

Economic and Political Influence on Tobacco Tax Rates: A Nationwide Analysis of 31 Years of State Data

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Smoking prevalence has declined in the past few decades, but recently, progress has stalled.^{1,2} In 1997, nearly 1 in 4 adults, and more than 1 in 3 youths, smoked at least 1 cigarette in the previous month. Although by 2007 rates for both groups had dropped to about 20%, no declines have been observed since.^{2,3} Without further progress, Healthy People 2020 goals for smoking among adults (12%) and youths (16%) will not be met.⁴

Cigarette excise taxes are considered one of the most effective strategies for reducing smoking.^{5,6} Higher cigarette prices are associated with decreased consumption,⁷⁻⁹ and taxes are an effective tool for raising product price.¹⁰ Furthermore, in almost half of all states, some portion of excise tax revenues fund tobacco control programs.¹¹

Although all states levy cigarette taxes, rates vary extensively.¹² In 2011, New York's \$4.35 tax rate was more than 25 times higher than Missouri's \$0.17 rate.¹³ Geographic variation in taxes may promote regional disparities in smoking prevalence and encourage cross-border smuggling or online tobacco sales, limiting the public health impact and revenue generation capabilities of high taxes.¹³⁻¹⁵ In 2007, the Institute of Medicine recommended that states with excise taxes below those in the top quintile raise their rates to match those in high-tax states.⁶

Yet raising cigarette taxes, especially in low-tax states, has proven difficult. Between 2007 and 2011, only 43% of states in the bottom 4 quintiles raised taxes, whereas 91% of the highest-tax states increased their rates.¹² Little is known about what motivates recent changes in state excise tax levels. Tobacco control advocates have suggested that economic contractions may drive states to raise cigarette taxes to generate revenue, noting high numbers of tax hikes following national recessions.¹⁶

Political scientists, however, argue that political factors and regional pressures may also be important policy predictors.¹⁷⁻¹⁹

Objectives. We evaluated state-level characteristics associated with cigarette excise taxes before and after the Master Settlement Agreement (MSA).

Methods. We gathered annual cigarette excise tax rates for all US states and the District of Columbia, between 1981 and 2011, and matched each state-year tax rate with economic, political, attitudinal, and demographic characteristics, creating a data set of 1581 observations. We used panel data regression techniques to assess relationships between key characteristics and state cigarette excise tax levels.

Results. Cigarette excise tax rates grew at more than 6 times the rate of inflation between 1981 and 2011; growth varied by time period and region. We found strong negative associations between Republican Party control of state legislatures and governors' offices and state cigarette tax rates. Tobacco production, citizens' attitudes toward taxes and tobacco control, and cigarette tax rates in neighboring states were significantly associated with cigarette tax rates. We found no association between unemployment and tax rates.

Conclusions. Future excise tax growth rate may depend more on the political leanings of state legislators, and the attitudes of the people they represent, than on economic circumstances. (*Am J Public Health.* 2014;104:350-357. doi:10.2105/AJPH.2013.301537)

Nonelection years and neighboring tax initiatives, in addition to poor fiscal health, have been associated with diffusion of gasoline and income taxes.¹⁸ Public support of tobacco control, as well as actions of local and neighboring governments, influence the uptake of indoor air and tobacco sales restriction policies.^{20,21} The extent to which economic circumstances, state politics, constituency beliefs, or regional pressures influence state cigarette excise tax rates, however, remains unclear.

Moreover, the key determinants of cigarette taxes can change over time, as public opinion evolves. The 1998 Master Settlement Agreement (MSA) with tobacco manufacturers generated new allocations of tobacco control revenue, some of which was used to fund social marketing campaigns about smoking and the tobacco industry (e.g., the "truth" campaign). One study did document some economic and political correlates of state cigarette tax rates, but relied on data through 2000, just as the impact of the MSA began.²² In the years since the MSA, the public has increasingly identified smoking as hazardous, and the majority now

supports some form of tobacco control legislation.²³ If these public sentiments influence beliefs about cigarette taxes, the political landscape in which tax decisions are made could be changing.

Better understanding of which factors most strongly predict cigarette taxes could help tobacco control professionals target their advocacy. We used annual data from all 50 states between 1981 and 2011 to explore the magnitude of the associations between key economic, political, and regional characteristics and state cigarette excise tax levels, both before and after the MSA.

METHODS

We compiled cigarette excise tax rates for all 50 states and the District of Columbia from 1981 to 2011, creating a data set of 1581 observations. We matched each state-year tax rate with select economic, political, attitudinal, and demographic characteristics from the previous year, to account for the lag between a tax policy vote and implementation.

Measures

State cigarette taxes. We drew state cigarette excise taxes from the 2011 edition of *The Tax Burden on Tobacco*, which is produced by the consulting firm Orzechowski and Walker with support from cigarette manufacturers and state tobacco tax administrators.¹² Taxes are measured in cents per pack of 20 cigarettes. In regression analyses, rates are adjusted for inflation with the consumer price index, and logged to decrease skewness.

State economic conditions. We employed 2 annual measures of state economic conditions. The state unemployment rate, calculated by the US Bureau of Labor Statistics, is the percentage of people in the labor force who are unemployed.²⁴ State per capita income is calculated by dividing the total personal income of all residents by the midyear population with data from the US Bureau of Economic Analysis.²⁵ In sensitivity analyses, we used Census measures of outstanding state debt,²⁶ Bureau of Labor Statistics measures of national unemployment,²⁷ and indicators for the 7 years of national recession, as defined by the National Bureau of Economic Research.²⁸

We included a dichotomous indicator of whether a state is an agricultural producer of tobacco, based on whether the US Department of Agriculture reported that state farmers grew a nonzero number of tobacco acres in any year in the analysis period.²⁹ Data describing the number of farmed tobacco acres were also used in sensitivity analyses.

State political conditions. We included 2 annual measures of political climate: gubernatorial election and party control. The gubernatorial election variable indicates whether an election occurred in a specific year (= 1) or not (= 0). Party control is a categorical variable with 3 possible values: Democratic control, which occurs when the governor is a Democrat and Democrats hold majorities in both state legislative bodies; Republican control if Republicans hold the governorship and majorities in both legislative bodies; and mixed control. We compiled political information from *The Book of the States*, produced by the Council of State Governments.³⁰ In sensitivity analyses, we considered measures of average citizen and government ideology, on a liberal–conservative continuum, developed by Berry et al.^{31,32}

Attitudes about taxes and tobacco control. To capture opinions about taxes in general, we used data from 19 waves of the General Social Survey administered between 1980 and 2009.³³ Respondents were asked whether they believed federal income taxes were too high, about right, or too low. Few respondents (<5%) indicated that taxes were too low, so our variable measures the percentage of respondents concerned that taxes were too high. Responses were aggregated by 9 Census-defined regional divisions. Because the General Social Survey is administered every other year, we interpolated values in alternate years by averaging percentages from the previous and subsequent years.

We derived 2 variables describing public attitudes toward tobacco control from 7 iterations of the Current Population Survey Tobacco Use Supplement that were administered between 1992 and 2007.³⁴ Support for restaurant smoking bans was measured as the percentage of state respondents who agreed that smoking in restaurants should be not allowed at all, as opposed to allowed in some or all areas. Home smoking bans were measured as the percentage of respondents who indicated that smoking was not permitted in their home.

External conditions. To assess regional pressures on cigarette taxation, we used *Tax Burden on Tobacco*¹² data to create annual measures of the average tax level in contiguous states. We also included a dichotomous variable to indicate the 6 years in which federal excise taxes on cigarettes were raised. Finally, we included 4 categorical variables indicating the geographic region of the state, as defined by the US Census Bureau.³⁵

State demographic controls. We included measures of population size and composition to control for fiscal pressures from population growth, and differences in cigarette demand resulting from disparities in tobacco use.² We drew annual sociodemographic state characteristics from the US Census³⁶ and the Current Population Survey,³⁷ and employed these as control variables. We measured population growth as the annual percentage increase in population size from the previous year. We measured racial, ethnic, age, and educational variations by the percentage of the population identifying as non-Hispanic Black, Hispanic of any race, younger than 18 years, older than 64 years, and older than 25 years with a college degree.

Analysis

After we examined changes in the prevalence and magnitude of cigarette excise rate changes, we estimated bivariate analyses of differences in tax rates under varying state conditions, and multivariate analyses that isolate effects of economic, political, and regional factors. Our multivariate linear regression models employed random effects to account for clustering of data within states (Breusch–Pagan test $\chi^2 = 7174.7$; $P < .01$), with first-order autoregressive disturbances to adjust for additional serial correlation in the observation-specific error term (Baltagi–Li joint test $\chi^2 = 1197.9$; $P < .01$).

Because cigarette taxes have increased across all years and regions, we included a linear time trend in all models, but also created a spline to allow the time trend to differ before and after the MSA adoption in November 1988, and conducted stratified analyses in the 2 time periods. To account for the lag between MSA adoption and the implementation of new excise tax policies, we divided the time periods after 1999. Finally, we estimated an additional model, incorporating measures of attitudes toward tobacco control between 1992 and 2008.

To ensure that our results were not sensitive to variations in model structure or construct measurement, we conducted analyses in which we added additional variables describing political ideology, outstanding state debt, and acres of farmed tobacco, or substituted alternative employment measures for state unemployment. We also estimated state and year fixed-effects models to explore potential bias in coefficient estimates caused by unobserved factors. In the absence of evidence for significant bias, we prefer the random effects, time trend model, because it explicitly includes geographic region, tobacco grower status, and federal tax hikes.

We conducted all analyses with panel data estimation packages in Stata version 11 (StataCorp LP, College Station, TX).

RESULTS

Between 1981 and 2011, average nominal rates of cigarette excise taxes increased from \$0.13 to \$1.38, an increase nearly 6 times the rate of inflation, with rates growing more quickly following the MSA (Figure 1). Although

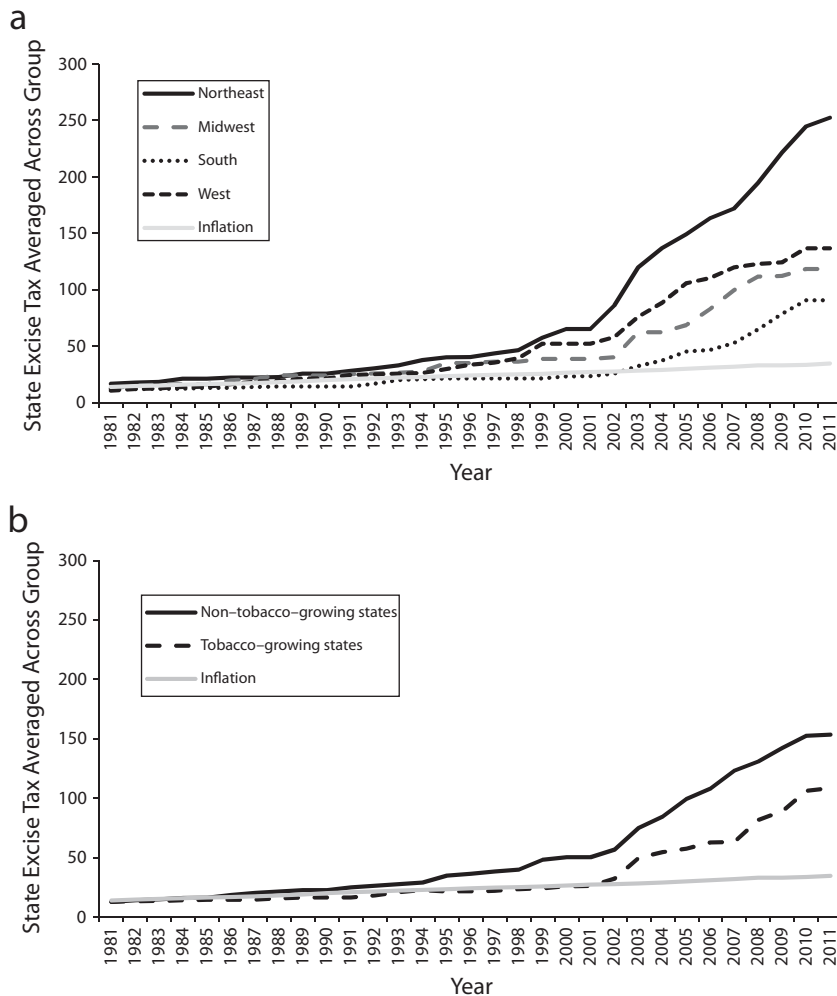


FIGURE 1—Regional variation in nominal state tobacco excise taxes over time by (a) region and (b) tobacco grower status: all US states and the District of Columbia, 1981–2011.

regional variation was limited in 1981, by 2011, the average excise tax rate in the Northeast (\$2.70 per pack) was 3 times higher than the average rate in the South (\$0.91), and taxes in non-tobacco-growing states (\$1.58) were 1.5 times higher than those in tobacco-growing states (\$1.08). Differences in average tax rates by region and tobacco-growing status were statistically significant in *t* test comparisons, both before and after the MSA (Table 1).

Variation in Cigarette Excise Tax Rates

In bivariate *t* test comparisons of average values, state cigarette excise taxes varied significantly under select state conditions, as a result of differences in both the number and magnitude of cigarette tax hikes (Table 1).

Although average taxes did not vary across states with high versus low unemployment rates across the full time period, stratified analyses indicated that tax rates were lower in high-unemployment states before the MSA, but higher in high-unemployment states following it. This shift appears to reflect higher tax hikes when they occurred, rather than a greater prevalence of hikes. In all time periods, higher-income and non-tobacco-growing states passed more, and larger, tax hikes, compared with lower-income and non-tobacco-growing states, resulting in significantly higher average rates.

Significant differences in average tax rates by party control exist only following the MSA, when average Democratic-controlled state rates were 1.7 times higher than those in

Republican-controlled states (Table 1). This difference appears to be attributable to more, rather than larger, tax hikes. Cigarette tax rates were lower in regions where a larger percentage of people believed that federal income taxes were too high, and in states that border relatively low-tax areas.

Correlates of State Cigarette Excise Rates Across All Years

Comparing mean tax rates can reveal patterns, but does not account for potential confounding from correlations between predictors of tax rates. To identify the independent effects of various state characteristics on cigarette tax rates, we analyzed multivariate regression models.

The only economic factor significantly related to tax rates during the complete time period was tobacco-growing status (Table 2, model 1). Non-tobacco-growing states had 41% higher excise tax rates, compared with tobacco-growing states, with other factors held constant from 1981 to 2011.

Across all years, Republican Party control was associated with 6% lower rates, compared with mixed-party control, whereas Democratic control and gubernatorial election year were unrelated to cigarette tax rates (model 1). Regional beliefs about federal income taxes demonstrated a slight positive association with cigarette taxes, such that a 1-percentage-point increase in the percentage of people believing income taxes are too high was associated with a 0.3% increase in excise tax rates.

Federal and regional cigarette tax rates were also correlated with state rates between 1981 and 2011. Model 1 indicates that when average taxes in neighboring states doubled, taxes in the referent state increased by an average of 21%. In the year following a federal tax hike, state taxes increased an average of 2.6%, with other factors held constant.

Finally, significant differences in regional tax rates and changes over time remained in our multivariate models, as shown in model 1. Under similar economic, political, and social conditions, states in the Northeast and Midwest would have tax rates 67% and 34% higher than those in the South, respectively. Before the MSA, cigarette tax rates grew an average of 1% per year, though this was only

TABLE 1—Prevalence of Cigarette Tax Hikes and Differences in Cigarette Tax Rates by State Characteristics: All US States and the District of Columbia, 1981–2011

Characteristic	All Years (1981–2011)			Pre-MSA (1981–1999)			Post-MSA (2000–2011)		
	No. (% Observations With Hike)	Average Hike Amount	Average Tax Rate	No. (% Observations With Hike)	Average Hike Amount	Average Tax Rate	No. (% Observations With Hike)	Average Hike Amount	Average Tax Rate
All state-year periods	1581 (16.4)	21.3	59.8	969 (16.0)	6.0	37.6	612 (17.2)	43.8	95.0
State economic characteristics									
Unemployment rate									
High state UE ($\geq 6\%$)	681 (15.9)	18.8	57.7	505 (15.6)	5.8	35.4**	176 (16.5)	54.3	121.7**
Low state UE ($< 6\%$)	900 (17.0)	23.9	61.8	464 (16.4)	6.2	40.0	436 (17.7)	41.4	84.9
Per capita income (in thousands)									
High income (> 33)	736 (19.0)	33.3	87.6**	261 (19.9)	10.1	49.8**	475 (18.5)	47.0	108.4**
Low income (≤ 33)	845 (14.3)	8.5	36.0	708 (14.5)	3.9	33.1	137 (13.1)	34.5	50.6
Tobacco-growing status									
Non-tobacco-growing state	1023 (19.0)	21.3	68.5**	627 (19.5)	6.4	41.8**	396 (18.2)	46.5	110.7**
Tobacco-growing state	558 (12.0)	23.3	44.5	342 (9.6)	4.6	30.0	216 (15.7)	41.4	67.6
Political characteristics									
Government party control									
Democratic	455 (17.1)	21.1	61.1	314 (16.2)	4.9	36.1	141 (19.1)	51.5	116.7**
Republican	260 (13.8)	27.7	54.3	121 (15.7)	6.9	39.9	139 (12.2)	51.0	66.7**
Mixed (Ref)	866 (17.0)	20.7	61.2	534 (15.9)	6.4	38.0	332 (18.7)	40.4	98.5
Gubernatorial election status									
Governor election year	421 (18.8)	21.4	63.6	262 (18.3)	8.5	39.2	159 (19.5)	41.3	103.7
Non-governor election year	1160 (15.7)	21.4	58.6	707 (15.1)	4.8	37.0	453 (16.6)	46.3	92.2
Attitudes toward federal income taxes									
$\geq 62\%$ believe tax high	824 (17.1)	18.3	56.6*	561 (16.6)	7.0	39.1**	263 (18.3)	40.4	94.0
$< 62\%$ believe tax high	757 (15.9)	25.9	63.7	408 (15.2)	4.5	35.5	349 (16.6)	48.6	96.6
External characteristics									
Federal or border taxes									
Above average border tax	690 (17.8)	26.8	79.5**	431 (16.2)	8.2	44.9**	259 (20.5)	51.4	137.2**
At or below average border tax	891 (15.5)	17.3	44.9	538 (15.8)	4.2	31.8	353 (15.0)	38.4	64.9
Federal excise hike	306 (22.2)	25.0	63.1	153 (20.9)	3.8	36.2	153 (23.5)	43.9	89.9
No federal excise hike	1275 (15.1)	20.6	59.3	816 (15.1)	6.5	37.9	459 (15.3)	45.4	97.3
Census region									
Northeast	279 (27.2)	26.6	96.1**	171 (23.4)	6.1	49.5**	108 (33.3)	49.3	170.1**
Midwest	372 (15.1)	19.2	58.6	228 (16.7)	5.1	41.6	144 (12.5)	48.8	85.5**
South	527 (10.1)	23.2	38.1**	323 (7.4)	5.2	27.7**	204 (14.2)	38.2	54.5**
West	403 (18.9)	17.9	65.0*	247 (21.5)	6.9	38.7**	156 (14.7)	43.5	106.6*

Note. MSA = Master Settlement Agreement; UE = unemployment rate. All categories measured in the year before the tax rate variable to account for tax implementation lag. Tax hikes refer to changes in state-set excise tax rates not attributable to inflation. Average tax hikes measure the average amount of a tax increase in the category group only in the periods in which a hike is implemented. The average tax rate measures the rate averaged across all observations in the category in the time period. Tax hike and rate amounts were adjusted for inflation and measured in 2010 cents. Asterisks denote significant differences in the average tax rate (logged, in 2010 cents) of a category group, compared with its referent group (for 2 group categories) or all others (for political control and region), with 2-way *t* tests. We created categorical groups based on continuous variables by dichotomizing at the mean value for the entire sample, except for border tax rates, which we dichotomized at the mean for the time period (pre- or post-MSA) to account for increasing rates over time.
P* < .05; *P* < .01.

TABLE 2—State Economic, Political, and Attitudinal Factors Associated With State Cigarette Excise Tax Rates (Logged; n = 1581): All US States and the District of Columbia, 1981–2011

Factor	Mean	Model 1: All Years (n = 1581), b (95% CI)	Model 2: Pre-MSA (1981–1999; n = 969), b (95% CI)	Model 3: Post-MSA (2000–2011; n = 612), b (95% CI)
State economic characteristics				
Unemployment rate	5.98	0.002 (-0.01, 0.02)	0.010 (0.00, 0.02)	-0.010 (-0.04, 0.02)
Per capita income, in thousands	33.00	0.011 (0.00, 0.03)	0.025** (0.01, 0.04)	0.006 (-0.02, 0.03)
Non-tobacco-growing state	0.65	0.411** (0.14, 0.68)	0.347* (0.08, 0.62)	0.526** (0.21, 0.84)
State political characteristics				
Government party control				
Democratic	0.29	0.034 (-0.01, 0.08)	0.041* (0.00, 0.08)	0.039 (-0.06, 0.14)
Republican	0.16	-0.064* (-0.12, -0.01)	0.021 (-0.04, 0.08)	-0.170** (-0.29, -0.05)
Mixed control	0.55
Governor election year	0.27	0.002 (-0.02, 0.02)	0.009 (-0.01, 0.03)	-0.028 (-0.07, 0.01)
Attitudes toward federal income taxes				
Percentage believe taxes too high	61.49	0.003* (0.00, 0.01)	0.002 (0.00, 0.00)	0.005 (0.00, 0.01)
Percentage believe taxes right or too low	38.51
External factors				
Average border state tax, log	2.87	0.207** (0.12, 0.30)	0.180** (0.07, 0.29)	0.185* (0.03, 0.34)
Federal excise hike	0.19	0.026* (0.00, 0.05)	0.008 (-0.02, 0.03)	0.059* (0.01, 0.11)
Census regions				
Northeast	0.18	0.669** (0.31, 1.03)	0.503** (0.15, 0.86)	0.964** (0.49, 1.44)
Midwest	0.24	0.340* (0.02, 0.66)	0.260 (-0.06, 0.58)	0.479* (0.08, 0.88)
South	0.33
West	0.25	0.281 (-0.09, 0.65)	0.104 (-0.26, 0.47)	0.550* (0.07, 1.03)
Time trends				
Linear trend 1980–1999	...	0.011 (0.00, 0.02)	0.008 (0.00, 0.02)	...
Linear trend 2000–2010	...	0.067** (0.05, 0.08)	...	0.078** (0.05, 0.10)

Note. CI = confidence interval; MSA = Master Settlement Agreement. All regressors lagged 1 year. Excise tax rates and per capita income are both adjusted for inflation. Excise taxes are measured in logged 2010 cents. All models include variables controlling for changes in state demographic conditions, and were estimated with state random effects to adjust for clustering within states, and for first-order autocorrelation.

* $P < .05$; ** $P < .01$.

marginally significant ($P = .05$); after the MSA, the annual growth rate increased to 7%, with all other factors held constant.

Differences in Excise Tax Correlates Over Time

To document changes in the correlates of excise tax rates before and after the MSA, we stratified the results by time period (Table 2, models 2 and 3). Consistent with Figure 1, variation in taxes by tobacco-growing state, as well as region, was strongest after the MSA. In addition, per capita income was significantly and positively associated with taxes in the early time period ($b = 0.03$), but showed no impact in the later time period.

Stratified results also demonstrate that, before the MSA, control by the Democratic

Party was associated with a 4% increase in excise tax rates, whereas Republican control had no impact. After the MSA, however, Democratic control became an insignificant factor, and tax rates under Republican control were 17% lower than those under mixed-party control. Whereas neighboring states' tax rates appeared to consistently have an impact on referent state rates in both time periods, federal tax hikes appeared to be stronger correlates following the MSA ($b = 0.06$).

In unadjusted models, we found correlations between positive attitudes toward bans on smoking at home and in restaurants and higher excise taxes, but only the influence of home smoking bans remained significant once we adjusted for economic, political, and social

factors (Table 3). A 1-percentage-point increase in nonsmokers living in homes with smoking bans was associated with a 1.4% increase in excise taxes. In this model, the effects of other covariates (not shown) remained similar to what is reported in Table 1, model 1, except our measure of regional attitudes toward income taxes became insignificant.

Including different measures of political sentiment or economic indicators, adding variables capturing tobacco production, or employing alternative model specifications did not change the magnitude or significance of most effects (results not shown). Increased tobacco production was associated with a small (< 1%) decrease in excise tax rates, whereas measures of political ideology, national

TABLE 3—Association of Tobacco Taxes With Tobacco Control Attitudes: All US States and the District of Columbia, 1993–2008

Model	Mean	Unadjusted, b (95% CI)	Adjusted, ^a b (95% CI)
1: Percentage of homes with smoking bans (n = 561)	60.62	0.021** (0.02, 0.02)	0.014* (0.00, 0.03)
2: Percentage supporting full restaurant smoking ban (n = 510)	52.44	0.025** (0.02, 0.03)	-0.156 (-1.01, 0.70)

Note. CI = confidence interval. Data for model 1 drawn from all states in the years 1992–1993, 1995–1996, 1998–1999, 2001–2002, 2003, and 2006–2007. Because of data availability, model 2 excludes the year 2003. All regressors were lagged 1 year.

^aModels include variables controlling for unemployment rate, per capita income, tobacco-growing status, government party control, gubernatorial election status, attitudes toward federal income taxes, federal or border taxes, census region, state demographic conditions, and time trends, and were estimated with state random effects and for first-order autocorrelation.

* $P < .05$; ** $P < .01$.

unemployment, or indicators of recession, when added or substituted in the original model, showed no effect. Finally, coefficients on the regressors of interest did not change in significance or magnitude when we employed state or year fixed effects.

DISCUSSION

Consistent with the growth of other tobacco control initiatives,¹⁶ state cigarette tax rates have, on average, increased over time, with stronger growth following the 1998 MSA. Moreover, variation in excise tax rates has also increased over time. Consistent with earlier findings,²² states where tobacco is farmed continue to lag behind the rest of the country in adopting higher cigarette tax rates. Models that control for economic, political, and other factors suggest that non-tobacco-producing states levy tax rates that are more than 40% higher than those in tobacco-producing states. Furthermore, even when tobacco production is taken into account, states in the Northeast, and more recently the Midwest and West, are establishing higher rates than Southern states. Our results suggest this may be attributable to both greater likelihood of tax hikes in certain areas and higher rate increases when hikes are adopted.

Whereas some advocates and media pundits have argued that economic downturns may trigger tax hikes designed to fill budget shortfalls,¹⁶ our results suggest otherwise. Although our results and an earlier study²² indicate associations between higher per capita income levels and cigarette taxes before the MSA, we found no such associations in the post-MSA

era. Furthermore, although taxes do appear to be higher when state unemployment is high, particularly in recent years, this relationship appears to be confounded by other factors. Once politics, attitudes, and regional variation are considered, relationships between state unemployment rates and cigarette taxes disappear.

Instead, our results imply that changing distributions of political power may be more important than macroeconomic changes for understanding excise tax rates. Policy change is typically easier when the same party controls both legislative and executive bodies. The significant effects associated with political control in some of the models, therefore, may be unsurprising. More notable are the changes in those impacts over time. Before the MSA, Democratic control resulted in higher excise taxes, and Republican control had little impact. Since 2000, however, Democratic control is no longer associated with high tax rates, whereas Republican control is now associated with 17% lower cigarette tax rates, compared with mixed-control states. Our descriptive data suggest that this is largely because of fewer, rather than smaller, tax increases under Republican control. The 2012 election resulted in the largest number of unified governments since 1952, with 23 under Republican control.³⁸ In these states, it seems likely that Republican leadership will continue to hinder efforts to raise cigarette tax rates.

Despite this challenge, our results can provide direction to tobacco control professionals trying to promote higher state cigarette tax rates. Targeting advocacy efforts in states that are struggling economically may be ineffective

if political barriers to tobacco control exist. In the absence of strong political opposition, our analyses suggest that states that border others where excise taxes have recently risen are ideal targets for rate adjustment. Consumers likely cross state borders in pursuit of lower tobacco tax rates.^{39,40} As a consequence, politicians may be most amenable to raising cigarette taxes when the potential for losing revenue because of a hike is minimized. Furthermore, positive associations between higher taxes in neighboring and referent states imply a reciprocal pattern of regional taxation. If one state, especially near a low tax region, makes a substantial policy change, its neighbors may follow suit.

Tobacco control advocates might also benefit from distinguishing cigarette taxes from other taxes in their campaigns. In our analyses, higher cigarette taxes were positively correlated with both regional concerns about high federal taxes and state-level support for other tobacco restrictions, especially home smoking bans. Despite opposition to higher income tax rates generally, the American public may favor higher tax rates on harmful products, such as cigarettes, more specifically. As public support for tobacco control continues to grow,²³ public health officials may become better situated to work with politicians to raise cigarette taxes and promote reductions in tobacco consumption.

Our analysis provides the first nationwide evaluation of state-level characteristics associated with cigarette excise tax rates in the post-MSA era, but we faced some limitations. We could not evaluate the effects of lobbying activities on tax rates, because longitudinal data describing state political activities by both the tobacco industry and tobacco control advocates are not available. Research about the importance of such activities to excise taxes is contested, with some authors documenting comprehensive strategies by the tobacco industry to defeat a variety of policies,^{41,42} and others arguing that effects demonstrated in previous analyses were confounded.⁴³ In 2012, the tobacco industry spent more than \$45 million dollars to fight a proposal to raise excise taxes by a dollar in California, and tobacco control advocates credit these expenditures with the initiative's defeat.⁴⁴ One recent study suggested that tobacco lobbying currently targets only a small number of initiatives, but

usually defeats a large portion of those it targets.⁴⁵ Without uniform data on spending by advocates supporting and fighting tax increases, however, the average role of interest groups in excise tax policies is unknown.

State cigarette excise taxes remain one of the most promising strategies for reducing cigarette use and preventing smoking-related illness and death, yet implementing them requires policy change. Although cigarette taxes have increased over time, there is disparity in tax rates across states, with tobacco-growing and Southern states lagging behind the rest of the country. Despite suggestions that recessionary periods spark higher cigarette taxes, the speed of excise tax growth in the future may depend more on the political leanings of state legislators, and the attitudes of the people they represent, than on the economic circumstances they face. ■

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S.D. Golden conducted the analyses and served as the primary author for all sections. K.M. Ribisl edited and provided substantive input to all sections of the article. K.M. Pereira edited the article and provided assistance with the analyses.

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Human Participant Protection

The University of North Carolina at Chapel Hill institutional review board exempted this research from institutional review board approval.

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