

Lame Duck Governors and Vertical Tax Externalities

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Abstract

This paper investigates whether reputation building strategies guide U.S. governors' responses to changes in federal cigarette taxes. If state governors facing a binding term limit (lame ducks) exhibit a different response than other governors, then reputational concerns affect their behavior according to Besley and Case (1995). Using 1975-2000 data, we find the first evidence that reputation-building strategies affect the nature of vertical tax externalities. Lame duck governors exhibit a more negative response to changes in the federal cigarette tax. Moreover, governor behavior is conditional on party affiliation, as Republican lame duck governors have a stronger tendency to respond negatively.

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1. Introduction

In federal systems, taxes set at one level of government (e.g., the federal level) influence the tax base of other levels of government (e.g., the state level). A growing literature examines such “vertical tax interactions” in federal systems (see, e.g., Besley and Rosen 1998; Devereux *et al.* 2007). Another parallel literature examines how electoral accountability affects policymaking in areas such as state tax and expenditure policy, as well as state environmental policy (e.g., Besley and Case 1995; Bernhardt *et al.* 2004; List and Sturm 2006). This latter literature seeks to analyze how politicians’ reputation-building behavior is affected by limits on their term in office.¹ Is a governor’s behavior altered in her last term in office? 35 states had gubernatorial term limits in year 2000, and term limits may consequently have significant policy effects.

In this paper, we stake out a new empirical research question by merging the above two (previously separate) strands of the literature. In particular, are state governors’ *responses* to federal policymaking guided by reputation-building strategies?

Existing theory provides guidance in formulating predictions. First, in the area of reputation-building, Banks and Sundaram (1998) (see also Barro 1970), Besley and Case (1995) provide a model where voters with imperfect information reelect a governor with a higher probability, the greater the incumbent’s effort (and consequently more “successful” policies, raising voters’ utility). In the governor’s final term, when she is without re-election considerations, the governor puts in less effort and the policy choices will differ from earlier periods.²

Second, a growing theoretical literature on vertical commodity tax externalities identifies a multitude of opposing and ambiguous effects of a federal tax increase on state commodity taxes. Determinants of the slope of the state reaction function include the price-elasticity of demand,

¹ See Lopez (2003) for a useful survey of the Congressional term limit literature.

² See also Dick and Lott (1993), Glaeser (1997), and Bernhardt *et al.* (2004) for theoretical contributions.

revenue effects, and the extent of cross-border shopping and horizontal tax competition (see, e.g., Besley and Rosen 1998; Keen 1998; Devereux *et al.* 2007).³

Since the theoretical literature on vertical tax externalities yields ambiguous answers, the following prediction emerges regarding last-term governors' responses to changes to federal taxation: if governors are guided by reputation-building strategies, "lame duck" governors will respond differently to federal tax changes than do governors who are not in their last term in office. This is because lame duck governors no longer have electoral accountability (reputation building) considerations.

Our particular focus is cigarette taxation, which is practiced both at the federal and state levels.⁴ Utilizing state level panel data for 1975-2000, we find that lame duck governors do behave differently than other governors. They do so in two ways. In particular, while they set higher cigarette taxes than other governors, they also have a more negative response to federal tax changes than their non-lame-duck counterparts. This suggests that reputation building is an important strategy for governors seeking re-election, and it appears in multiple dimensions of policy making. We also find that these reputation building approaches are pursued particularly by Republican governors, who appear to have an especially clear change of heart in their last period in office. This

³ For example, Keen (1998) and Devereux *et al.* (2007) argue that the price-elasticity of demand (the elasticity of the tax base) is an important determinant of the sign of the tax reaction function. Besley and Rosen (1998) argue that a revenue effect arises from the need of states to raise tax rates in order to keep state revenues intact, which results in a positive response to a federal tax hike. Devereux *et al.* also discuss the case of cross-border shopping and horizontal tax competition. When no cross-border shopping occurs, the state commodity tax responds negatively to the federal tax when demand is linear, but positively if demand is iso-elastic. When cross-border shopping is intense and demand is relatively price-inelastic, the state commodity tax will be unresponsive to the federal tax rate (but highly positively responsive to neighboring states' rates); when demand instead is elastic, the response is ambiguous (Devereux *et al.*). Besley and Rosen (1998) and Keen (1998) in addition argue that a federal tax hike increases the marginal value of state public goods, raising the attractiveness of the state tax. Keen points out that when the federal tax raises the consumer price and thus reduces demand for the good, the welfare loss resulting from the state tax declines, yielding a positive response. Moreover, Besley and Rosen suggest that there may be complementarity and substitutability effects among various types of taxes, in the presence of non-separabilities in demand. This suggests ambiguous responses by states. Besley and Rosen furthermore identify the possibility of endogenously determined expenditure effects, where states reduce public spending as a response to federal tax increases. This also yields an ambiguous effect on state taxes.

⁴ The focusing on cigarette taxation appears to have the advantage that it is an easily measured policy instrument and that policy choices are clearly identified (as opposed to total tax revenues and expenditures, which depend on overall economic growth and other factors).

applies both to cigarette taxes in general, and in particular to the response to federal tax policy changes. We believe these findings are new contributions to the literature. Our results hold up to several forms of robustness analysis, including the inclusion of a horizontal tax interaction variable (see Rork 2003), a lagged dependent variable (see Devereux *et al.* 2007), another state sin tax (beer tax), and the exclusion of tobacco producing states from the sample.

The earlier empirical literature on vertical tax externalities does not provide an unambiguous finding. In the area of commodity taxes, Besley and Rosen (1998) (using 1975-89 data) and Devereux *et al.* (2007) (using 1977-97 data) find positive or insignificant effects on U.S. state cigarette and gasoline taxes of an increase in the corresponding federal excise tax using data, while Fredriksson and Mumun (2007) report a negative vertical cigarette tax externality for years 1982-2001.⁵ This literature has not incorporated the effect of reputation building strategies.

The empirical literature on the policy impact of politicians' "lame duck" status has not settled on a final conclusion either. Besley and Case (1995) found that Democratic lame duck governors had significantly higher total state taxes per capita and higher state expenditures per capita during years 1950-86. Besley and Case (2003) extended their earlier data set to 1997 and found a significant effect only for state expenditures. Millimet *et al.* (2004) extended the sample further to 1999, and found even stronger effects positive effects than the earlier literature. Moreover, they found that Republican lame ducks raise taxes and spending per capita more than do Democratic lame ducks.⁶ This literature has not investigated vertical tax externalities.

⁵ The literature has also explored other areas of taxation. Boadway and Hayashi (2001) and Karkalakos and Kotsogiannis (2007) report negative effects on Canadian provincial corporate taxes, and Goodspeed (2000) finds a negative effect on U.S. state income taxes of federal income tax changes. Esteller-Moré and Solé-Ollé (2001) establish a positive impact on U.S. state taxes of federal personal income and general sales taxes, whereas Esteller-Moré and Solé-Ollé (2002) report a similar relationship for Canadian income taxes. Brülhart and Jametti (2006) find a positive vertical externality on Swiss personal and corporate sub-national taxes. For other theoretical and empirical contributions to the tax competition literature, see, for example, Boadway and Keen (1996), Boadway *et al.* (1998), Boadway and Hayashi (2001), Hoyt (2001), and Ravelli (2003). See Brueckner (2003) for a useful survey of the literature on horizontal tax externalities.

⁶ Lott (1987) and Lott and Bronars (1993) used voluntary retirements from the U.S. Congress as an indicator for a binding term limit in order to detect changes in voting patterns during the last term in office. Little evidence was uncovered of such a behavior. Lee (2002) and Erler (2007) also report that term limits lead to higher levels of spending.

The paper is organized as follows. Section II discusses the empirical model, data, and hypothesis specification. Section III presents the results, and Section IV provides a brief conclusion.

II. Empirical Analysis

The Empirical Model

The main empirical aim of this paper is to estimate the effect (direction and size) on state cigarette excise taxes of changes in the U.S. federal cigarette tax, and in particular whether the effect is conditional on governor lame duck status. The following basic empirical model is estimated:

$$t_{it}^s = \alpha_i + \gamma t_t^f + \beta l_{it} + \rho t_t^f \times l_{it} + \delta X_t + \theta Z_{it} + \varepsilon_{it}, \quad (1)$$

where t_{it}^s is the cigarette tax rate in state i in year t , α_i is a state fixed effect, t_t^f is the federal cigarette tax in year t , l_{it} is a dummy variable equal to one if the governor in state i has lame duck status in year t , $t_t^f \times l_{it}$ is the corresponding interaction variable, X_t are the time varying controls common to all states, Z_{it} are the time and state varying controls, and ε_{it} is a random error term. The coefficients of interest are γ and ρ .

Data and Hypothesis Specification

Our data set spans 1975 to 2000 and comprises 48 contiguous U.S. states. All sources and variable definitions, as well as summary statistics, are reported in Table 1. The state and federal cigarette excise tax rates (per pack of 20 cigarettes) come from Orzechowski and Walker (2003) and are deflated to 1983 constant \$ prices. The state tax rates (*STATETAX*) vary substantially across states and over time. In 2000, the state cigarette excise tax rate ranged from \$0.025 per pack in Virginia to \$1.11 in New York. The federal tax rate (*FEDTAX*) is identical for all states in any given year (of course). From 1952 to 1975 the nominal federal tax rate was 8 cents per pack, but by year 2000 it had increased to 34 cents (after several tax hikes). The nominal state cigarette tax rate

increased for most states between 1975 and 2000, although every state did not exhibit an increasing trend.

Data on gubernatorial term limits come from List and Sturm (2006). *LAMEDUCK* takes a value of one if the incumbent governor is currently facing a binding term limit, and zero otherwise. In many U.S. states, governors face term limits after two terms in office. However, both one and three term limits existed during our sample period. Table A1 in the appendix describes the pattern of term limit legislation across states during the sample period.

In order to distinguish the policy responses by political party affiliation, we differentiate lame ducks by party affiliation. *DEMOLAME* represents lame duck Democrats, and *REPLAME* is their Republican counterparts. *DEMOLAME* and *REPLAME* take a value of one if a lame duck governor is a Democrat and Republican, respectively.

We utilize control variables from Besley and Rosen (1998) and Fredriksson and Mamun (2007). *SALES* measures lagged (one year) per capita cigarette sales (in 100s) at the state level in a given year (Orzechowski and Walker). *SALES* controls for the voting incentive of smokers and the lobbying pressure from cigarette producers and distributors (Dixit *et al.* 1996). In addition, we use the sale of cigarettes per square mile (lagged one year) to measure smokers' and tobacco sellers' ability to organize politically and thus gain political influence (*CONCENTRATION*).

State level corruption is measured by the number of convictions of public officials on corruption charges per 1000 public employees (*CORRUPTION*). The conviction data is collected from the U.S. Department of Justice (various years), and is used also by, e.g., Glaeser and Saks (2006). Rose-Ackerman (1975) and Glaeser and Saks (2006) suggest that corruption distorts policy and economic outcomes. Politicians may be bribed during the initial policy formulation, or political pressure may be exerted on officials by producer and other lobby groups to change (or not to change, or delay changing) existing policies.

In order to control for political party dominance, we use (i) a dummy variable equal to one if the state governor is a Democrat (*DEMOGOV*), (ii) the proportion of Democrats in the state Senate (*DEMOSENATE*), and (iii) the proportion of Democrats in the state House (*DEMOHOUSE*). The state governor data comes from the National Governors Association (2005), while the proportions of Democrats in Senate and House come from various editions of the Statistical Abstracts of the United States (U.S. Census Bureau (various years)).

National real GDP (*NatlGDP*) and the national unemployment rate (*NatlUNEMPLOY*) capture fluctuations in the national economic climate. These variables represent the X_t controls in Eqn. (1). The time and state varying controls Z_{it} in Eqn. (1) consist of state demographic and economic variables such as the total state population (*POPULATION*), real state income per capita (*INCOME*), state unemployment rate (*UNEMPLOYstate*), the portion of population in the state between five and 17 years of age (*CHILD*), and over 65 years old (*OVER65*). The national real GDP, population, and state income data are from the Bureau of Economic Analysis (U.S. Department of Commerce (various years)), and the state unemployment rates are from the Bureau of Labor Statistics (U.S. Department of Labor (various years)). The data on the national unemployment rate and the proportion of children and the aged in the population are from various editions of the Statistical Abstracts of the United States (U.S. Census Bureau (various years)).

Next, *TOBBACO INCOME* equals tobacco production per dollar of state income, and comes from USDA (various years); it measures the relative importance of tobacco for the state. In addition, *GAS* measures gasoline production per dollar of state income, *GRANTS* is federal grants/capita, and *INCOME TAX* is the federal income tax divided by adjusted gross income. The daily gasoline production data comes from the U.S. Department of Energy (various years) database, whereas federal grant and income tax data comes from the U.S. Census Bureau (various years).

III. Empirical Results

As shown by Moulton (1986), OLS estimations may give spurious results if the dependent variable is at the individual level and one or more of the independent variables are at the aggregate level. Thus, we utilize White (1980) robust standard errors and allow for within year correlations.

Table 2 reports results using *LAMEDUCK*, and various combinations of party affiliation controls and their *FEDTAX* interactions. Model VII drops three political economy related controls. *FEDTAX* is positive in all models in Table 2, but significant only in Models I-IV. However, the *FEDTAX*LAMEDUCK* interaction is significant and negative in all models. *LAMEDUCK* is consistently positive and significant in all seven models presented in Table 2. Table 2 also reveals that *FEDTAX* and *FEDTAX*LAMEDUCK* are jointly significant in all models.

Our results suggest that governors in their last period of incumbency behave differently than other governors, and they do so in two dimensions. First, lame duck governors set higher cigarette tax rates than other governors. Similar results have been shown previously in the literature (see Besley and Case 1995), although not for cigarette taxes specifically. Second, they tend to respond to real federal tax hikes by giving a more negative response than other governors (who exhibit a positive or no significant response to *FEDTAX* changes). This is a new contribution to the literature, which has not previously addressed this issue. Both findings lend support to models of reputation-building behavior by politicians (discussed, e.g., by Besley and Case 1995).

Table 3 takes a closer look at lame duck governors' party affiliation. Here, we separate Democratic governors (*DEMOLAME*) and Republican governors (*REPLAME*).⁷ *FEDTAX* is significant and positive in four models (Models IX-XII). While *FEDTAX*DEMOLAME* reaches significance at conventional levels in two models (Models VI-VII), *FEDTAX*REPLAME* is consistently negative and significant in all models. Moreover, the latter interaction consistently has a

⁷ The joint significance of the *FEDTAX*, *DEMLAME*, *REPLAME*, and their interactions are reported at the bottom of Table 3.

greater coefficient size than the former. Thus, the results reported in Table 2 for *FEDTAX*LAMEDUCK* appear largely driven by Republican governors facing binding term limits.

Next, both *DEMOLAME* and *REPLAME* are positive and significant in all models except Model IV (*DEMOLAME* not significant). The effect of *REPLAME* appears stronger, as it is significant at the 1 percent level in all models in Table 3. The *REPLAME* coefficient is also greater than the *DEMOLAME* coefficient in all models. This finding differs from Besley and Case (1995) who found that primarily lame duck Democrats set higher taxes and spending levels. However, our result is consistent with Millimet *et al.* (2004) who report that Republican lame duck governors raise per capita taxes and spending more than do Democratic lame ducks.

The different results across parties is explained by Alesina and Rosenthal (1995), who argue that voters have different expectations regarding tax policies depending on government ideology, and thus evaluate political parties' tax policies differently. Moreover, Lowry *et al.* (1998) find that Republican governors lose votes if under their watch unanticipated increases in state budgets occur, while their Democratic counterparts are not penalized and may even be rewarded for such behavior. On the other hand, voters reward Republicans and punish Democrats for unexpected budget cuts.

In sum, we find evidence that both Democratic and Republican governors engage in reputation building. However, Republican governors appear particularly concerned about their reputation in the area of taxation when eligible for re-election. Once a Republican is elected governor for the last time, she changes her approach to cigarette taxes in important ways.

Robustness Analysis

Tables 4 and 5 offer robustness analysis based on Model IV in Tables 2 and 3, respectively. In the following, we discuss Tables 4 and 5 simultaneously, unless otherwise noted. In Model I, *FEDTAX* is instrumented by the federal deficit as a percentage of national GDP, following Besley and Rosen (1998). In the IV models, we report the F-test of joint significance of the instruments in

each first-stage regression in the footnote of the tables. In addition, we report Shea's (1997) partial R^2 , Anderson's under-identification test (see Hall *et al.* 1996) and finally, the Anderson-Rubin test that the endogenous variables are jointly statistically significant (Anderson and Rubin 1949). In Model II, we investigate whether changes in *FEDTAX* may affect state taxes with a lag (of one year). State legislators may react to federal legislation with a lag, or state legislation may not take effect until the following year (as discussed by Reed 2006). Model III includes only states that did not have any changes in the term limit legislation during the time period studied. Changes in taxes and term limits may be simultaneously determined (as discussed by Besley and Case 1995). Model IV adds *NEIGHBOR TAX_{t-1}*, which seeks to control for horizontal tax interactions (Brueckner 2003; Devereux *et al.* 2007). Following Rork (2003), we utilize the population weighted tax set by neighboring states (lagged one year), instrumented by the population weighted state unemployment rate, the percentage of children and old in the population and the proportion of Democrats in the state House (see also Devereux *et al.* 2007). Model V includes a lagged dependent variable, *STATE TAX_{t-1}*. As argued by Devereux *et al.* (2007), a lagged dependent variable is appropriate since the state taxes exhibit strong serial correlation. We instrument *STATE TAX_{t-1}* by the second lag of the dependent variable. This necessitates dropping *SALES. BEER TAX* is included in Model VI and comes from the World Tax Data Base (2006); it adjusts for another sin tax. Finally, in Model VII we drop all tobacco producing states, since they may exhibit a different approach to cigarette taxation. It would be of concern if these states drive our results.

In Table 4, *FEDTAX* and *LAMEDUCK* are positive and significant in all models, and *FEDTAX*LAMEDUCK* is negative and significant in all models except in Model III where it does not reach significance at conventional levels. Model III excludes the 17 states that changed term limit legislation during the sample period (see Table A1 in the appendix), and the smaller sample size may be one reason for this finding. An additional reason may be that we are here grouping

heterogeneous lame duck governors (in a smaller sample). Recall that Table 3 suggested that primarily Republican lame duck governors display a significant response to *FEDTAX* changes. In fact, Model III in Table 5 below suggests a similar behavior by Republican lame ducks in states without any changes in term limit legislation (corresponding to Model III in Table 4). In Model III of Table 5 *FEDTAX*REPLAME* is negative and significant, supporting the reputation building hypothesis. In the same model *FEDTAX*DEMOLAME* is far from significant (and the coefficient is positive and close to zero). Lumping heterogeneous governors into *LAMEDUCK* in Table 4 consequently (at least partially) explains the insignificant result.⁸ Nevertheless, this finding is of some concern. We therefore ran additional models using, dropping the three political economy controls *SALES*, *CORRUPT*, and *CONCENTRATION* (not reported in our tables). The sample size now rises somewhat. *FEDTAX*LAMEDUCK* becomes significant at the 5 percent level (with *FEDTAX* and *LAMEDUCK* significant at the 5 and 1 percent level, respectively) (remaining results available upon request).

Adding *NEIGHBOR TAX₁*, *STATETAX₁*, and *BEERTAX* in Models IV-VI in Tables 4-5, respectively, do not affect the coefficients of interest in material ways. The highly significant *NEIGHBOR TAX₁* coefficient indicates the presence of horizontal strategic interaction among states, while the insignificant *BEERTAX* suggests that states tend not to adopt any particular pro- or anti-sin stance. Finally, Model VII suggests that our earlier results are not driven by tobacco producing states.

Controls

In Tables 2-3, *FEDTAX* interacted with *DEMOGOV*, *DEMOSENATE*, or *DEMOHOUSE* is never significant. Thus, we find no evidence that states' responses to federal tax changes are more positive with a Democratic governor or with a greater share of Democratic House representatives.

⁸ The proportion of lame duck governors is roughly 0.58 Democratic and 0.42 Republican in this sample for Model III. In full sample the proportion is 0.60 and 0.40 for Democratic and Republican governors.

Next, *DEMOGOV* reaches significance in eleven of the 28 models in Tables 2-5, *DEMOHOUSE* is significant in 14 models in these tables, while *DEMOSenate* is negative and significant only in the non-tobacco-producing state sample (Model VII in Tables 4-5). Thus, there is some weak evidence in Tables 2-5 that Democratic governors and (especially) a higher share of Democratic state House legislators lead to higher cigarette taxes.

SALES and *CONCENTRATION* are consistently negative in all models, suggesting smoking voters and special interest groups are more successful at reducing the cigarette tax, the greater the amount at stake and the easier time they have to organize collective action.⁹ *INCOME* is negative and significant in a majority of the models in Tables 2-5, suggesting that states with higher income tax revenues have a lower marginal need to tax cigarettes in order to meet revenue targets. Young states (as measured by *CHILD*) have higher cigarette taxes, perhaps in order to fund schools or discourage smoking. The generally negative *OVER65* coefficients suggest that older populations, who may have a larger share of smokers, yield lower cigarette taxes. Both *TOBACCO INCOME* and *GAS* are positive and significant in a majority of models, suggesting both tobacco and gasoline producing states set higher cigarette tax rates. We have no good explanation for why *TOBACCO INCOME* has this impact, but lobbying by gasoline producers appears to raise cigarette taxes. *GRANTS* is negative and significant in most models, suggesting the need to generate tax revenues is lower in states where the federal government dispenses more grants per capita. The remaining controls do not reveal consistently significant coefficients.

IV. Conclusion

This paper provides initial evidence that reputation building strategies by state governors affect their responses to federal tax policy changes. In particular, our findings suggest that the nature

⁹ Note that dropping *SALES* and *CONCENTRATION* (in addition to *CORRUPT*) in Model VII in both Tables 2-3 affects several coefficients of interest. The *LAMEDUCK*, *DEMOLAME*, and *REPLAME* coefficients (and their interactions) grow larger in Table 2 and 3 (in absolute value), respectively, and *FEDTAX*DEMOLAME* becomes highly significant in Model VII in Table 3. This suggests that controlling for these political economy variables is important when making predictions about vertical tax externalities.

of vertical tax externalities is affected when governors face a binding term limit (i.e. when they are no longer affected by re-election considerations). This is particularly evident for Republican governors. While the average governor has a positive or insignificant response to federal changes in cigarette taxes, Republican lame duck governors exhibit a more *negative* response to federal policy making. Moreover, lame ducks of both Democratic and Republican persuasions set higher cigarette taxes than other governors. Again, this is evidence of reputation building strategies in another dimension of tax policy choices.

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Appendix I

Table A1. Term Limit Legislation for Governors by State (1975-2000)

States with no term limits (13 states):

CT, ID, IL, IA, MA,^a MN, NH, NY, ND, TX, VT, WA,^b WI

States limiting governors to one term in office:

VA

States limiting governors to two terms in office (17 states):

AL, DE, FL, KS, LA, MD, ME, MO, NE, NJ, NV, OH, OK, OR, PA, SD, WV

State law changed from no term limit to a three-term limit:

UT (1994)

State law changed from no term limit to a two-term limit (8 states):

AZ (1992), AR (1992), CA (1990), CO (1990), MI (1992), MT (1992),
RI (1994), WY (1992)

State law changed from a one-term limit to a two-term limit (8 states):

GA (1976), IN (1972), KY (1992), NM (1991), MS (1986), NC (1977),
SC (1980), TN (1978)

Source: List and Sturm (2006).

Notes: Year of term limit change in brackets.

- a. Term limits were enacted in 1994, but in 1997 the MA Supreme Court ruled them unconstitutional.
- b. Two-term term limits were enacted in 1992, but in 1998 the WA Supreme Court ruled them unconstitutional.

Table 1. Summary Statistics

Variables	Definition	Source	Obs	Mean	Min	Max
<i>STATETAX</i>		Orzechowski and Walker (2003)	1248	0.18	0.01	0.64
State excise tax (1983 \$US)						
<i>FEDTAX</i>		Orzechowski and Walker (2003)	1248	0.14	0.08	0.20
Federal tax (1983 \$US)						
<i>LAMEDUCK</i>		List and Sturm (2006)	1248	0.26	0	1
<i>DEMOLAME</i>		List and Sturm (2006)	1248	0.16	0	1
<i>REPLAME</i>		List and Sturm (2006)	1248	0.10	0	1
<i>SALES</i>		Orzechowski and Walker (2003)	1248	1.14	0.39	2.80
per capita cigarette sale						
<i>CORRUPT</i>		US Department of Justice	1208	0.04	0	0.33
corruption convictions per 1000 public employees						
<i>CONCENTRATION</i>		Orzechowski and Walker (2003)	1248	0.02	0.0004	0.14
cigarette sales per square mile						
<i>BEER TAX</i>		World Tax Data Base (2006)	1222	0.17	0.01	1.43
State excise tax per gallon (1983 \$US)						
<i>NatlGDP</i>		U.S. Department of Commerce	1248	3858	2472	5700
national real GDP (1983 bn \$US)						
<i>NatlUNEMPLOY</i>		U.S. Census Bureau	1248	6.45	4	9.5
national unemployment rate						
<i>POPULATION</i>		U.S. Department of Commerce	1248	5070343	376000	3.40x10 ⁷
State population						
<i>INCOME</i>		U.S. Department of Commerce	1248	12944	7628	24097
personal income/capita (1983 \$US)						
<i>StateUNEMPLOY</i>		U.S. Department of Labor	1248	6.19	2.2	18
State unemployment rate						
<i>CHILD</i>		U.S. Census Bureau	1248	0.20	0.16	0.26
portion of population age 5–17						
<i>OVER65</i>		U.S. Census Bureau	1248	0.12	0.7	0.19
Portion of population over 65						
<i>TOBBACO INCOME</i>		USDA	1248	0.02	0	0.10
tobacco production/\$US of state income						
<i>GAS</i>		U.S. Department of Energy	1248	0.007	0	0.32
daily production/\$US of state income						
<i>GRANTS</i>		U.S. Census Bureau	1296	497	230	1192
federal grants/capita (1983 \$US)						
<i>INCOME TAX</i>		U.S. Census Bureau	1248	0.14	0.06	0.19
federal income tax divided by adjusted gross income						
<i>DEMOGOV</i>		National Governors Association	1248	0.55	0	1
dummy = 1, if the governor is a Democrat						
<i>DEMOSENATE</i>		U.S. Census Bureau	1248	0.58	0	1
proportion of State Senate that is democratic						
<i>DEMOHOUSE</i>		U.S. Census Bureau	1248	0.57	0	1
proportion of State House that is democratic						

Table 2. Fixed Effect Estimations I

Model	I	II	III	IV	V	VI	VII
<i>FEDTAX</i>	0.37*** (3.34)	0.35*** (3.21)	0.32** (2.48)	0.31*** (2.76)	0.13 (1.15)	0.11 (0.92)	0.10 (0.48)
<i>LAMEDUCK</i>	4.96*** (4.10)	4.93*** (3.98)	4.97*** (4.04)	4.71*** (4.02)	4.99*** (4.66)	4.99*** (4.50)	6.89*** (5.58)
<i>FEDTAX*</i> <i>LAMEDUCK</i>	-0.33*** (3.60)	-0.33*** (3.47)	-0.33*** (3.50)	-0.31*** (3.52)	-0.33*** (4.05)	-0.33*** (3.87)	-0.47*** (4.71)
<i>DEMOGOV</i>		0.63** (2.03)	-0.18 (0.13)	0.56* (1.73)		0.007 (0.01)	0.16 (0.13)
<i>FEDTAX*</i> <i>DEMOGOV</i>			0.06 (0.56)			0.04 (0.37)	0.02 (0.24)
<i>DEMOSENATE</i>				-0.49 (0.38)	-3.51 (0.54)	-2.45 (0.37)	3.52 (0.64)
<i>FEDTAX*</i> <i>DEMOSENATE</i>					0.23 (0.49)	0.15 (0.32)	-0.30 (0.77)
<i>DEMOHOUSE</i>				9.38*** (4.31)	7.99 (0.95)	6.98 (0.85)	0.42 (0.06)
<i>FEDTAX*</i> <i>DEMOHOUSE</i>					0.12 (0.22)	0.18 (0.33)	0.69 (1.47)
<i>SALES</i>	-0.17*** (6.00)	-0.17*** (6.05)	-0.18*** (6.04)	-0.17*** (6.29)	-0.17*** (6.27)	-0.17*** (6.35)	
<i>CORRUPT</i>	0.36 (1.00)	0.39 (1.09)	0.39 (1.10)	0.39 (1.17)	0.43 (1.25)	0.46 (1.32)	
<i>CONCENTRATION</i>	-2.16*** (6.56)	-2.25*** (6.25)	-2.25*** (6.25)	-2.22*** (6.03)	-2.04*** (6.00)	-2.13*** (5.61)	
<i>NatlGDP</i>	-0.00014 (0.11)	-0.0003 (0.25)	-0.0002 (0.23)	-0.0005 (0.36)	-0.0002 (0.22)	-0.0004 (0.32)	0.0015* (1.68)
<i>Natl</i> <i>UNEMPLOY</i>	-0.15 (0.73)	-0.16 (0.78)	-0.17 (0.80)	-0.17 (0.83)	-0.17 (0.82)	-0.19 (0.88)	-0.15 (0.72)
<i>POPULATION</i>	-8.6E-07* (1.81)	-8.3E-07* (1.85)	-8.4E-07* (1.85)	-4.1E-07 (0.85)	-4.4E-07 (0.87)	-4.3E-07 (0.88)	-9.3e-07* (1.73)
<i>INCOME</i>	-0.002** (2.58)	-0.002** (2.45)	-0.002** (2.54)	-0.002** (2.36)	-0.002** (2.56)	-0.002** (2.51)	-0.005*** (5.29)
<i>State</i> <i>UNEMPLOY</i>	-0.34** (2.19)	-0.33** (2.17)	-0.33** (2.21)	-0.32** (2.09)	-0.33** (2.10)	-0.32** (2.11)	-0.20 (1.36)
<i>CHILD</i>	82.39*** (4.82)	84.25*** (4.89)	83.88*** (4.92)	66.54*** (3.82)	66.90** (3.80)	68.67*** (3.90)	114.56*** (5.63)
<i>OVER65</i>	-99.35*** (4.06)	-98.02*** (4.06)	-98.17*** (4.03)	-88.08*** (3.70)	-87.75*** (3.54)	-86.61*** (3.50)	-44.66** (2.09)
<i>TOBACCO</i> <i>INCOME</i>	81.21*** (3.23)	84.10*** (3.18)	85.27*** (3.08)	64.59*** (2.75)	62.79*** (2.80)	66.54*** (2.66)	-24.61 (-1.49)
<i>GAS</i>	22.68** (2.86)	22.44** (3.00)	22.15** (3.09)	19.71** (2.83)	20.58** (2.83)	20.22** (3.10)	13.31** (2.11)

<i>GRANTS</i>	-0.004* (1.85)	-0.004** (2.19)	-0.004** (2.20)	-0.004** (2.29)	-0.003** (2.16)	-0.003* (2.18)	-.003 (1.53)
<i>INCOME TAX</i>	-11.93 (0.93)	-10.38 (0.82)	-10.10 (0.78)	-7.50 (0.59)	-7.16 (0.56)	-5.76 (0.44)	-7.92 (0.68)
Observations	1208	1208	1208	1208	1208	1208	1248
Joint Signif. Test	8.67 [0.00]	8.01 [0.00]	6.64 [0.00]	7.26 [0.00]	8.90 [0.00]	8.97 [0.00]	19.59 [0.00]

Notes: The dependent variable is the state cigarette excise tax rate. All models include a constant and square terms for *POPULATION* and *INCOME*, a time trend and its square, an interaction term of *SALES*CORRUPT* and *FEDTAX*CORRUPT*. ***(**)[*] indicates significant at the 1(5)[10]% level, respectively. Fixed-effect estimations with robust standard errors for years 1975–2000.

Table 3. Fixed Effect Estimations II

Model	I	II	III	IV	V	VI	VII
<i>FEDTAX</i>	0.37*** (3.25)	0.36*** (3.20)	0.36*** (2.70)	0.31*** (2.76)	0.16 (1.40)	0.15 (1.17)	0.12 (0.58)
<i>DEMOLAME</i>	3.23* (1.78)	3.08* (1.69)	2.96* (1.75)	3.04 (1.64)	3.69** (2.00)	3.50** (2.06)	5.95*** (3.74)
<i>REPLAME</i>	6.62*** (4.73)	7.03*** (4.52)	7.13*** (4.02)	6.61*** (4.54)	6.15*** (4.88)	6.62*** (4.13)	8.12*** (4.54)
<i>FEDTAX*</i> <i>DEMOLAME</i>	-0.19 (1.31)	-0.20 (1.36)	-0.19 (1.41)	-0.20 (1.34)	-0.23 (1.54)	-0.23* (1.71)	-0.42*** (3.17)
<i>FEDTAX*</i> <i>REPLAME</i>	-0.46*** (4.82)	-0.47*** (4.66)	-0.48*** (4.06)	-0.44*** (4.77)	-0.43*** (5.05)	-0.44*** (4.24)	-0.55*** (4.44)
<i>DEMOGOV</i>		0.63* (1.87)	0.85 (0.60)	0.57* (1.69)		0.74 (0.53)	0.64 (0.45)
<i>FEDTAX*</i> <i>DEMOGOV</i>			-0.016 (0.15)			-0.012 (0.11)	-0.006 (0.06)
<i>DEMOSENATE</i>				-0.54 (0.42)	-2.90 (0.41)	-2.09 (0.30)	3.80 (0.69)
<i>FEDTAX*</i> <i>DEMOSENATE</i>					0.18 (0.35)	0.12 (0.24)	-0.32 (0.81)
<i>DEMOHOUSE</i>				9.34*** (4.28)	7.96 (0.92)	6.78 (0.81)	0.28 (0.04)
<i>FEDTAX*</i> <i>DEMOHOUSE</i>					0.11 (0.20)	0.19 (0.34)	0.70 (1.49)
<i>SALES</i>	-0.17*** (6.05)	-0.17*** (6.08)	-0.17*** (6.07)	-0.17*** (6.32)	-0.17*** (6.34)	-0.17*** (6.37)	
<i>CORRUPT</i>	0.38 (1.06)	0.41 (1.12)	0.41 (1.12)	0.41 (1.20)	0.44 (1.27)	0.47 (1.32)	
<i>CONCEN- TRATION</i>	-2.19*** (6.38)	-2.26*** (6.20)	-2.26 (6.20)	-2.23*** (5.99)	-2.08*** (5.80)	-2.14*** (5.59)	
<i>NatlGDP</i>	-0.0001 (0.07)	-0.0003 (0.24)	-0.0003 (0.25)	-0.0004 (0.36)	-0.0002 (0.18)	-0.0004 (0.34)	0.0014 (1.58)
<i>Natl UNEMPLOY</i>	-0.17 (0.78)	-0.17 (0.81)	-0.17 (0.80)	-0.18 (0.85)	-0.18 (0.85)	-0.19 (0.88)	-0.15 (0.70)
<i>POPULATION</i>	-9.1E-07* (1.87)	-8.4E-07* (1.81)	-8.4E-07* (1.80)	-4.3E-07* (-0.84)	-4.8E-07* (0.92)	-4.3E-07 (-0.86)	-9.1E-07 (-1.65)
<i>INCOME</i>	-0.002** (2.55)	-0.002** (2.45)	-0.002** (2.43)	-0.002** (2.36)	-0.002** (2.49)	-0.002** (2.41)	-0.005*** (5.21)
<i>State UNEMPLOY</i>	-0.34** (2.17)	-0.33** (2.19)	-0.33** (2.18)	-0.32** (2.11)	-0.33** (2.08)	-0.32** (2.07)	-0.20 (1.35)
<i>CHILD</i>	80.23*** (4.72)	83.89*** (4.94)	83.94*** (4.94)	66.58*** (3.88)	65.16*** (3.74)	69.08*** (3.94)	115.62*** (5.66)
<i>OVER65</i>	-97.33*** (3.84)	-95.62*** (3.87)	-95.46*** (3.84)	-85.00*** (3.53)	-86.45*** (3.37)	-84.60*** (3.34)	-43.25** (1.98)

<i>TOBACCO</i>	85.48***	87.89***	87.78***	68.17***	66.05**	68.60***	-23.39
<i>INCOME</i>	(3.15)	(3.13)	(3.09)	(2.69)	(2.70)	(2.66)	(1.35)
<i>GAS</i>	22.30**	22.37***	22.44***	19.71***	20.25***	20.46***	13.52**
	(2.90)	(3.04)	(3.13)	(2.89)	(2.87)	(3.14)	(2.16)
<i>GRANTS</i>	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.003**	-0.003
	(2.25)	(2.19)	(2.19)	(2.27)	(2.21)	(2.17)	(1.51)
<i>INCOME TAX</i>	-11.28	-9.79	-9.84	-6.95	-6.96	-5.63	-7.79
	(0.87)	(0.77)	(0.76)	(0.54)	(0.54)	(0.43)	(0.67)
Observations	1208	1208	1208	1208	1208	1208	1248
Joint Signif. Test	8.39 [0.00]	8.03 [0.00]	5.53 [0.00]	7.85 [0.00]	10.34 [0.00]	8.44 [0.00]	14.93 [0.00]

Notes: The dependent variable is the state cigarette excise tax rate. All models include a constant and square terms for *POPULATION* and *INCOME*, a time trend and its square, an interaction term of *SALES*CORRUPT* and *FEDTAX*CORRUPT*. ***(**) [*] indicates significant at the 1(5)[10]% level, respectively. Fixed-effect estimations with robust standard errors for years 1975–2000.

Table 4. Fixed Effect Estimations: Robustness Analysis I

Model	I IV	II FEDTAX LAGGED	III NO T. LIMIT CHANGE	IV HORIZ. INTER ACTION	V LAGGED DEP'T VAR.	VI BEER TAX	VII NON- TOBAC STATES
<i>FEDTAX</i>	0.51*** (3.94)		0.32*** (3.11)	0.25** (2.26)	0.16*** (2.81)	0.31*** (2.82)	0.26** (2.23)
<i>LAMEDUCK</i>	5.88*** (3.22)	6.21*** (2.80)	3.01** (2.01)	4.23*** (3.25)	3.45*** (3.94)	4.80*** (4.05)	3.64** (2.26)
<i>FEDTAX*</i> <i>LAMEDUCK</i>	-0.40*** (3.02)	-0.43*** (2.77)	-0.15 (1.45)	-0.28*** (2.76)	-0.24*** (4.08)	-0.32*** (3.54)	-0.30*** (2.74)
<i>FEDTAX₋₁</i>		0.51*** (3.71)					
<i>NEIGHBOR TAX₋₁</i>				0.22*** (6.64)			
<i>STATETAX₋₁</i>					0.83*** (26.99)		
<i>BEERTAX</i>						0.014 (0.94)	
<i>DEMOGOV</i>	0.51* (1.74)	0.78** (2.34)	0.22 (0.90)	0.35 (1.19)	0.12 (0.59)	0.61* (1.87)	1.14** (2.42)
<i>DEMOSENATE</i>	-0.53 (0.27)	-0.03 (0.02)	-1.28 (0.56)	-0.31 (0.22)	0.38 (0.35)	-0.39 (0.30)	-3.28** (2.37)
<i>DEMOHOUSE</i>	8.87*** (3.98)	10.17*** (4.27)	10.02*** (4.54)	7.32*** (3.46)	1.97 (1.14)	9.09*** (4.20)	14.27*** (5.13)
<i>SALES</i>	-0.16*** (8.20)		-0.17*** (6.24)	-0.17*** (5.96)		-0.17*** (6.43)	-0.12*** (5.22)
<i>CORRUPT</i>	0.72* (1.95)	0.47*** (3.21)	0.97** (2.61)	0.23 (0.68)	0.12** (2.03)	0.40 (1.19)	0.48 (1.35)
<i>CONCEN- TRATION</i>	-2.22*** (5.48)	-3.33*** (7.28)	-2.28*** (2.96)	-2.20*** (5.41)	-0.71*** (2.84)	-2.24*** (5.95)	-2.01*** (4.36)
<i>NatlGDP</i>	0.0003 (0.24)	0.001 (1.63)	-0.0004 (0.30)	-0.0016 (1.18)	-0.0014** (2.44)	-0.0004 (0.29)	-0.00002 (0.01)
<i>Natl UNEMPLOY</i>	-0.26** (1.74)	0.02 (0.14)	-0.49** (2.54)	0.006 (0.03)	0.21** (1.98)	-0.16 (0.77)	-0.18 (0.70)
<i>POPULATION</i>	-4.7E-07 (0.68)	-1.7E-07 (0.32)	5.1E-08 (0.05)	-1.5E-07 (0.26)	-1.5E-07 (0.34)	-3.7E-07 (0.74)	2.7E-06** (2.25)
<i>INCOME</i>	-0.002** (-2.43)	-0.003** (2.77)	-0.001 (0.98)	-0.001 (1.59)	-0.0002 (0.46)	-0.002** (2.22)	-0.003*** (3.09)
<i>State UNEMPLOY</i>	-0.32** (2.33)	-0.28** (2.09)	-0.20* (1.74)	-0.35** (2.00)	-0.04 (0.37)	-0.32** (2.06)	-0.59*** (2.57)
<i>CHILD</i>	60.04*** (3.01) ***	95.90*** (4.93)	47.75** (2.17)	45.81** (2.36)	18.28* (1.86)	65.93*** (3.56)	39.29* (1.74)
<i>OVER65</i>	-91.98 (2.84)	-69.79*** (-2.71)	-58.38 (-1.85)	-84.06*** (3.55)	-3.49 (0.23)	-85.73*** (3.67)	-47.25 (1.44)

<i>TOBACCO</i>	60.15***	-5.71	246.59	56.97***	11.22	59.96***	
<i>INCOME</i>	(3.17)	(0.32)	(2.30)	(2.73)	(1.52)	(2.76)	
<i>GAS</i>	19.08***	15.12**	7.52	12.24*	3.80	19.28***	42.69***
	(2.75)	(2.01)	(1.02)	(1.80)	(0.67)	(2.78)	(3.40)
<i>GRANTS</i>	-0.004**	-0.007***	-0.0006	-0.004	-0.001	-0.004**	0.00006
	(1.93)	(4.27)	(0.26)	(1.55)	(0.55)	(2.34)	(0.02)
<i>INCOME TAX</i>	-0.65	-4.33	-16.75	-11.71	-9.18	-6.53	-2.85
	(0.05)	(0.32)	(1.66)	(1.00)	(1.26)	(0.49)	(0.20)
Observations	1208	1208	734	1164	1164	1183	774
Joint Signif. Test	16.91 [0.00]	6.95 [0.00]	4.84 [0.01]	4.51 [0.02]	9.01 [0.00]	7.50 [0.00]	4.42 [0.02]

Notes: The dependent variable is the state cigarette excise tax rate. All models include a constant and square terms for *POPULATION* and *INCOME*, a time trend and its square, an interaction term of *FEDTAX*CORRUPT*. An interaction term *SALES*CORRUPT* also included in every models except Model II and V. In addition, Model II includes the lagged *FEDTAX* interactions. *** (**)* indicates significant at the 1(5)[10]% level, respectively. Fixed-effect estimations with robust standard errors for years 1975–2000 (except for Model I, where z-statistics reported). The F-test of joint significance of instruments in Model I is 530.01 [0.00]. The Shea’s partial R^2 is 0.43, while the Anderson’s underidentification test is [p=0.00] and Anderson-Rubin test of joint significance of endogenous variable is $\chi^2(2)=15.93$ [0.00].

Table 5. Fixed Effect Estimations: Robustness Analysis II

Model	I IV	II FEDTAX LAGGED	III NO T. LIMIT CHANGE	IV HORIZ. INTER ACTION	V LAGGED DEP'T VAR.	VI BEER TAX	VII NON- TOBAC STATES
<i>FEDTAX</i>	0.50*** (3.90)		0.33*** (3.19)	0.25** (2.29)	0.17*** (2.82)	0.32*** (2.81)	0.26** (2.32)
<i>DEMOLAME</i>	4.06** (1.98)	5.13** (2.23)	0.10 (0.03)	2.94 (1.62)	2.64*** (2.86)	3.20* (1.72)	1.19 (0.36)
<i>REPLAME</i>	7.78*** (3.23)	8.10*** (3.57)	4.85*** (3.40)	5.85*** (3.92)	4.39*** (4.17)	6.63*** (4.56)	7.10*** (3.41)
<i>FEDTAX*</i> <i>DEMOLAME</i>	-0.27* (1.83)	-0.35** (2.14)	0.06 (0.24)	-0.19 (1.38)	-0.18*** (2.88)	-0.21 (1.43)	-0.15 (0.60)
<i>FEDTAX*</i> <i>REPLAME</i>	-0.52*** (3.04)	-0.56*** (3.65)	-0.29*** (3.29)	-0.37*** (3.79)	-0.30*** (4.50)	-0.44*** (4.76)	-0.50*** (4.12)
<i>FEDTAX₁</i>		0.51*** (3.66)					
<i>NEIGHBOR TAX₁</i>				0.22*** (6.65)			
<i>STATETAX₁</i>					0.83*** (27.06)		
<i>BEERTAX</i>						0.012 (0.84)	
<i>DEMOGOV</i>	0.53 (1.50)	0.79** (2.33)	0.13 (0.37)	0.45 (1.37)	0.14 (0.58)	0.63* (1.83)	1.26** (2.62)
<i>DEMOSENATE</i>	-0.58 (0.30)	-0.04 (0.03)	-1.48 (0.66)	-0.34 (0.24)	0.36 (0.33)	-0.43 (0.33)	-3.21** (2.28)
<i>DEMOHOUSE</i>	8.86*** (3.97)	10.13*** (4.27)	10.12*** (4.51)	7.31*** (3.42)	1.95 (1.12)	9.08*** (4.18)	14.31*** (5.11)
<i>SALES</i>	-0.16*** (8.23)		-0.17*** (6.23)	-0.17*** (5.97)		-0.17*** (6.44)	-0.12*** (5.23)
<i>CORRUPT</i>	0.71* (1.94)	0.47*** (3.10)	0.98*** (2.69)	0.24 (0.70)	0.13** (2.11)	0.42 (1.22)	0.50 (1.31)
<i>CONCEN- TRATION</i>	-2.23*** (-5.50)	-3.33 (7.25)	-2.28*** (2.88)	-2.20*** (5.41)	-0.71*** (2.87)	-2.24*** (5.93)	-1.99*** (4.38)
<i>NatlGDP</i>	0.0002 (0.19)	0.0016 (1.60)	-0.0003 (0.25)	-0.0017 (1.19)	-0.0014** (2.41)	-0.0004 (0.29)	-0.0001 (0.05)
<i>Natl UNEMPLOY</i>	-0.26* (1.76)	0.024 (0.14)	-0.51** (2.55)	0.004 (0.02)	0.21* (1.97)	-0.16 (0.79)	-0.19 (0.77)
<i>POPULATION</i>	-4.8E-07 (0.69)	-1.9E-07 (0.34)	-1.5E-07 (0.13)	-1.3E-07 (0.22)	-1.5E-07 (0.34)	-3.9E-07 (0.74)	2.8E-06** (2.18)
<i>INCOME</i>	-0.002** (2.41)	-0.003*** (2.74)	-0.001 (0.96)	-0.001 (1.57)	-0.0002 (0.45)	-0.002** (2.24)	-0.003*** (3.14)
<i>State UNEMPLOY</i>	-0.33** (2.49)	-0.23* (2.33)	0.19* (1.67)	-0.35** (2.02)	-0.04 (0.38)	-0.32** (2.08)	-0.59** (2.61)

<i>CHILD</i>	60.57*** (3.02)	96.13*** (4.99)	47.97** (2.16)	47.10** (2.44)	18.49* (1.93)	66.33*** (3.63)	41.79*** (1.96)
<i>OVER65</i>	-89.46*** (2.77)	-69.04 (2.68)	-61.84* (1.95)	-81.85*** (3.42)	-2.28 (0.15)	-83.76*** (3.50)	-46.98 (1.43)
<i>TOBACCO INCOME</i>	64.19*** (3.38)	-3.04 (0.17)	203.22* (1.79)	60.34*** (2.71)	13.20* (1.72)	63.86*** (2.71)	
<i>GAS</i>	19.13*** (2.76)	15.20** (2.04)	7.59 (1.04)	12.41* (1.86)	3.81 (0.69)	19.34*** (2.84)	42.99*** (3.43)
<i>GRANTS</i>	-0.004* (1.92)	-.007*** (4.31)	-0.0008 (0.36)	-0.004 (1.54)	-0.001 (0.57)	-0.004** (2.31)	0.0003 (0.11)
<i>INCOME TAX</i>	-0.57 (0.05)	-4.29 (0.32)	-16.51 (-1.57)	-11.23 (0.96)	-8.96 (1.23)	-6.05 (0.46)	-1.03 (-0.07)
Observations	1208	1208	734	1164	1164	1183	774
Joint Signif. Test	17.34 [0.00]	5.44 [0.00]	5.47 [0.00]	5.21 [0.00]	7.53 [0.00]	7.87 [0.00]	5.87 [0.00]

Notes: The dependent variable is the state cigarette excise tax rate. All models include a constant and square terms for *POPULATION* and *INCOME*, a time trend and its square, an interaction term of *FEDTAX*CORRUPT*. An interaction term *SALES*CORRUPT* also included in every models except Model II and V. ***(**)[*] indicates significant at the 1(5)[10] % level, respectively. Fixed-effect estimations with robust standard errors for years 1975–2000 (except for model I, where z-statistics reported). The F-test of joint significance of instruments in Model I is 537.62 (0.00). The Shea's partial R² is 0.41, while the Anderson's underidentification test is [p=0.00] and Anderson-Rubin test of joint significance of endogenous variable is $\chi^2(2)=15.53$ [0.00].