
Majority Rule versus Supermajority Rules: Their Effects on Narrow and Broad Taxes

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Abstract

Buchanan and Tullock argue that larger supermajority rules reduce tyranny of the majority but should have no effect on the passage of mutually advantageous policies. The authors test this argument by separately analyzing the effect of supermajority requirements on taxes that are targeted toward narrow groups (more redistributive) and taxes targeted toward a broader base (less redistributive), in a panel of fifty states from 1970 to 2008. Regression analysis reveals an inverse relationship between narrow taxes and the size of the majority rule requirement and no relationship between broad taxes and the size of the majority requirement—consistent with the claim of Buchanan and Tullock. The authors also find that Democratic controlled governments have significantly higher tax rates on narrow taxes than Republican controlled governments. The reverse is found for broad taxes, but the result is not as strong.

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In the fall of 1994, House Republicans unveiled their Contract with America. The plan included a provision requiring three-fifths of both houses to increase taxes. Within days of taking control, the House adopted this rule for tax increases (CQ Almanac, 1995, 51:2-77).¹ California's infamous Proposition 13 required a two-thirds majority of both state legislative chambers for tax increases, which led several states to follow suit. By 1996, a total of thirteen states enacted, or had enacted, similar requirements (Minzer 1999).

Presumably, governments enact supermajority rule requirements for tax increases to improve fiscal responsibility. However, such rules may have other effects. One effect may be on the distribution of tax burdens. The Arkansas state constitution explicitly exempts revenue bills that broaden the state's tax base from its supermajority requirement on tax increases, suggesting that distributional concerns might have played a role in that state's provision (Minzer 1999, 62). Surveys in Michigan (Courant, Gramlich, and Rubinfeld 1980) and Massachusetts (Ladd and Wilson 1982) suggest voters believe supermajority requirements might address redistributive concerns.

Rather than focus on the effects of supermajority rules on fiscal discipline, as done by previous scholars (McEachern [1978] 2004; Rafool 1996; Knight 2000), in this article, we examine the effect of supermajority rule on two different types of tax policy. We consider a tax "narrow" if it is levied on only a narrow portion of the population. In contrast, we call a tax "broad" if it is paid by almost everyone. We test whether supermajority rules affect narrow and broad taxes differently using a panel of the fifty states over thirty-nine years. Our findings suggest that supermajority rules have a limiting effect on narrow taxes but no effect on broad taxes. This supports a hypothesis first introduced by Wicksell ([1896] 1967) and later articulated by Tullock (1959) and Buchanan and Tullock (1962) that supermajority rules limit redistributive policies but have no effect on mutually advantageous policies.

Supermajority Rules and Redistributive Policies

Governments redistribute in at least two ways: (1) when they tax uniformly and spend the proceeds on only a segment of the population (standard pork barrel politics)² and (2) when they tax a small segment of the population and spend the proceeds on almost everyone. Although the benefits from public expenditures are not easily measured, the costs are revealed through

taxation. We identify the second type of redistributive policy by analyzing the size of the population who pay a specific tax.

Several scholars have described ways in which majority rule and supermajority rules can lead to redistribution other than the obvious route of direct cash transfers (Tullock 1959; Buchanan and Tullock 1962; Hinich and Munger 1997; Mueller 2003). To follow these arguments, first assume that actors are rational utility maximizers whose utility from a government policy is a monotonic function of the net benefits the policy produces for them. Next, consider a more general concept of majority rule and supermajority rule called k -majority rule. In a population of N legislators, a proposal passes by k -majority rule if and only if the proportion of legislators in favor of it are at least as great as $k = K/N$, where $(N + 1)/2 \leq K \leq N$, for N odd; otherwise, the status quo is chosen. For example, majority rule requires $K = (N + 1)/2$, whereas unanimity rule requires $K = N$.

Standard treatments suggest that requiring larger k -majority rules for tax increases makes it more difficult to increase any type of tax (Rafool 1996; Knight 2000; Waisanen 2008). The argument is that greater k -majority rules imply larger majorities are needed to pass legislation making it more difficult to pass legislation, regardless of the constituency targeted. Standard empirical studies of tax limitations are usually of this nature.

In contrast, Buchanan and Tullock (1962) argue that requiring larger k -majority rules would limit certain types of policies but not others. They argue that larger k -majority rules make it more difficult to pass redistributive policies because as k increases, more legislators have to agree for a measure to pass. A proposal that places the tax burden on 45 percent of legislative districts, for example, might pass under majority rule, but it would not pass under a two-thirds rule. Similarly, a proposal that places the tax burden on 30 percent of the districts would pass under two-thirds rule, but not under three-fourths rule, and so on. As the size of the k -majority rule increases, the size of the admissible opposition shrinks. Hence, policies must conform to the interest of more constituents, and presumably more legislators, to pass. Put differently, Buchanan and Tullock believe the external costs of enacted policy are inversely related to the size of the k -majority rule.

Although Buchanan and Tullock (1962) argue that larger k -majority rules should discourage redistributive policies³ they also claim there is no reason for larger k -majority rules to have the same effect on policies, which affect everyone uniformly. This is because such policies should generate consensus and either pass under all k -majority rules or fail under all k -majority rules.

In sum, the conventional wisdom suggests that larger k -majority rules suppress all types of taxation (Rafool 1996; Knight 2000; Waisanen 2008), whereas an implication from Buchanan and Tullock (1962) is that supermajority rules should have different effects depending on whether the tax is narrow or broad. By finding support for the model of Buchanan and Tullock, we reject the common belief that higher thresholds should always result in lower tax rates.

Previous Empirical Studies on Supermajority Rules

Most of the empirical literature on supermajority rules focuses on the maintenance of fiscal discipline, not on distributive issues. McEachern ([1978]/2004) conducts one of the earliest tests and finds that debt levels are lower for states that require a supermajority of voters to approve tax increases in referenda. More recently, Rafool (1996) provides anecdotal evidence that supermajority requirements are more effective than traditional revenue limits in curbing state tax increases. Crain and Miller (1990) regress per capita spending growth over two-year periods on supermajority requirements, balanced budget requirements, and line-item vetoes. They find that supermajority requirements cut spending growth by roughly 1 percent, but such results are only significant at the .10 level. Knight (2000) studies a composite tax rate (total tax revenues/income) in a panel of forty-eight states and thirty-three years (1963–95). His estimates range from supermajority requirements having no effect to greater supermajority rule requirements causing tax rates to decrease between 8% and 23%, depending on the estimation technique.

None of these studies, however, consider the effect of supermajority requirements on different types of taxes. Two studies that have raised the issue are Minzer (1999) and Bradbury and Johnson (2006). However, neither is complete. Minzer compares the variance of tax revenues across all tax types for five states with supermajority rule requirements to the same for five states with majority rule requirements. His simple comparison suggests that supermajority requirements may affect the ability to alter tax types. Nevertheless, the sample is limited, and it is not clear that a visual comparison of two variances is the best approach, particularly because it does not control for other factors. Bradbury and Johnson set out to study the relationship more systematically but use government expenditures per capita and tax revenue per capita as their dependent variables. This is problematic because states do not have supermajority rule requirements for expenditures or for tax revenues. They only have supermajority rule

requirements for tax rates. Although Bradbury and Johnson find no relationship between the amount of tax revenue and a supermajority rule requirement for tax increases, they do find a negative relationship between public welfare expenditures and a supermajority rule requirement for tax rate increases. They interpret the latter as evidence in favor of the argument of Buchanan and Tullock. Our analysis adds to this line of inquiry by examining the effect of larger k -majority rules on narrow versus broad tax rates. Our approach represents a more direct test of the argument of Buchanan and Tullock regarding the different effects of k -majority rules on redistributive and non-redistributive policies.

Empirics

Data

To test the effects of supermajority rule on the distribution of taxes, we examine all fifty states over thirty-nine years, from 1970 to 2008. This provides a particularly good testing ground because fifteen states maintain supermajority requirements during at least part of this period (see table 1). Furthermore, the applications of the supermajority rule requirements are fairly uniform.

Rather than create an index of redistribution based on a ratio of expenditures to revenue (as done, e.g., by Booms and Halldorson [1973]), we measure redistribution by categorizing taxes as either primarily narrow or broad. In this study, taxes on cigarettes and distilled spirits are considered narrow because only a relatively small percentage of the population consumes cigarettes or hard liquor.

In contrast, we treat gasoline and public utility taxes as broad-based because almost everyone consumes gasoline and public utilities. The vast majority of the adult population purchases gasoline directly or pays gasoline taxes indirectly as consumers of public transportation (buses) or private transportation (taxis). Similarly, everyone consumes some of the items taxed in the public utilities category. These include telephone, power, water, and other utilities.⁴ Only those who have power and water included in their rent avoid paying such taxes directly, but even those people are likely to be affected, at least indirectly, by changes in their rent, and they might pay other utilities, such as telephone, directly.

The average levels of these four taxes across the fifty states are presented in figure 1. Each of the taxes we consider is specified by law as a nominal amount, rather than as a percentage. Given the long time span, we use the real value of the tax rate (in 2000 dollars) to account for the fact that

Table 1. States with Supermajority Rules for Tax Increases

State	Adopted	Supermajority requirement	Applies to
Arizona	1992	Two-third	All taxes
Arkansas	1934	Three-fourth	All taxes except alcohol and sales
California	1978	Two-third	All taxes
Colorado ^a	1992	Two-third	All taxes
Delaware	1980	Three-fifth	All taxes
Florida ^b	1994	Two-third	All taxes
Kentucky	2000	Three-fifth	All taxes, odd years only
Louisiana	1966	Two-third	All taxes
Michigan	1994	Three-fourth	Property taxes
Mississippi	1970	Three-fifth	All taxes
Missouri ^a	1980	Two-third	All taxes
Nevada	1996	Two-third	All taxes
Oklahoma	1992	Three-fourth	All taxes
Oregon	1996	Three-fifth	All taxes
South Dakota ^c	1996	Two-third	All taxes
Washington ^d	1993	Two-third	All taxes

^a In Colorado and Missouri, tax increases that exceed the state's revenue limit must be approved by a popular referendum. However, in the event of an emergency, the legislature can raise taxes with a two-thirds approval of both chambers. Both are coded as requiring a two-thirds majority.

^b In 1970, Florida required a three-fifths majority of both chambers to increase corporate taxes. Because corporate taxes are not studied here, Florida was treated as having a majority rule requirement until 1994 when it enacted its two-thirds requirement for all taxes.

^c In 1978, South Dakota required two-thirds of both chambers to increase corporate, sales, and income tax. This requirement was extended to all taxes in 1996. We report a start date of 1996 because corporate, income, and sales taxes are not studied here.

^d State judicial decrees required Washington to briefly suspend its supermajority rule requirement in 2002 and 2005. Washington is coded .51 those years.

Sources: Knight (2000), Minzer (1999), Mullins and Wallin (2004), Waisanen (2008), and various state constitutions.

inflation weakens the burden of a tax over time unless legislators specifically act to raise the tax again.⁵ It also makes the tax rates comparable to the other real valued variables used in our regression analysis.

The upper two graphs show the trajectory for the narrow taxes of cigarettes and distilled spirits and the lower two graphs show the trajectory for the broad taxes of gasoline and public utilities. Note that the real valued tax rate on cigarettes has generally risen since the early 1980s and increased sharply in 2003 in the aftermath of the infamous tobacco lawsuits. The real

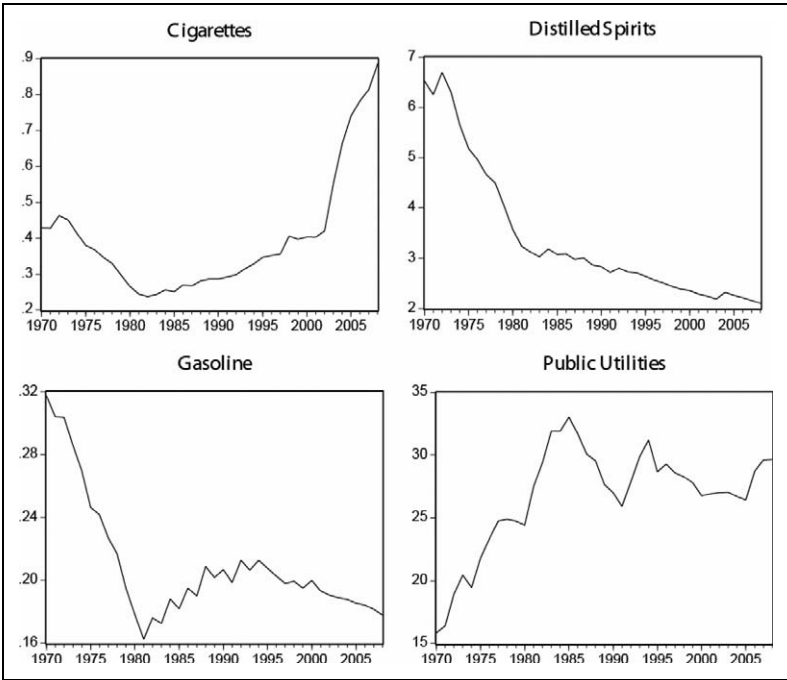


Figure I. Average real tax rates, 1970–2008

tax rate on distilled spirits, however, has steadily declined over time. The time patterns of gasoline and public utilities have also taken contrasting paths. This helps to show that our later regression results are unlikely to stem from spurious relationships with time.

Conventional wisdom suggests that larger supermajority rule thresholds make it more difficult for any proposal (broad or narrow) to pass. If the argument of Buchanan and Tullock (1962) applies, however, supermajority rule requirements should have a limiting effect on the tax rates for cigarettes and distilled spirits but no effect on the tax rates for gasoline and public utilities. We focus on this distinction in our analysis.

Table 2 presents the average, real tax rate for each commodity, stratified by the *k*-majority requirement. There do not appear to be any consistent patterns between the *k*-majority requirement and the level of taxation across the commodity categories. Only public utilities show a consistent inverse relationship. Because none of the other taxes follow this pattern, the notion that greater *k*-majority rule requirements make it more difficult for any type

Table 2. Average Level of State Tax Rates (Real 2000 dollars)

<i>k</i> -majority requirement	Cigarettes	Distilled spirits	Gasoline	Public utilities
.51	0.40	3.47	0.21	29.53
.60	0.33	1.91	0.21	14.99
.67	0.42	3.24	0.19	14.08
.75	0.40	5.52	0.20	1.55

The averages reported are among the states and years (1970–2008) which have the specified *k*-majority rule requirement.

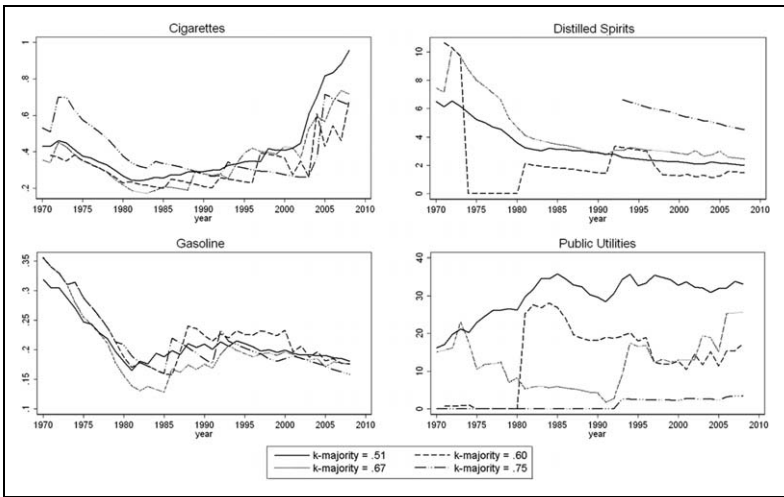


Figure 2. Average real tax rate for different *k*-majority rules

of tax to pass is not well supported. In addition, because this particular tax is broad rather than narrow, it runs counter to the hypothesis of the Buchanan and Tullock as well.

Figure 2 combines the concepts of figure 1 and table 2 by presenting the average real tax rate for each commodity over time, stratified by the various *k*-majority rule requirements. The figure shows that tax rates are not always smaller in cases when larger *k*-majority rules are in effect. Although it does appear to hold for public utilities and cigarettes in more recent years, the relationship does not hold for distilled spirits, gasoline, or cigarettes in the early years of our sample. The observation that *k*-majority rules converge to

the hypothesized effect for cigarettes in later years can be easily explained by the fact that very few states have supermajority rule requirements in earlier years, and each category needs several states to produce a meaningful average. However, this does not explain the other three cases. Hence, the figure does not lend much support to the hypothesis that greater k -majority requirements are likely to suppress all types of tax rates nor does it seem to support the hypothesis that greater k -majority thresholds are more likely to suppress narrow taxes alone.

However, such graphs can be misleading. Although they show the average, real valued tax rates by various k -majority rule requirements and how these categories have changed over time, they do not show whether a larger supermajority rule requirement dampens the tax rate in any particular state (some of which may have greater propensities to tax than others). This suggests the importance of controlling for state (and perhaps time) effects. Of course, other systematic factors can also affect the observed relationships. We therefore turn to multivariate regression analysis with cross-sectional and temporal effects to better isolate the true impact of k -majority rules on the level of taxes. As shown below, these results strongly support the notion that, on the margin, higher k -majority rules limit narrow taxes but not broad taxes, consistent with the ideas put forth by Buchanan and Tullock (1962).

Empirical Specification

To test the relationship between redistributive taxation and supermajority requirements, consider the following empirical specification:

$$r_{it} = \alpha k_{it} + \beta' X_{it} + \sum \lambda_i a_i + \sum \delta_t a_t + u_{it}, \quad (1)$$

where r_{it} is the real valued, tax rate on a specific commodity in state i and year t . Our commodity tax rates include cigarettes, distilled spirits, gasoline, and public utilities each considered separately.⁶ We treat the first two as narrow and the latter two as broad.

The variable k_{it} is the k -majority rule required to pass tax increases in the legislature of state i in year t , represented as a proportion between 0 and 1.⁷ All states require the same k -majority rule in both houses. In later regressions, alternative specifications will be considered for representing k_{it} . If all taxes are affected by supermajority rules, then $\alpha < 0$ for all taxes. If the theory put forth by Buchanan and Tullock (1962) applies, then $\alpha < 0$ for the narrow taxes of cigarettes and distilled spirits and $\alpha = 0$ for the broad taxes of gasoline and public utilities.

The matrix X_{it} represents a series of control variables. These include a measure of wealth (real income per capita), dummies for tax and expenditure limitations, and dummies for party control of government.⁸

We hypothesize that tax rates are negatively related to income because wealthier states can maintain the same level of government spending with lower tax rates than poorer ones. The income variable is lagged because policy makers do not know actual wealth (ability to pay) when setting tax rates for a particular year. Lagging income further helps alleviate a potential endogeneity problem between tax rates and income.

Traditional expenditure limitations restrict state appropriations to the growth of income or inflation (Minzer 1999).⁹ Traditional revenue limitations restrict revenue growth to changes in income, inflation, or gross domestic product (Elder 1992). For example, Florida constitutionally limits its revenues to a fixed percentage of five-year growth in personal income. We capture these institutional constraints by including separate dummy variables for expenditure or revenue limitations.

Party control is measured by a dummy for whether the Democrats control both the governorship and both houses of the state legislature and a dummy for when the same holds true for the Republicans.¹⁰ The default (left out) category is divided control. The expected signs on the party control variables are ambiguous. A traditional partisan approach would expect higher taxes under Democratic control than under Republican control (Lipford and Yandle 1990). A moderation model (Fiorina 1992) predicts that divided governments spend and tax at some negotiated value between the two parties' preferred targets. Thus, relative to the default category of divided control, the coefficients on unified control should be of opposite signs for each party. This would indicate the divided control tax level falls somewhere between the unified party targets. In contrast, a gridlock model (Zupan 1991) predicts divided governments lead to stalemates, resulting in lower taxes than either party deems optimal. This particular gridlock effect would be supported by both unified party variable coefficients being positive, with one party coefficient (presumably unified Democrats) significantly larger than the other. This would signify both differences among the parties' optimal targets implemented when they have complete control, and that divided control results in the lowest level of taxes. We maintain separate dummies for unified Democratic and unified Republican control, rather than a single variable of party control, to allow for these various effects.

Finally, for the tax rate on distilled spirits, additional regressions are also run, which include a dummy variable indicating whether the state maintains a monopoly on liquor sales. Presumably, excise taxes on liquor need not be

as high, or exist at all, when the state controls the price and receives all the revenue from liquor sales. Data sources for all variables are summarized in the appendix.

Despite all our control variables, unobserved heterogeneity may still remain. For example, the underlying progressivity/conservativeness of constituent ideology may make certain states more or less prone to higher taxes in general. Furthermore, attitudes regarding the appropriateness of various taxes may change over time. To control for such potential effects, the model also includes a series of state (a_i) and time (a_t) dummies, with one of the temporal dummies excluded to avoid perfect collinearity.¹¹ All regressions are estimated using panel-corrected standard errors clustered by states.

Results

The main results are summarized in table 3. In what follows, we first discuss findings related to narrow taxes (columns 1–3) and then cover the findings related to broad taxes (columns 4–5).

Narrow Taxes

The estimated coefficient for the size of the k -majority rule used for tax increases is always negative and significant for the narrow taxes of cigarettes and distilled spirits, consistent with the argument made by Buchanan and Tullock (1962).¹² The magnitudes are economically meaningful as well. For example, increasing the k -majority rule threshold from a simple majority (.51) to a two-thirds requirement (.67) reduces the average tax rate on cigarettes by approximately five cents, which is 12 percent of the mean tax rate on cigarettes. Furthermore, states with a three-fourths requirement have on average roughly seven cents (18 percent of the mean) lower tax rates on cigarettes relative to states with only a majority rule requirement.

For distilled spirits, the estimated coefficient in column 2 implies that states with a two-third (resp. three-fourth) majority requirement have a ninety-three cents (resp. \$1.40) lower tax rate on distilled spirits relative to states using majority rule. This translates into a 27 percent (resp. 41 percent) decline relative to the average tax rate. Including the state monopoly variable in column 3 does not affect the sign, magnitude, or significance of the k -majority rule variable or other variables.

For the control variables, income per capita generates a positive but extremely small and statistically insignificant coefficient for cigarette taxes but is negative and significant for taxes on distilled spirits. The latter

Table 3. Determinants of Tax Rates, 1970–2008

Dependent variable	Narrow taxes			Broad taxes	
	Cigarettes (1)	Distilled spirits (2)	Distilled spirits (3)	Gasoline (4)	Public utilities (5)
k-majority rule	-0.306*** (0.129)	-5.768*** (0.994)	-5.565*** (0.992)	-0.010 (0.021)	15.565 (13.113)
Income per capita (lagged, thousands)	0.001 (0.004)	-0.152*** (0.031)	-0.158*** (0.031)	-0.002*** (0.001)	-0.681* (0.420)
Tax limit (dummy)	0.010 (0.029)	-0.600*** (0.195)	-0.654*** (0.195)	-0.001 (0.005)	2.620 (1.778)
Expenditure limit (dummy)	0.082*** (0.017)	0.015 (0.136)	-0.049 (0.135)	0.018*** (0.003)	-8.334*** (1.912)
Unified democratic control (dummy)	0.057*** (0.012)	0.371*** (0.101)	0.328*** (0.098)	0.003 (0.002)	-0.207 (1.336)
Unified republican control (dummy)	-0.087*** (0.013)	-0.137 (0.102)	-0.127 (0.102)	0.004* (0.002)	3.035*** (1.441)
State liquor monopoly (dummy)			-7.223*** (0.436)		
Mean, dependent variable	0.40	3.40	3.40	0.21	26.70
Wald test for UDC = URC	67.20***	13.67***	11.25***	0.287	2.50
F test for state fixed effect	25.17***	103.31***	34.82***	42.41***	103.31***
F test for year fixed effect	30.56***	11.27***	10.55***	44.46***	2.90***
Adjusted R ²	.628	.813	.821	.711	.765
Regression standard error	0.179	1.510	1.477	0.032	17.360

N = 1,950. Panel-corrected standard errors are shown in parentheses. Regressions include cross-sectional and temporal fixed effects. k-majority rule has values of .51, .60, .67, or .75.

*, **, *** p value ≤ .10, .05, .01, respectively.

suggests that poorer states tend to have higher taxes on distilled spirits than wealthier states, possibly to compensate for a lower tax base. Perhaps, cigarette taxes are not treated this way to avoid the regressivity inherent in cigarette taxes (Colman and Remler 2004). Personal income tends to be inversely correlated with cigarette consumption (Farrelly et al. 2001) but positively correlated with the consumption of distilled spirits (Ornstein and Hanssens 1985).

Tax limits have no effect on cigarette taxes but significantly reduce the distilled spirits tax rate by roughly sixty to sixty-five cents. The latter implies that on average, states with tax limits reduce their tax rates on distilled spirits by almost one-fifth. In contrast, states with expenditure limits tend to have roughly eight cents higher tax rate on cigarettes, a seemingly perverse effect, but expenditure limits do not significantly affect taxes on distilled spirits.

We also find that Democratic control of both the executive and legislature branches results in higher tax rates on cigarettes by an average of five to six cents per pack, or roughly 14 percent more than the mean tax rate on cigarettes, compared to cases where neither party controls both branches. Republican control yields an average of almost nine cents (20 percent) lower in tax rate per pack compared to divided control and fourteen cents (36 percent) lower relative to Democratic control. We also find partisan differences for taxes on distilled spirits, but here they are less dramatic. States under Democratic control have on average 10 percent higher tax rates on distilled spirits compared to either Republican or divided governments. Although Republican control suggests slightly lower taxes on distilled spirits, divided control and Republican control do not differ significantly from each other. Thus, it appears that Democrats are able to raise taxes on cigarettes more easily than for distilled spirits. Overall, the findings for cigarette taxes strongly support the partisan moderation model. Democratic control of both branches of government yields the highest tax rates for cigarettes compared to cases where Democrats control at least one branch or chamber. Unified Republican control yields even lower tax rates. For distilled spirits, Democrats must take over every branch to have a positive effect.

Finally, a state monopoly on liquor sales has a negative effect on the tax rate for distilled spirits, as expected. States with liquor monopolies gain revenue from liquor sales directly and do not need additional taxes distinct from the sales price. Note that, as stated earlier, inclusion of the state monopoly dummy does not affect the signs or significance of the other estimated coefficients and has only a very minor impact on the estimated magnitudes.

Broad Taxes

The negative relationship between higher k -majority rule thresholds and narrow tax rates are consistent with both the model of Buchanan and Tullock (1962) and the standard view that any taxes, or indeed any policy in general, would be harder to pass with larger k -majority rules. Thus, support for the interpretation of Buchanan and Tullock must be tempered until the broad taxes are considered.

Regression results for the broad-based taxes on gasoline and public utilities are presented in the last two columns of table 3. For these taxes, the k -majority rule variable coefficient is never statistically significant. This suggests that the significant effect of this variable for limiting narrow taxes was not simply an artifact of the difficulty of passing policies in general when majority thresholds are raised. Instead, the effect of k -majority rules differ depending on the type of taxes considered. Larger k -majority rule requirements reduce narrow taxes, but they do not have a significant effect on broad taxes, consistent with our interpretation of Buchanan and Tullock.

The control variables typically have different effects depending on whether the tax is for gasoline or for public utilities. States with greater income tend to have lower taxes than poorer states for both gasoline and public utilities, but at different levels of significance. The tax limit coefficients are of opposite signs across the two types of taxes, but not statistically significant in either case. We conclude that tax limitations do not affect broad taxes. States with expenditure limits have lower effective taxes for public utilities but higher for gasoline.

Unified Democratic control does not appear to be an important determinant of either broad tax. Yet, when Republicans are in control of both branches, both gasoline taxes and public utilities taxes tend to be higher relative to cases where neither party controls both branches. The level of significance is higher for public utilities than for gasoline. However, a Wald test is unable to reject the null of equality of taxes between unified Democratic control and unified Republican control for either tax. Thus, for broad taxes, we do not find strong support for any of the three party models of partisanship, moderation, or gridlock.

Robustness

The previous set of results suggest that increases in the majority threshold are associated with smaller narrow tax rates but have no effect on broad tax rates. The estimates may be biased, if the marginal impact is not constant.

For example, if increasing the threshold of a narrow tax eight percentage points from .67 to .75 has a smaller impact than increasing it seven percentage points from .60 to .67, then the estimated coefficients on the narrow taxes may overrepresent the true magnitude of k -majority rules. Moreover, the lack of significance for the gasoline tax may be due to an enlarged standard error from the variable impact associated with a nonlinear effect.¹³

As a first check, we considered a log specification for the k -majority rule variable. In every regression, we found the same estimated sign and level of significance as for the linear form presented in table 3.

Still, it may be the case that the relationship between tax rates and k -majority rules is neither linear nor log linear. The observed differences in the k -majority rule thresholds may not have the implicit effect that their magnitudes might imply. For a blunt treatment, in table 4, we replace the precise threshold value of the k -majority rule by a dummy variable for any supermajority rule. Results are very similar except the significance level for the cigarette taxes falls to a p value of only .07. A state with a supermajority requirement would have on average roughly four cent lower cigarette tax than if the same state used majority rule instead. The impact is similar to the effect of switching from majority rule to three-fifth majority rule derived from table 3 but significantly less than had been estimated for switching between majority rule and three-fourth rule. The estimated effect on distilled spirits for adopting supermajority rules are between six to seven cents, which is less than the estimates for switching to three-fifth rule derived from table 3, but remains statistically significant at the .01 level. The dummy variable coefficient is not significant for either gasoline or public utilities.

Note this simple dummy treats all supermajority rules the same, which may be problematic itself if various supermajority rules do not have the same effect (i.e., three-fourths rule may have a stronger effect relative to majority rule than does three-fifths rule). In theory, supermajority rules can be set at any level above majority rule. In practice, however, only a few levels are observed. We exploit this phenomenon in table 5 using separate dummy variables for each of the supermajority thresholds adopted by various states: three-fifth, two-third, or three-fourth. For cigarette taxes, although the estimated coefficients are increasing in magnitude for each higher threshold as expected, only the three-fourth majority rule dummy coefficient is statistically significant. This suggests the threshold effect does not kick in unless the highest observed requirement is adopted. States with a three-fourth majority requirement have on average nineteen cents (48 percent) lower cigarette taxes compared to the same state using majority rule,

Table 4. Effect of Supermajority Rule Relative to Majority Rule

Dependent variable	Narrow taxes			Broad taxes	
	Cigarettes (1)	Distilled spirits (2)	Distilled spirits (3)	Gasoline (4)	Public utilities (5)
Supermajority rule (dummy)	-0.037* (0.021)	-0.710*** (0.155)	-0.640*** (0.153)	-0.000 (0.003)	2.017 (1.620)
Income per capita (lagged)	-0.002 (0.004)	-0.149*** (0.031)	-0.155*** (0.031)	-0.002*** (0.001)	-0.689* (0.421)
Tax limit (dummy)	0.006 (0.030)	-0.659*** (0.197)	-0.734*** (0.196)	-0.002 (0.005)	2.740 (1.801)
Expenditure limit (dummy)	.079*** (0.017)	-0.030 (0.136)	-0.098 (0.135)	0.017*** (0.003)	-8.223*** (1.889)
Unified democratic control (dummy)	0.057*** (0.012)	0.376*** (0.101)	0.334*** (0.098)	0.003 (0.002)	-0.221 (1.336)
Unified republican control (dummy)	-0.087*** (0.013)	-0.137 (0.103)	-0.125 (0.102)	0.004* (0.002)	3.038** (1.442)
State liquor monopoly (dummy)			-7.180*** (0.440)		
Mean, dependent variable	0.40	3.40	3.40	0.21	26.70
Wald test for UDC = URC	67.43***	13.91***	11.44***	0.29	2.52
F test for state fixed effect	24.94***	130.13***	34.39***	42.54***	103.39***
F test for year fixed effect	30.45***	11.12***	10.39***	44.45***	2.89***
Adjusted R ²	.628	.812	.820	.711	.765
Regression standard error	0.179	1.514	1.483	0.032	17.362

N = 1,950. Panel-corrected standard errors are shown in parentheses. Regressions include cross-sectional and temporal fixed effects. The supermajority rule dummy = 1, if the k-majority rule is .60, .67, or .75.

*, **, ***: p value ≤ .10, .05, .01, respectively.

Table 5. Threshold Effects for Supermajority Rules Relative to Majority Rule

Dependent variable	Narrow taxes			Broad taxes		
	Cigarettes (1)	Distilled spirits (2)	Distilled spirits (3)	Gasoline (4)	Public utilities (5)	
Three-fifth majority rule (dummy)	-0.006 (0.034)	0.204 (0.281)	0.502 (0.258)	0.011* (0.006)	-2.573 (1.942)	
Two-third majority rule (dummy)	-0.022 (0.025)	-0.713*** (0.163)	-0.704*** (0.163)	-0.003 (0.004)	3.701** (1.622)	
Three-fourth majority rule (dummy)	-0.191*** (0.040)	-2.627*** (0.485)	-2.648*** (0.489)	-0.005 (0.006)	1.400 (1.531)	
Income per capita (lagged)	0.001 (0.004)	-0.153*** (0.031)	-0.159*** (0.031)	-0.002*** (0.001)	-0.702* (0.423)	
Tax limit (dummy)	-0.004 (0.031)	-0.753*** (0.194)	-0.825*** (0.193)	-0.002 (0.005)	2.412 (1.729)	
Expenditure limit (dummy)	0.083*** (0.017)	-0.045 (0.136)	-0.012 (0.135)	0.018*** (0.003)	-8.458*** (1.928)	
Unified democratic control (dummy)	0.055*** (0.012)	0.357*** (0.101)	0.315*** (0.098)	0.028 (0.002)	-0.294 (1.346)	
Unified republican control (dummy)	-0.088*** (0.013)	-0.132 (0.103)	-0.115 (0.102)	0.005* (0.003)	2.903** (1.448)	
State liquor monopoly (dummy)			-7.457*** (0.452)			
Mean, dependent variable	0.40	3.40	3.40	0.21	26.70	
Wald test for UDC = URC	66.19***	12.68***	10.08***	0.36	2.42	
F test for state fixed effect	24.76***	129.76***	34.37***	42.20***	103.07***	
F test for year fixed effect	30.65***	11.38***	10.69***	44.58***	2.93***	
Adjusted R ²	.629	.814	.823	.711	.765	
Regression standard error	0.179	1.506	1.472	0.032	17.362	

N = 1,950. Panel-corrected standard errors are shown in parentheses. Regressions include cross-sectional and temporal fixed effects.

*, **, ***: p value $\leq .10$, $.05$, $.01$, respectively.

an effect more than two and a half times as large as was estimated using the linear specification.

For distilled spirits, the threshold effect kicks in earlier at two-third and is larger still at three-fourth. Adopting a two-third requirement results in taxes that are on average seventy-one cents (20 percent) lower, and for three-fourth requirement, taxes are \$2.63 (77 percent) lower. The former effect is less than had been estimated under the linear specification, but the latter effect is much larger.

The patterns of the supermajority requirements are not the same for broad taxes. For gasoline (table 5, column 4), only the lowest supermajority rule of two-thirds yields a significant coefficient but in a positive direction. It is surprising that a supermajority requirement results in slightly higher taxes but at only one cent it is not an economically meaningful distinction. Larger k -majority rules do not affect the broad gasoline tax relative to majority rule, consistent with the results in table 3. The regression for public utilities presented in the final column also reveals an uneven pattern, with only the two-thirds requirement affecting tax levels but in a perverse way of suggesting a positive relationship with the public utilities tax rate. Again, this result does not support the concept that having higher requirements will yield lower taxes, regardless of the tax type. The insignificance of the other supermajority rule thresholds suggest that the lack of negative effect found earlier is not due to this one perverse relationship. Combined, these results lend further support to the notion that supermajority rule requirements generally affect narrow tax rates but not broad tax rates.

Conclusion

Several authors have suggested that state supermajority rule requirements for tax increases curb state revenues and lead to greater fiscal discipline (Rafool 1996; Knight 2000; Waisanen 2008). The logic of this argument is that greater supermajority rule requirements make it more difficult to pass any type of tax increase. In this article, we have taken a more nuanced approach by examining two taxes that target a narrow segment of the population and two taxes that target just about everyone. We find that supermajority rule requirements do *not* have the same affect on both types of taxes. Supermajority rule requirements have negative effects on state tax rates on cigarettes and distilled spirits, two taxes that affect a relatively narrow population, and no effect on state tax rates on gasoline and public utilities, two taxes that affect almost everyone. The simple explanation for this phenomenon is that, for political reasons, few legislators want to increase the costs

of goods that everyone, or almost everyone, consumes. They prefer instead to tax goods consumed only by a smaller segment of society. Supermajority rules have a dampening effect on their ability to tax such groups and no effect on taxing goods that almost everyone consumes.

Our results also support an argument made by Buchanan and Tullock (1962) that greater k -majority rules should dampen redistributive policies, but have no effects on mutually advantageous, or mutually disadvantageous, policies. Thus, our findings help resolve a debate in the public choice literature about the relationship between k -majority rules and redistribution.

Whether the effect of supermajority rule on narrow taxes is desirable or not is a matter of interpretation. On one hand, greater k -majority rules seem to dissuade tax increases on those who represent a relatively small segment of society. Given their minority status, it is relatively easy to consistently burden them with the cost of running government. Arguably, this is a negative consequence of democracy that should be avoided. On the other hand, greater k -majority rules seem to dissuade “sin” taxes on smoking and drinking, which may have greater negative externalities on communities than consuming gasoline or public utilities. Whether the distributional effect of supermajority rule makes society better or worse off depends on the hand considered.

Appendix Data Sources

Tax Rates: Cigarettes (dollars per pack of twenty cigarettes), distilled spirits (dollars per gallon), and gasoline (dollars per gallon) came from “State Excise Tax Rates,” *The Book of the States*, biennial. Missing values for odd years were derived from various state government Web sites (available on request) and National Association of State Budget Officers (1999-2002). Missing tax rates for cigarettes were also found using data made available by Badi Baltagi (<http://www.wiley.co.uk/wileychi/baltagi/datasets.html>). The tax rate on public utilities was estimated as the revenue from public utilities divided by population. Such an estimate was required because public utilities include water, electricity, natural gas, public transportation, and in some cases telephone and telegraph. Each has different rates. All were reported in 2000 dollars.

Tax Revenues: United States Census Bureau (1963-2000).

k-majority rule: Knight (2000), for the years 1970–1995; *The Book of States*, for the years 1995–2008; Minzer (1999); Mullins and Wallin (2004); and Waisanen (2008). In the few cases of conflict between the sources, the issue was resolved by consulting the constitution of each state.

Income per capita: Bureau of Economic Analysis, Regional Economic Accounts. 2009. “State Annual Summary Tables (SA1-3, SA51-52),” <http://www.bea.gov/regional/spi/default.cfm#download>. Reported in 2000 dollars.

Tax and Expenditure limits: Rafool (1996), Mullins and Wallin (2004), and Waisanen (2008). State Constitutions were examined in the few cases where the sources conflict.

Political party variables: *The Book of the States*, 1970–2008. Missing years were filled in using information from the national governors association (www.nga.org) and the Minnesota Reference Library (<http://www.leg.state.mn.us/lrl/histleg/histdat.asp>).

State Liquor Monopoly: “State Excise Tax Rates,” *The Book of the States*, biennial.

Notes

1. This requirement never passed the Senate and simply became a non-binding agreement in the 104th House.
2. Olson (1965) refers to this situation as “concentrated benefits” and “diffuse costs.”
3. Under an alternative set of assumptions, Dixit, Grossman, and Gul (2000) argue that larger *k*-majority rules *encourage* redistributive measures, rather than discourage them. They claim that the party in power is more likely to pass fair and non-redistributive measures under smaller *k*-majority rules, such as majority rule, than under larger *k*-majority rules. This is because smaller *k*-majority rules allow the opposing party to punish unfair policies in future periods. Larger *k*-majority rules make future punishment more difficult and therefore allow for a greater number of people to be harmed in current periods. Implicitly, this assumes the current majority party has enough seats to meet the higher threshold and the *k*-majority rule requirement remains fixed over time. Testing their model would require identifying the constituent interests of each party for each state and year, as well as the particular taxes used to punish the other party. As these data are not readily available, such a test is beyond the scope of this article.
4. The federal government defines the “public utilities sales tax” (code T15) as a tax on “passenger and freight transportation companies; telephone (land based

and mobile), telegraph, cable television providers, and Internet service providers, in addition to the electric power, gas, mass transit, and water supply utilities defined separately for Census Bureau statistics on government-operated utilities” (United States Census Bureau 2006, 4-12). This is the only public utilities tax used in this study. The census bureau treats revenue sharing from county or municipal governments to state governments (codes D80-D94) and revenues from public utility licenses (code T27) as separate categories.

5. Taxes that are expressed in percentage terms automatically reflect inflation through changes in the commodity price. However, three of the taxes studied here are stated in a dollar amount per volume, and the utility tax is calculated as revenue per capita. Because total revenue needs to be corrected for inflation to avoid a spurious relationship with time, we adjust all tax rates for consistency. Converting tax rates to real dollars helps capture the fact that a ten-cent tax on a gallon of gasoline would be much more burdensome to voters in 1970 than in 2008.
6. Because there is no single tax rate for public utilities, we use the effective tax rate, which is revenue/population. Knight (2000) proxies the effective tax rate for all taxes using total revenue/income. Public utilities are part of that ratio. He may divide by income because he is not explicitly focused on a broad-based tax. Our findings regarding the effect of *k*-majority rule on the utility tax do not depend on this choice.
7. Majority rule is coded .51.
8. We also experimented with a proxy for the strength of opposition to taxes, as captured by the contribution of that industry to gross state product (GSP). However, data on distilled liquor production are not available at the state level, making it impossible to include such a variable for distilled spirits. For the other tax rates, this variable was never close to achieving statistical significance and including the variable did not affect our primary results. For consistency, we do not include a measure of strength of opposition in any of the regressions we report.
9. Expenditures limited to 98 percent of revenue growth were not coded as an expenditure limit.
10. Nebraska and Minnesota are often excluded from state analyses which control for partisan composition in the legislature, due to their non-partisan elections (e.g., Knight 2000). However, as detailed in the appendix, we recovered party identification for both states using alternative sources.
11. We also ran regressions using random unit effects. Fixed effects are consistent but inefficient, whereas random effects are efficient unless the unobserved heterogeneity is correlated with one or more of the explanatory variables. In the latter case, estimates will not be consistent. For example, constituent ideologies may be

correlated with party control or the adoption of supermajority rules in which case random effects would not yield consistent estimates. However, even if ideology differs consistently across states, party identification may still change over time (consider Southern Democrats), which would weaken any potential correlation. As it turns out, the signs and significance of the k -majority rule variables remain robust between the fixed and random effect specifications. To conserve space in the tables, only the fixed effects estimates are reported.

12. Our estimates assume supermajority requirements occur exogenously. It could be the case, however, that higher thresholds occur endogenously when taxes become “too high” for fear of them climbing even higher. If this were true, our failure to account for endogeneity would bias the test against the claim of Buchanan and Tullock.
13. Recall that the k -majority rule coefficient for public utilities had the wrong sign in addition to being nonsignificant.

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