Setting Cigarette Tax Rates: The Competing Forces of Median Voter and Interest Groups[†]

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Abstract. This study applies the median voter theorem and the concepts of special interest politics to explain the setting of cigarette tax rates in the 48 contiguous states of the U.S. between 1997 and 2001. Based on the theoretical framework provided by Grossman and Helpman (1996), we examine these two competing forces using the data from *CPS Tobacco Use Supplements* and the *National Institute on Money in State Politics* (*NIMSP)*. Our OLS regression results show that state cigarette tax rates are significantly affected by voters' preferences and by political contributions from the tobacco industry. Furthermore, the influence of voters' preference is stronger when parties share relatively equal popularity in electoral competition. When state fixed effects are specified in estimation, most of the coefficients become insignificant except those of voters' attitudes. Unlike the majority of the existing empirical work, our study find strong evidence for the median voter theorem in both the OLS and fixed effects results.

JEL classifications: H0, H2, H7.

1. INTRODUCTION

The literature on the topic of cigarette taxes is large and growing. Studies have investigated a wide range of issues, including the behavioral outcomes of cigarette taxes and the inter-state tax competition facilitated by cross-border smuggling.[1] However, the political economy of cigarette tax setting in the areas of median voter theorem and special interest politics has seldom been examined quantitatively, although the competing theories of public choice have been largely studied in the context of general taxation (e.g. Besley and Case, 1995; Besley and Case, 2003).

On the one hand, the widely acknowledged health hazards of tobacco use and the controversial role of the tobacco industry make the politics of cigarette taxes a topic worthy of special attention. The tobacco industry is considered to be among the most politically influential interest groups.

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[1] For example, Brown (1995), Chaloupka and Grossman (1996), Evans, Ringel and Stech (1999), and Ohsfeldt, Boyle and Capilouto (1998), among others, have studied the impacts of tobacco taxes and policies on tobacco use. There are also studies that examine cross border smuggling and regional tax competition like Coats (1995) and Benjamin and Dougan (1997).

Studies report that the tobacco industry spends large amounts of money on political donations or lobbying activities in exchange for political favors (e.g. CFTFK, 2002; Dearlove and Glantz, 2000; Monardi and Glantz, 1997; Monardi and Glantz, 1998). On the other hand, public opinion on tobacco use may also influence the setting of cigarette taxes. For decades the general public has been receiving information about the health hazards of tobacco consumption, perhaps from both non-profit sources and the profit-oriented health insurance industry, which may have helped shape attitudes toward tobacco regulation. Recent events, including the 1998 national settlement of more than $240 billion from lawsuits against tobacco companies and the tax increases on tobacco products raised by the federal and 19 state governments in 2002, show a turning tide against the tobacco industry in the political and judicial systems, possibly signaling the failing influence of tobacco interests or a growing influence of its health-conscious opponents.

In principle, the public-interest view of government suggests that government officials take actions that are approved by the majority of citizens. If governments respond to voters, the voting public ultimately makes all the important decisions. A great deal of literature advocates the view that government choices should reflect the preferences of the median voter. However, due to monopoly governments and incomplete information for voters, the public generally cannot achieve their most preferred policy actions through the electoral process. Buchanan and Tullock (1962), among others, suggest an alternative interpretation of government behavior that focuses on the self-interested behavior of government officials. The so-called rent-seeking model suggests that voters do not have much information to evaluate the actions of politicians, and that small groups of people may manipulate government for their own gains. Recently, the political economy literature has presented a stream of models that address both median voter's preferences and special interest groups in the choices of policies. For example, Grossman and Helpman (1996) have proposed a model that allows for the simultaneous functioning of elections and interest groups and sheds useful insights to direct empirical analysis. The model focuses on electoral motivation as a vehicle for shaping policy choices. The influence of political contributions and impressionable voters' behavior are introduced to explain why a vote-seeking government may also rely on support from special interest groups. The model reconciles the theorem of median voter and special interest politics, and it implies that median voter's preferences, campaign contributions from interest groups, and voter composition, are among the major factors influencing political parties' policy choices.

Our study applies the conceptual framework provided by Grossman and Helpman (1996) to investigate the determinants of state cigarette tax policy in the United States, particularly focusing on the impact of voter preference and special interests. One of the major difficulties for this line of

study is data availability and measurement. We introduce two sets of measures for voters' attitudes toward tobacco control using the survey data from *CPS Tobacco Use Supplements,* and we measure special interest influence by campaign contribution funds using data from the *National Institute on Money in State Politics* (*NIMSP)* for the states. We estimate both OLS and fixed effects regressions to examine the competing forces of median voter and special interest groups empirically.

The remainder of the paper is organized as follows. In section 2, we outline Grossman and Helpman's model and discuss the implications. Section 3 describes the data, measures, and model specifications. Section 4 discusses our estimation results. Section 5 concludes the paper.

2. THEORETICAL FRAMEWORK

Our study focuses on the politics of the smoking-health controversy in representative democracies. We assume that interest groups use campaign contributions to influence public policy.[2] Following the models of Grossman and Helpman (1996) and Puy (2000), we consider a jurisdiction with two political parties, a fixed continuum of voters, and two sets of special interest groups, which, in our case, are tobacco interest and anti-smoking interest groups.

The two political parties face two-dimensional political issues, of which one is ideological and the other is pliable. Each party maintains a firm position on the ideology issues but may modify their pliable policies. Each party has to decide on a policy platform in respect of the pliable issues to maximize the number of votes. After elections, the parties are assumed to implement their platform exactly as they promised.[3] As introduced in Baron (1994), the voters are distinguished as between the "knowledgeable" and the "impressionable."[4] The knowledgeable voters are those who know and understand the parties' positions on both the ideology and the pliable policy issues and then vote for whichever party offers policies that will maximize their utility. The impressionable voters, by contrast, have no opinion about parties' positions prior to the electoral campaign, although they may have initial preferences toward one party or the other. Their vote

[2] The campaign contributions can be monetary funds or in-kind supports, including votes direct from the interest groups. In addition, interest groups may also make efforts to attract voters to participate in their activities and so to become more politically influential.

[3] Parties may have incentives to break promise and change policy positions after elections. Nonetheless, noted in Grossman and Helpman (1996), the keeping of promises can be motivated in a repeated game, where punishments for failure to pursue their commitments are imposed.

[4] The terms used here follow Puy (2000)'s definitions, which are different from Baron (1994) and Grossman and Helpman (1996). In the latter, they named the voters as the informed and the uninformed though the contents of the definitions are identical.

depends primarily on the political campaign that each party carries out. Both types of voters have the ex ante voter bias in favor of one of the parties over the other, which reflects voters' preferences on parties' ideological agenda and other factors that are independent of pliable policy platforms.

Grossman and Helpman (1996) assume that each special interest group is formed by a small group of knowledgeable voters who share similar preferences concerning the pliable issues. Each group seeks to maximize their net expected joint welfare from the pliable policies, particularly in terms of campaign contributions. In this study, we consider only tobacco interest groups and anti-smoking groups. Both interest groups provide political contributions to the parties in order to influence their policy platforms.

The model provides a political equilibrium of a non-cooperative political game, consisting of a set of feasible policy vectors of two parties, and a set of contribution schedules for interest groups, such that each party maximizes its number of votes and each interest group maximizes its members' welfare. With the familiar spatial voting setup and particular function forms, Grossman and Helpman are able to specify the equilibrium platforms in a clear manner.[5] We depict how the competing forces of the voters, the interest groups, and the parties affect the choices of policies in Figure 1.

Each party values interest group contributions because of the existence of impressionable voters, whose votes are driven by electoral campaigns, which are financed by political contributions. The stronger the dominance of the majority party, the greater the political contributions from the interest groups, because the interest groups are more certain about which party's platform will be taken into action. The length of the dotted lines in Figure 1 indicates the degree of influence of the interest groups. As the figure shows, the greater the influence from one side, the party's platform will be further away from the median voter's preference and in favor of the interest groups on that side. Although the party dominance effect is mediated by the amount of political contributions in the model, we can extend the model to include the assumption that a party has incentives to desire "money" for purposes other than obtaining electoral votes. In this case, a strong party can depart from median voter's preference independent of the amount of contribution. For this reason, we consider the interaction of party dominance and median voter's preference in our empirical model.

Next, we summarize the model's implications as follows:

[5] Interested readers may refer to Grossman and Helpman (1996), page 275, for details.

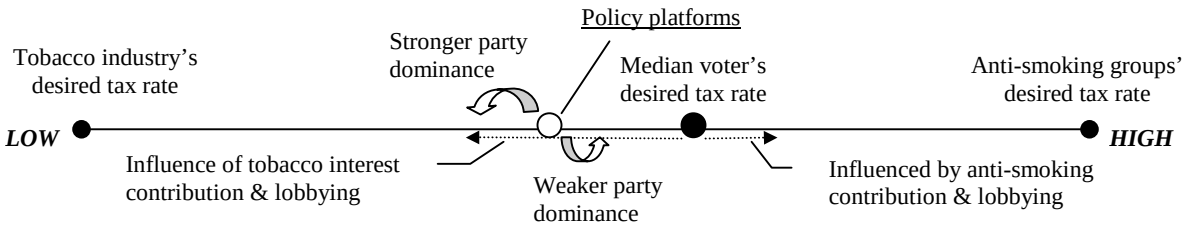

Figure 1. Competing Forces and Choices of Tax Rates

1. Median voter's preference counts: Electoral incentives resulting from the presence of knowledgeable voters lead to the convergence of both parties' policy positions to the preference of the median knowledgeable voters. If the distributions of preferences were identical for knowledgeable and impressionable voters, the preference of the median knowledgeable voters would be the same as that of the median voter in the total voting population. The resulting tobacco tax policy in equilibrium would keep pace with the median voter's preference. In other words, the model implies that the stronger the degree of median voter's attitudes toward anti-smoking policy, the higher the cigarette tax rates.

2. Special interest groups compete: The attitudes of an impressionable voter depend upon the course of election campaign. The more the campaign spending, the more the impressionable votes the party would gain. Grossman and Helpman (1996)'s results suggest: 1) the interest group would contribute to both parties but give a larger amount to the more popular party; 2) the equilibrium platforms lie between the position of the median interest-group member and that of the median voter; and 3) the larger is the fraction of impressionable voters to the total voting population, the bigger amount of campaign contribution the parties would receive from interest groups, and the closer the parties' platforms would be toward interest groups' preferences.[6] These results also imply that cigarette tax rates will be lower where there is greater contribution from tobacco interest groups. On the other hand, further efforts made by anti-smoking groups, in particular, higher political contributions would tend to urge state government to increase the state cigarette tax rate.

3. Party dominance matters: The model also indicates that the locally-favored party, which controls the majority of seats in the legislature, would receive more campaign contributions from special interest groups. In the one lobby case, the government's policy will tend toward the special interest side. Since we have two competing lobbies, pro-tobacco and anti-smoking, unlike Grossman and Helpman's one lobby example, the party's platforms would depend on the relative amount of contributions from each group. However, in either case, the median voter's desire

[6] It is worth to be noticed that both campaign contributions and policy platforms are endogenously determined in the model.

would become less influential in a one-party-dominated legislature, as compared to a more competitive one in which the parties share equal popularity.

3. EMPIRICAL MODEL AND DATA

Our empirical analysis investigates the determinants of cigarette tax setting in the 48 continental states of the United States during selected years between 1997 and 2001. Our regression model can be summarized in the following equation:

$$Tax_{i,t+2} = \alpha_0 + \alpha_1 \cdot VoterAttitude_{it} + \alpha_2 \cdot VoterAttitude_{it} * PartyDom._{it} + \alpha_3 \cdot Tobacco_{it} + \alpha_4 \cdot AntiSmoking_{it} + \beta' X_{it} + u_{it},$$

where $Tax_{i,t+2}$ represents per-pack state cigarette tax; $VoterAttitude_{it'}$ represents voters' attitudes toward more restrictive tobacco control; $PartyDom._{it}$ is a measure of party dominance in state legislature; $Tobacco_{it}$ is a measure of the political influence of tobacco industry; $AntiSmoking_{it}$ is a measure of the political influence of the anti-smoking groups; and X_{it} is a vector of other control variables. Sub-indexes *i* and *t* indicate state and time, respectively. All explanatory variables are measured two years prior to the tax year, to account for policy lags.[7]

The dependent variable, per-pack state cigarette tax, is the amount of cents taxed on each pack of cigarettes sold, obtained from the State Tobacco Activities Tracking & Evaluation (STATE) data set. Following our theoretical framework, we emphasize three major sets of explanatory variables: voters' attitudes on tobacco control; political influence from interest groups; and the interaction term of the party dominance index and voters' attitudes on tobacco control.

First, for measuring voters' attitudes on tobacco policy, we generate two sets of indices from *Current Population Survey* (CPS) - *Tobacco Use Supplements*. The data are available only for the years 1992, 93, 95, 96, 98, and 99, which restricts us from pursuing our study for a longer period. The Tobacco Use Supplements survey asks 9 questions about respondents' opinions toward tobacco regulations.[8] We compute a total score based on the responses to the 9 questions. For each question, a score point of 1 is assigned if the answer was "don't allow at all," 0 if it was "allow

[7] We are concerned that the one-year lag time may not be adequate to truly capture the legislative process of tax changes, and the three-year lag time may be too far away from the reality. So we apply two-year lag time between the measurement points of the potential policy determinants and state cigarette taxes. In addition, we find that the results are somewhat sensitive to the choice of periods of lag.

[8] The first five questions are whether smoking should be allowed or restricted in restaurants, hospitals, indoor work areas, bars and cocktail lounges, and indoor shopping malls. The rest four questions are regarding the regulation of tobacco companies' free samples and advertising activities.

some," and –1 if the response was "allow all smoking." The resulting total score for each respondent, therefore, lies between –9 and 9.[9] A higher score indicates that the person is more likely to support more restrictive tobacco control policies. The first type of voters' attitudes indices consists of a strong and a weak index by categorizing the total score. The strong index, defined as the percentage of population favoring strong tobacco control, is measured by the percentage of sample population whose total score is larger than or equal to 5. The weak index, indicating the percentage of population favoring little tobacco control, is measured by the percentage of sample population whose total score is below 0. The second type of index is a continuous scale of public opinion toward tobacco control, which is measured by the state average of the total score of the respondents.

The political influence from interest groups is measured by political contribution rates and number of lobbyists from tobacco industry and health industry, respectively.[10] We obtain the campaign contribution data at the state level from the National Institute on Money in State Politics (*NIMSP*). The contribution rate of the tobacco industry or health industry is measured by the percentage of campaign funds contributed by the said industry in the total amount of funds. Unfortunately, the *NIMSP* data are very limited in terms of availability and quality for the years before 1993, although some data are available from 1988. In addition to campaign contribution funds, we use the total number of lobbyists from Goldstein and Bearman (1996) as another measure of special interest influence. We expect that having a larger number of lobbyists in the state may increase the interest groups' political influence on policy decisions. The data are available only for the year 1994, and we therefore treat it as a time-invariant measure during our analysis period.

Party dominance is measured by a dichotomous variable, which is defined as 1 if the same party held the legislative majority in the state for the entire period between 1990 and 2000, and 0 otherwise. A legislative majority is defined as owning at least 55% of seats in the state legislature. As discussed in the previous section, greater party dominance in a state is likely to reduce the relative importance of the median voter's preference on policy choices.[11] Therefore, we include an interaction term of party dominance and voters' attitudes on tobacco control to reflect this indirect impact.

[9] The mean for the whole sample population is 4.17. See table 2.
[10] It is common practice to use health industry to represent for anti-smoking interest groups due to data limitation.
[11] It may also induce greater influence from interest groups because interest groups have larger incentives to contribute to a political party when they are certain of a party's decision power.

Also included in our control set are the measures for political institution factors, the so-called ripple effect, and demographic characteristics. First, the studies of political institutions, such as Besley and Case (2003), Callard (1997) and Studlar (2002) suggest that the Republicans seem to be more favorable toward the U.S. tobacco industry than the Democrats. Chriqui (2000) and Goldstein et al. (1997) also indicate that a state legislature under the control of the Republicans tends to hinder restrictive tobacco control policy. In addition, the majority party of a state legislature tends to dominate decisions about state cigarette taxation, even when its governor is from the other party.[12] Based on this evidence, we include the governor's partisanship and party control of seats in the state legislature. The governor's partisanship dummy variable is defined as 1 if the governor is a Democrat, and 0 otherwise. The party control of state legislature is measured by the percentage of house seats held by Democrats. Another institutional factor is the presence of "supermajority rule," which refers to an increase in the number of legislative votes required to pass a tax increase proposal. As of 1996, 13 states required a three-fifths, two-thirds, or three-quarters legislative vote in order to approve tax increases or new taxes.[13] Supermajority rules make it harder to raise taxes. Therefore, we also include a dichotomous variable indicating the presence of a supermajority rule in the state. Interestingly, the supermajority rules are more likely to be adopted by Democrat-controlled states. In 1996, of the 13 states with supermajority rules, 11 were run by Democratic governors and the Democrats held the legislative majority in 8 states.

The distance to point of tobacco production is controlled to capture the so-called "ripple effect." This ripple effect, introduced in Benjamin and Dougan (1997), reflects a monotonic geographic pattern of the cigarette tax rates with the lowest at the center, where tobacco production concentrates. First, tobacco producers at point of production, such as North Carolina, Virginia, and Kentucky, have strong incentives and advantages to influence the excise taxes in their home states due to lower lobbying costs and their industrial importance. The perception that the lowest cigarette tax rates are observed in these tobacco production states supports this argument. Furthermore, evidence shows that cigarette price differences resulting from tax differences among states provide a strong incentive for individuals to purchase cigarettes across state boundaries or from smugglers (Coats, 1995; ACIR, 1977). These cross-border smuggling activities imply a revenue loss for a state imposing a higher tax rate than its neighbors, and therefore lead to tax

[12] These evidences relate to our theoretical framework in two ways: First, the parties may have a certain ideological tendency and a pliable position on a single policy issue. Second, they validate the model setup focusing on a legislature system as it dominates the governor's platform in the decision of state cigarette tax rates.

[13] See Rafool (1996) and Knight (2000) for details.

competition across states. The two mechanisms combined suggest a monotonic increasing rate pattern from the point of production.

Finally, we include several state-specific demographic variables in our analysis. We employ aging, education, gender, race, income, and the metropolitan population centralization degree to reflect potential difference of voter distribution among states. Differences in these characteristics are likely to signal cultural or ideological differences in voters and politicians, therefore inducing policy differences in tobacco taxes among the states.

Restricted by data availability from all sources, our preliminary analysis examines state taxes implemented in the years 1997, 1998, 2000 and 2001. The variable definitions and the descriptive statistics are shown in Table 1 and 2. The model is first estimated by simple ordinary least square (OLS) regressions. Due to the use of pooled data, clustering of repeated appearances of each state are specified to calculate the robust standard errors in our OLS regressions. We also employ fixed-effect (FE) regressions to control for the unobserved state characteristics, given that the unobserved traits and their effects do not change over time. The FE regressions contain state-specific constant terms as explanatory variables, which absorb the observed or unobserved time-invariant characteristics of a state. Fixed-effect models utilize only the over-time changes in the values of variables for a state but not the differences in the levels of variables across states in the estimation. Therefore, all time-invariant variables, including distance to tobacco production, number of tobacco lobbyists, number of health lobbyists, and supermajority dummy, drop out of the fixed effect estimation. For all regressions, we expect the parameters α_1 and α_4 to be positive, and α_2 and α_3 to be negative.

4. RESULTS

In this section we present empirical results with pooled data of the 48 continental states for the four selected years between 1997 and 2001. Table 3 and 4 present the estimates from the OLS and fixed-effects regressions respectively. Under each method, the equations estimated in the three columns differ in the specification of voters' attitude measure. In particular, the first equation includes both the strong and weak indices of the first set of voters' attitudes, the second equation includes only the strong index of the first set of voters' attitudes, and the last one uses the continuous scale of voters' attitudes toward tobacco control. The weak index of the first set of voters' attitudes was removed from the specification (2) due to its high correlation with the strong index, which may cause a multicollinearity problem in estimation.

The OLS results suggest that both political contributions from interest groups and voters' attitudes toward tobacco control have significant effects on state cigarette taxes. An increase of one percentage point in tobacco industry contribution rate leads to reductions in cigarette excise tax of about 10 cents per pack of cigarette. The coefficients of political contributions from the health industry are positive in all specifications, although they are only marginally significant and much smaller in size compared to their tobacco industry counterparts. Voters' attitudes favoring tobacco control have significantly positive effects on the state cigarette tax rates, while the sizes of the effects are smaller in the states that were politically dominated by one specific party during the period of 1990 and 2000. This is consistent with the model's prediction that a state in which the parties share equal popularity is more likely to reflect voters' preferences than a state in which one party is unambiguously dominating the state legislature.

Another significant factor affecting state tax setting is the distance to the center of tobacco production, which is consistent with the ripple-effect found in Benjamin and Dougan (1997). In addition, a state's median income, education composition and racial composition also have significant effects on state cigarette taxes. The states with greater percentage of white population or with higher median income tend to have higher cigarette tax rates, whereas the more the higher-educated population, the lower the state cigarette taxes.

In the fixed-effect regression results, only the voters' attitudes have significant effects on state cigarette tax rates. The coefficients of tobacco industry contribution rate are significantly different from zero in OLS regressions, but not in fixed-effect regressions. A possible explanation for this change is that the contribution rate of the tobacco industry is endogenous to state taxes because greater contributions may reflect a persistently good relationship between the tobacco industry and state governments. Since all time-invariant state characteristics are removed from the fixed-effect estimation, the estimated effects of tobacco industry contributions diminish. In addition, the lack of over-time variations in the explanatory variables may be responsible for the insignificant estimates.

5. CONCLUSION

The issue of tobacco control has long received great attention from policy makers and researchers. Enormous numbers of studies have been conducted to explain the policy choices relating to tobacco control in the United States and around the world. However, the political economy of cigarette tax setting in the area of median voter theorem and special interest politics

requires more quantitative examination. This study uses data from *CPS Tobacco Use Supplements* and the *NIMSP* data set to measure median voter's preference and political influence of special interest groups. Applying the theory provided by Grossman and Helpman (1996), we examine the competing forces of median voter and interest groups in setting state cigarette tax rates.

Our study investigates the determinants of cigarette tax setting in the 48 continental U.S. states for 4 selected years between 1997 and 2001. Our results of OLS regressions suggest that both voters' preferences and political contributions from interest groups are important predictors of state cigarette tax rates. Moreover, the influence of voters' preference is reduced when persistent party dominance is observed in a state. These findings support the implications of Grossman and Helpman's model. We also estimate the fixed effects model to control for unobserved state-specific characteristics. However, most of the coefficients diminish in this model formulation, with the exception of voters' attitude measures. Unlike the majority of the existing empirical work, our study find strong evidence for the median voter theorem in both the OLS and fixed effect results.

Table 1. Variable Definition and Data Source

Variable	Definition	Data Source
State Cigarette Tax (of year t+2)	Per-pack state cigarette excise tax	STATE (CDC)
Indexes for Voters' Attitudes on Tobacco Control		
% Population Favoring Strong Tobacco Control	% of sample whose score of 9 survey questions >=5 (for each questions, 1 = don't allow at all, 0 = allow some, -1 = allow all smoking)	CPS-Tobacco Use Supplement*
% Population Favoring Little Tobacco Control	% of sample whose score of 9 survey questions < 0 (for each questions, 1 = don't allow at all, 0 = allow some, -1 = allow all smoking)	CPS-Tobacco Use Supplement*
Score of Public Opinion Toward Tobacco Control	State average score of 9 survey questions (for each questions, 1 = don't allow at all, 0 = allow some, -1 = allow all smoking)	CPS-Tobacco Use Supplement*
Political Influence from Interest Groups		
Tobacco Industry Campaign Contribution Rate	% of political contributions from tobacco industry	Following the money (NIMSP)
Health Industry Campaign Contribution Rate	% of political contributions from health industry	Following the money (NIMSP)
# of Tobacco Lobbyists	Total number of tobacco lobbyists in 1994	Goldstein-Bearman
# of Health Lobbyists	Total number of health lobbyists in 1994	Goldstein-Bearman
Political Institution Factors		
Party Dominance	1 if any single party dominates state legislature during the whole 1990s; 0 if else	Statistical Abstract*
Governor's Partisanship	1/0 if Democratic/Republican governor	Statistical Abstract*
State Legislature's Partisanship	% of Democratic seats in state legislature	Statistical Abstract*
Supermajority Dummy	1 if there are supermajority rules; 0 if else	Rafool (1996)
Other Control Variables		
Distance to Tobacco Production	Distance to the center of tobacco production (North Carolina)	GIS*
% Less than college	% of population without any college education for 25 years old and above	CPS
% Male	% of male population	CPS
% Metropolitan Population	% of population living in metropolitan areas	CPS
% African American	% of African American to population	Statistical Abstract
% Age 65 or over	% of 65 years old and above population	Statistical Abstract
% Under Age 25	% of under 25 years old population	Statistical Abstract
State Median Income	State median income of households	Statistical Abstract
% Population Below Poverty level	% of population with income below poverty level	Statistical Abstract

Notations: STATE= State Tobacco Activities Tracking & Evaluation; CDC = Centers for Disease Control and Prevention; NIMSP=The National Institute on Money in State Politics; Statistical Abstract = U.S. Census Bureau, Statistical Abstract of the United States; CPS= Current Population Survey; AS=Agricultural Statistics Data Base; USDA=U.S. Department of Agriculture; NASS=National Agricultural Statistical Service; GIS=Geographic Information System

* Author's calculation added.

Table 2. Descriptive Statistics of Analysis Sample (127 Observations)

Variable (unit)	Mean	Std. Dev.	Min.	Max.
State Cigarette Tax Rate (of Year t+2) (¢ per pack)	46.33	36.58	2.50	151.00
Voters' Attitudes on Tobacco Control				
% Pop Favoring Strong Tobacco Control	52.97	8.21	30.68	75.86
% Pop Favoring Little Tobacco Control	11.74	4.61	3.35	27.99
Score of Public Opinion Toward Tobacco Control	4.22	0.70	2.15	5.84
Political Influence from Interest Groups				
Tobacco Industry Contribution Rate (%)	0.33	0.40	-0.18	2.19
Health Industry Contribution Rate (%)	3.85	1.88	0	10.40
# of Tobacco Lobbyists	9.83	4.31	3	25
# of Health Lobbyists	66.58	63.21	9	280
Political Institution Factors				
Party Dominance	0.69	0.46	0	1
Governor's Partisanship (Dem.)	0.31	0.47	0	1
State Legislature's Partisanship (Dem.)	0.47	0.50	0	1
Supermajority Dummy	0.20	0.41	0	1
Other Control Variables				
Distance to Tobacco Production (1,000 mileage)	4813.9	3304.4	0	11917.3
% Less than college	50.86	6.14	36.53	66.52
% Male	48.90	0.97	46.41	51.11
% Metropolitan Population	69.26	20.37	22.27	100
% African Americans	10.78	10.44	0	39.00
% Age 65 or over	12.28	1.95	7.67	17.14
% Under Age 25	35.27	2.95	28.94	46.77
State Median Income ($)	38968.7	5359.8	26637	52310
% Population Below Poverty level	12.27	3.62	5.7	25.5

Table 3. OLS Regression Results

(Dependent Variable: State Cigarette Excise Tax Rates, t+2)

	(1)	(2)	(3)
% Pop Favoring Little Tobacco Control (%little)	-0.757		
	(1.243)		
% Pop Favoring Strong Tobacco Control (%strong)	1.744***	1.812***	
	(0.575)	(0.337)	
Score of Public Opinion Toward Tobacco Control (score)			21.317***
			(4.090)
%little * Party Dominance	0.659		
	(0.864)		
%strong * Party Dominance	-0.462	-0.321**	
	(0.293)	(0.132)	
score * Party Dominance			-4.053**
			(1.663)
Tobacco Industry Contribution Rate	-9.877*	-10.476**	-10.287**
	(5.080)	(4.940)	(4.727)
Health Industry Contribution Rate	1.378	1.414	1.629*
	(0.912)	(0.862)	(0.862)
# of Tobacco Lobbyists	-0.371	-0.430	-0.388
	(0.444)	(0.440)	(0.451)
# of Health Lobbyists	-0.014	-0.014	-0.021
	(0.049)	(0.049)	(0.048)
Governor's Partisanship (Dem.)	-4.521	-5.320	-5.193
	(5.653)	(5.239)	(5.319)
State Legislature's Partisanship (Dem.)	2.652	2.088	2.706
	(5.237)	(5.174)	(5.172)
Supermajority Dummy	-4.096	-3.458	-2.283
	(9.878)	(9.173)	(9.240)
Distance to Tobacco Production	0.003*	0.003*	0.003*
	(0.002)	(0.002)	(0.002)
% Less than college	1.316*	1.342**	1.453**
	(0.728)	(0.660)	(0.686)
% Male	-2.602	-2.903	-2.724
	(2.740)	(2.929)	(2.910)
% Metropolitan Population	0.212	0.196	0.197
	(0.163)	(0.149)	(0.148)
% African Americans	-0.531**	-0.595**	-0.600**
	(0.253)	(0.234)	(0.241)
% Age 65 or over	2.384	2.228	2.228
	(2.067)	(1.936)	(1.977)
% Under Age 25	-0.093	-0.253	0.076
	(1.130)	(1.107)	(1.105)
State Median Income	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)
% Population Below Poverty level	1.263	1.356	1.264
	(0.853)	(0.882)	(0.905)
Constant	-149.521	-138.501	-158.549
	(164.828)	(167.978)	(169.649)
Observations	127	127	127
Number of States	43	43	43
R-squared	0.6931	0.6903	0.6902

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4. Fixed-Effects Regression Results

(Dependent Variable: State Cigarette Excise Tax Rates, t+2)

	(1)	(2)	(3)
% Pop Favoring Little Tobacco Control (%little)	0.094		
	(0.520)		
% Pop Favoring Strong Tobacco Control (%strong)	0.537*	0.420*	
	(0.318)	(0.239)	
Score of Public Opinion Toward Tobacco Control (score)			4.683*
			(2.784)
%little * Party Dominance	0.304		
	(0.459)		
%strong * Party Dominance	-0.081	-0.042	
	(0.116)	(0.105)	
score * Party Dominance			-0.631
			(1.311)
Tobacco Industry Contribution Rate	2.643	2.517	2.539
	(2.420)	(2.377)	(2.383)
Health Industry Contribution Rate	-0.226	-0.237	-0.212
	(0.353)	(0.343)	(0.345)
Governor's Partisanship (Dem..)	-1.193	-1.020	-1.224
	(2.857)	(2.822)	(2.827)
State Legislature's Partisanship (Dem.)	3.767	3.126	3.327
	(5.953)	(5.715)	(5.748)
% Less than college	-0.275	-0.210	-0.221
	(0.440)	(0.427)	(0.430)
% Male	-0.722	-0.681	-0.627
	(0.767)	(0.756)	(0.767)
% Metropolitan Population	0.119	0.065	0.111
	(0.428)	(0.410)	(0.413)
% African Americans	0.913	0.909	0.949
	(0.605)	(0.578)	(0.591)
% Age 65 or over	-0.110	-0.103	-0.168
	(0.727)	(0.709)	(0.707)
% Under Age 25	-0.741	-0.725	-0.687
	(0.652)	(0.645)	(0.645)
State Median Income	0.0002	0.0001	0.0001
	(0.000)	(0.000)	(0.000)
% Population Below Poverty level	0.321	0.361	0.339
	(0.393)	(0.386)	(0.387)
Constant	56.148	64.914	61.018
	(62.738)	(61.410)	(62.933)
Observations	127	127	127
Number of States	43	43	43
Within R-squared	0.1992	0.1898	0.1864

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

REFERENCES

ACIR, 1977, *Cigarette Bootlegging: A State and Federal Responsibility*. Washington, DC: Advisory Commission on Intergovernmental Relations.

Baron, David- P., 1994, "Electoral Competition with Informed and Uninformed Voters," *American Political Science Review March*, 88, 1, 33-47.

Benjamin, Daniel K. and William R. Dougan, 1997, "Efficient Excise Taxation: The Evidence From Cigarettes," *Journal of Law and Economics*, XL, 113-136.

Besley, Timothy and Anne Case, 1995, "Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition," *American-Economic-Review*, 85, 1, pages 25-45.

Besley, Timothy and Anne Case, 2003, "Political Institutions and Policy Choices: Evidence from the United States," *Journal of Economic Literature*, XLI, 7-73.

Brown, A. Blake, 1995, "Cigarette Taxes and Smoking Restrictions: Impacts and Policy Implications," *American-Journal-of-Agricultural-Economics*, 77, 4, pages 946-951.

Buchanan, James M. and Gordon Tullock, 1962, *The Calculus of Consent*. Ann Arbor: University of Michigan Press.

Callard, Cynthia, 1997, "The Canadian Set-Back: Tobacco Use in Canada 1986-1997," In *10th World Conference on Smoking Or Health*. Peking, China.

CFTFK, 2002, "Voters Across the Country Support Significant Increases in State Cigarette Taxes," In. Washington, DC: National Center for Tobacco-Free Kids Action Fund.

Chaloupka, Frank and Michael Grossman, 1996, "Price, Tobacco Control Policies and Youth Smoking," *NBER Working Paper*, 5740, 25.

Chriqui, James F., 2000, "Restricting Minors' Access to Tobacco Products: How Do State Laws Measure Up?," In *American Political Science Association*. Washington.

Coats, Morris, 1995, "A Note on Estimating Cross-Border Effects of State Cigarette Taxes," *National Tax Journal*, 48, 4, 573-584.

Dearlove, Joanna and Stanton A. Glantz, 2000, "Tobacco Industry Political Influence and Tobacco Policy Making in New York 1983-1999," In. San Francisco: Institute for Health Policy Studies.

Evans, William- N., Jeanne- S. Ringel and Diana Stech, 1999, "Tobacco Taxes and Public Policy to Discourage Smoking," *Poterba, James M, ed Tax policy and the economy*, 13, 1-55.

Goldstein, Adam O. and Nathan S. Bearman, 1996, "State Tobacco Lobbyists and Organizations in the United States: Crossed Lines," *American Journal of Public Health*, 86, 8, 1137-1142.

Goldstein, Adam O., Joanna E. Cohen, Brain S. Flynn, Nell H. Gottlieb, Laura J. Solomon, Greg S. Dana, Karl E. Bauman and Michael C. Munger, 1997, "State Legislators' Attitudes and

Voting Intentions Toward Tobacco Control Legislation," *American Journal of Public Health*, 87, 7, 1197-1200.

Grossman, Gene- M. and Elhanan Helpman, 1996, "Electoral Competition and Special Interest Politics," *Review of Economic Studies*, 63, 2, 265-286.

Knight, Brian G., 2000, "Supermajority Voting Requirements for Tax Increases: Evidence from the States," *Journal of Public Economics*, 76, 41-67.

Monardi, Fred M. and Stanton A. Glantz, 1997, "Tobacco Industry Political Activity and Tobacco Control Policy Making in Pennsylvania: 1979-1996," In. San Francisco: Institute for Health Policy Studies.

Monardi, Fred M. and Stanton A. Glantz, 1998, "Tobacco Industry Political Activity and Tobacco Control Policy Making in Ohio: 1981-1998," In. San Francisco: Institute for Health Policy Studies.

Ohsfeldt, Robert- L., Raymond- G. Boyle and Eli- I. Capilouto, 1998, "Tobacco Taxes, Smoking Restrictions, and Tobacco Use," *National Bureau of Economic Research Working Paper*, 6486, 14.

Puy, M. Socorro, 2000, "Lobby Groups and the Financial Support of Election Campaigns," *Journal of Public Economic Theory July*, 2, 3, 319-348.

Rafool, M., 1996, "The Fiscal Perspective: State Tax and Expenditure Limits. The Fiscal Letter," In *National Conference of State Legislatures*.

Studlar, Donley T., 2002, *Tobacco control : comparative politics in the United States and Canada / Canada / Donley T. Studlar*. Peterborough, Ont.: Broadview Press.