictions receiving the largest (smallest) subsidies had mean values of T, INC, and POV of $175 ($30), $52,581 ($28,159), and 7% (17%),

respectively. The rebate of the local car tax is a clear transfer of resources to jurisdictions with relatively high incomes (the correlation between T and INC is .55), and away from jurisdictions with a high percentage of poorer citizens (the correlation between T and POV is -.60). Even at the sample mean of jurisdictions in our regression, the rebate is roughly $88 per person, while the statewide average rebate per person is $115. The mean district is thus a net loser in the sense that its per capita share of the foregone state revenue (that must be allocated to reimburse localities for lost car taxes) is smaller than its tax rebate. Yet, the rebate at the sample mean is a clear vote winner in Table 2. Results like these are indicative of the ability of highly visible tax benefits to prevail in the electoral process.

The strong positive correlation between median income and the size of the tax rebate is evident geographically as a clear regional reallocation of resources toward wealthier suburban districts and away from older cities and rural areas. As Figure 1 shows, the tax cut concentrates its largest gains in a handful of counties and cities of suburban Washington. Median family income in these five jurisdictions is $88,219. The other net winners (with tax rebates in excess of $115 per capita) are largely suburban districts on the I-95 corridor, counties with major universities, or wealthier suburban counties on the peninsula south east of Richmond. The clearest losers are poorer rural districts in western Virginia, and poorer urban areas.

Distributional effects at the individual level are considerably starker. A wealthy family with two cars, each valued at $20,000, would receive a $1,100 tax rebate per year in a high tax jurisdiction like Fairfax County (near Washington, DC). A poorer family with one car valued at $5,000 in a lower tax area like the western Virginia city of Staunton would get back only $70 per year. Our data are aggregated so we cannot distinguish within-jurisdiction effects. Nonetheless,

if envy or concern for the poor were strong political motivations, we would not expect the tax cut proposal to have such a strong vote-winning impact.

The data do not tell us why strong distributional effects of this tax cut had no major impact. Most voters may not have understood that the complicated car tax rebate would necessitate a cut in state spending on other things, though this point certainly was aired in the media. Alternatively, lack of information about which services would be cut might have induced voters to accept cash in hand over uncertain future service reductions. Lastly, fully informed voters may have placed a higher value on that cash in hand.

IV. Conclusion

Voting in a Virginia gubernatorial election in which elimination of the local car tax is the central issue shows how a highly visible universal tax benefit skewed toward upper income households can prevail in the electoral process. The car tax offered a particularly appealing target because of its visibility and because its removal yielded large gains to voters in populous (and generally higher income) jurisdictions and small gains to voters in less populous (lower income) jurisdictions. These results are also consistent with the concept of targeted universalism advanced by Wilson (1987) and Skocpol (1994). Even though the benefits of the proposal were skewed toward higher income jurisdictions, enough highly visible benefits were extended to others to enhance Gilmore's election prospects. These results are also consistent with positive models of fiscal structure choice that make the case that fiscal systems are the consequence of support maximizing politicians attempting to supply net benefits to easily identifiable interest groups without generating significant opposition from other groups.

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Table 1 - Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
S	56.87	8.80	30.27	75.06
T	88.22	38.98	8.17	203.10
S93	60.95	9.55	34.00	81.03
S96	50.91	9.57	21.81	72.22
INC	36,243	10,179	21,574	71,057
YNG	12.87	2.13	5.17	17.81
OLD	13.95	4.26	1.72	28.90
POV	12.67	5.11	3.20	25.40

S and S96 are from www.sbe.state.va/Election/results. T is from the State Comptroller's Office, Richmond, VA. S93 is from *Atlas of Virginia Statewide Elections* (Richmond: Klipson Press). INC is from www.census.gov. YNG, OLD and POV are from www.virginia.edu/coopercenter. YNG excludes 18 year-olds because this age group reflects a disproportionate share of students in private and public universities in several jurisdictions.

Table 2 – OLS Regression Results for Share Equation (2)

Variable	Coef.	Robust Std. Err.	t-score	P-value.
T	.0248	.0091	2.72	.007
S93	.3170	.0373	8.50	.000
S96	.6357	.0455	13.95	.000
INC	-.0010	.0002	-4.06	.000
INC^2	7.03e-09	2.27e-09	3.10	.002
YNG	.3449	.0991	3.48	.001
OLD	-.1491	.0737	-2.02	.045
POV	-.3232	.1328	-2.43	.016
Constant	29.50	7.679	3.84	.000

R-squared = .9280

Figure 1.   Per Capita Car Tax Rebates for Virginia Cities and Counties

Per Capita Reimbursements
- $ 0 - 60
- $ 60.01 - 115
- $ 115.01 - 165
- Over $ 165