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State Higher Education Spending and the Tax Revolt

Government subsidization of public higher education primarily is a function of the states. Even today, with budgets emerging from crisis, the states provide over four dollars of support for higher education expenses for every dollar of federal subsidy. Yet public effort in support of higher education—measured as state funding per $1,000 of personal income—has been in decline for the last quarter century. The magnitude of this decline has been quite significant. Aggregate state effort has fallen by 30% since the late 1970s.

In this article, we evaluate the connection between state higher education effort and the tax revolt that began in the 1970s. The tax revolt gave birth to a set of laws and constitutional provisions that have dramatically changed taxing and spending policies in many states. The tax revolt is based on the notion that government is too large, and that the appropriate strategy is to "starve the beast." The most prominent legal change resulting from the tax revolt is the Tax and Expenditure Limitation (TEL), which limits the growth of state revenue or expenditures to some outside indicator, most commonly the growth of state personal income. Starting in the late 1970s, 23 states adopted a TEL. In addition, though this happened more slowly and less often, states added supermajority requirements (SMRs), typically two-thirds, for the legislature to approve tax increases. Thirteen states have an SMR.

We use a 41-year panel of state data from 1961 to 2001 to investigate the importance of these tax revolt institutions for state effort on higher

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education. Both TELs and SMRs prove to be very robust predictors of the time series and cross-sectional variation in state funding effort. Together with rising costs, this retreat of public effort is a major component of the financial difficulties faced by state-supported colleges and universities. One measure of the consequences of this financial crisis at public institutions is the ratio of spending per full-time student at public institutions relative to private institutions. In 1980, public institutions spent 70 cents for every $1 spent at private colleges and universities. By the late 1990s that figure had fallen to 55 cents (see Kane, Orszag, & Gunter, 2003). Understanding the causes of this retreat is crucial if there is any chance of reversing it. Changing the political climate is never easy, but our results suggest that the task ahead is even more difficult. All of the SMRs and a majority of the TELs are amendments to state constitutions. They are firmly in place.

The questions that motivate our article arise at three distinct levels of generality. At the highest level, the issue is whether institutions actually affect policy outcomes. At the next, more specific level, the question is whether the particular institutions spawned by the tax revolt affect policy. There is an extensive literature, both theoretical and empirical, on these two questions. Our contribution comes from extending the discussion to the third and most specific question: Have the tax revolt institutions had a meaningful effect on higher education effort in particular? In this introduction, we briefly review the literature on the highest-level question. We discuss the more specific implications of the tax revolt institutions in separate sections of the paper.

That political institutions should matter for policy outcomes is not self-evident. In much of the political economy literature as it has evolved since the work of Anthony Downs (1957), policy outcomes are driven by the preferences of the median voter. This is true if politicians know voter preferences and can align their proposals accordingly. In this case, there is little scope for the institutional structure of decision making to exert an independent effect on policy outcomes. Institutions become important again whenever any of the assumptions of the Downsian paradigm are removed.

In particular, political parties may care about policy as well as winning elections. They may have imperfect information about voter preferences, and those preferences may not be single peaked (see Alesina, 1988). They may be dependent on political contributions that come from the extremes within a polarized electorate. An independent role for interest groups also calls into question the spatial choice nature of median voter models.[1] Lastly, in multi-issue political settings, the theoretical work of Kenneth Shepsle and Barry Weingast (1981) and Thomas

Romer and Howard Rosenthal (1978) has shown the importance of restrictions on the power to propose policies within a legislative process. These changes to the basic assumptions may lead to departures from the median voter's preferred outcome or to the reduced political salience of the median voter, creating a role for institutions to affect policy choices.

Timothy Besley and Anne Case (2003) have provided a thorough review of the theoretical and empirical literature on the role political institutions play in determining policy choices in the United States. They consider electoral rules, such as limitations on who can vote and whether proportional representation is used, and decision making rules, such as the line item veto, rules for appointing regulators, and whether agencies are independent or not. They conclude their detailed review of this literature by saying that the evidence from the U.S. clearly indicates that institutions do matter: "There can be little doubt that the structure of political representation, the terms on which elections are fought, and the rules governing the policy process, all influence policy outcomes" (Besley & Case, 2003, p. 67).

We address the remaining questions in six additional sections. In the next section, we explain the institutions of particular interest to us, TELs and SMRs, and review the literature about their effects on state budgets. In the third section, we review the evidence of the slowdown in higher education spending and the literature on this slowdown. In the fourth section, we describe the model and the data we use to test our hypothesis that the tax revolt institutions have an important impact on state spending effort for higher education. The fifth section presents our results. We discuss the policy implications of our finding in the sixth section. The final section contains our conclusions.

Tax Revolt Institutions and Research on the Tax Revolt

Tax Revolt Institutions

Individuals who did not trust legislatures started the tax revolt. They were deeply concerned with the growth of government at all levels, but particularly with the growth of state government. The basic strategy of the tax revolt was to put hard limitations on the growth of state tax revenues or direct limits on spending growth. Given balanced budget requirements, the approaches are very similar.

There are a number of theoretical reasons to expect that marginal voters might respond favorably to proposals that reduce the flow of resources toward public sector uses chosen by a legislature (see Matsusaka, 1995). Agency problems in politics may be similar to those that

characterize corporate governance. If constituents have limited information about their representatives, legislators may shirk and implement policies contrary to constituent interests without being punished at the polls. Moreover, logrolling within legislatures may help win approval for projects that are highly valued by some representatives even if they do not command a public majority. This provides a rationale for why initiatives make their way onto the ballot—citizens distrust elected officials.

Many of the TELs, however, were results of the legislative process itself. There is ample support in the literature for why legislatures might act this way.[2] TELs and SMRs throw sand in the gears of government, thus constraining future legislatures that may have a different attitude toward the fiscal role of government. Starting in 1976, 23 states enacted TELs. Sixteen of the 23 TELs were enacted in the four-year period from 1977 to 1980. A supermajority requirement for a tax increase is motivated by the same fear of the growth of government. If we make raising taxes more difficult, it will be harder for government to grow. SMRs are much less prevalent than TELs, and in most cases, they are a much more recent phenomenon. Only 13 states have such requirements, and six of these enacted their SMR in 1992 or thereafter.

Table 1 lists the states that have TELs and some of the characteristics of the provisions. These TELs are all limitations on total state spending or total state revenues as opposed to similar restrictions that affect particular taxes, typically property taxes. The TELs are a hodgepodge of different types of regulations. Some are constitutional provisions, and others are statutory. Some TELs restrict expenditures and others restrict taxation. Most limitations are based on the growth of personal income in the state, but some states use population growth and inflation. In addition, the exact composition of the budget subject to the restriction varies across states. In our empirical work below, we will focus on three distinctions among TELS.

The first of these distinctions was suggested by Besley and Case (2003), who distinguished between TELs that impose restrictive limits and ones that impose non-restrictive limits. Non-restrictive limits are ones that are either binding on the administration's budget submissions but not on the budget the legislature eventually passes, or ones that require only a simple majority of the legislature to override. A priori one would expect restrictive TELs to have a greater effect on the decisions of budget makers than non-restrictive ones have.

Our second distinction concerns the breadth of the TEL. Breadth is a difficult thing to measure, but it clearly varies across states. For the purposes of our analysis, we determined whether college tuition, or expenditures funded by tuition, was affected by the TEL. In cases in

which tuition revenue is considered part of the budget that is limited by the TEL, the states generally had very broad-based limitations. For example, Article IX, Section 17 of the Arizona constitution, which outlines the TEL, includes,[3]

> (2) For the purposes of this article, "state revenues":
>
> (a) Include all monies, revenues, fees, fines, penalties, funds, tuitions, property and receipts on any kind whatsoever received by or for the accounts of the state or any of its agencies, departments, offices, boards, commissions, authorities, councils and institutions except as provided in this subsection.

This describes a very broad broad-based TEL, much broader than in some states that explicitly exclude tuitions, fees, and other charges from the revenue subject to the limit. Six states in our sample include tuition or expenditures funded by tuition under their TEL.

TABLE 1
Tax and Expenditure Limitations

State	Date	Constitutional or Statutory	Limit Restrictive or Non-Restrictive	Fixed or Moving Base	Tuition Included
AK	1982	Const.	Restrictive	Fixed	No
AZ	1978	Const.	Restrictive	Fixed	Yes
CA	1979	Const.	Restrictive	Fixed	No
CO	1977	Stat–1991 Const–1992	Non-Restrictive	Moving	Yes
CT	1991	Const.	Non-Restrictive	Moving	No
FL	1994	Const.	Non-Restrictive	Moving	No
HI	1978	Const.	Restrictive	Moving	No
ID	1978	Stat.	Restrictive	Fixed	No
LA	1979	Stat–1979 Const–1993	Non-Restrictive	Fixed	No
MA	1986	Stat.	Restrictive	Moving	No
MI	1978	Const.	Restrictive	Fixed	No
MO	1980	Const.	Restrictive	Fixed	No
MT	1981	Stat.	Restrictive	Moving	No
NC	1991	Stat.	Non-Restrictive	Fixed	Yes
NJ	1976	Stat.	Restrictive	Moving	No
NV	1979	Stat.	Non-Restrictive–1981 Restrictive–1995	Fixed	Yes
OK	1985	Const.	Restrictive	Moving	No
OR	1979	Stat.	Non-Restrictive	Moving	Yes
SC	1980	Const.	Restrictive	Moving	No
TN	1978	Const.	Non-Restrictive	Moving	No
TX	1978	Const.	Non-Restrictive	Moving	No
UT	1979	Stat.	Non-Restrictive	Mix of Fixed and Moving	No
WA	1979	Stat.	Restrictive	Moving	Yes

The difference between a fixed-base TEL and a moving-base TEL is the final distinction of interest. A fixed-base TEL is one in which a state sets a limit and augments the limit each year. Article XIII B of the California constitution provides an example of a fixed-base TEL:

> SPEC 1. The total annual appropriations subject to limitation of the State and of each local government shall not exceed the appropriations limit of the entity of government for the prior year adjusted for the change in the cost of living and the change in population, except as otherwise provided in this article.

We term this a fixed-base TEL because the limit is established on a base from the year in which the limitation started (1979) and the limit is augmented by a formula. The important point is that the limit is not affected by last year's spending.

Article XXVIII of the Connecticut constitution provides an example of the alternative, a moving-base TEL:

> Sec. 18 b. The general assembly shall not authorize an increase in general budget expenditures for any fiscal year above the amount of general budget expenditures authorized for the previous fiscal year by a percentage which exceeds the greater of the percentage increase in personal income or the percentage increase in inflation. . . .

This is a moving-base TEL because in each year the base for the limit is the previous fiscal year's expenditures. The important distinction is between a limit on total spending—a fixed-base TEL—and a limit on each year's additional spending—a moving-base TEL. If the intent of the tax revolt was to limit the growth of state spending, the moving-base TEL should be more effective. Our discussions with state budget officers in several states with fixed-base TELs suggested that the TEL, though present, did not constrain the budget process because a large gap had grown between the limit and actual state spending. Such a gap is not possible with a moving-base TEL. Eight states have fixed-base TELs; 14 states have moving-base TELs, and one state, Utah, computes its TEL using a formula that is a mix of the two methods.

SMRs, on the other hand, are much more uniform than TELs, and all are parts of the state constitutions. Table 2 lists the states with SMRs and gives the dates they were adopted and the percentage needed to increase taxes. Some of the SMRs are provisions for temporary or emergency tax increases that later have to be approved by a vote of the citizenry, but most of them are explicit constraints on the state legislature. Nine of the 13 states that have an SMR also have a TEL, but it is only seldom the case that they were adopted in the same year. Typically, a state adopted its SMR after it had adopted a TEL.

TABLE 2
Characteristics of Super Majority Requirements

State	Year	Voting Requirements
AR	1934	3/4 or voter approval
AZ	1992	2/3
CA	1978	2/3
CO	1992	2/3 temporary and then voter approval
DE	1980	3/5
FL	1971	3/5
LA	1996	2/3
MS	1970	3/5
NV	1996	2/3 emergency and then voter approval
OK	1996	3/4 or voter approval
OR	1996	3/5
SD	1978	2/3
WA	1993	2/3 for revenue increases under the expenditure limit, otherwise voter approval

Tax Revolt Research

The literature on the tax revolt has focused on whether it has achieved its main objective. Therefore, studies have looked at the effects of tax revolt limitations on aggregate state budgets. Existing studies do not universally find a significant effect of TELs on aggregate state expenditures or aggregate state revenues. It has been easier to find significant effects for SMRs. The studies on TELs fall into two camps. The first camp includes Abrams and Dougan (1986), Shadbegian (1996), and Bails and Tieslau (2000), who found that a TEL significantly decreases the size of state government, though Shadbegian's result only holds when the TEL indicator variable is interacted with state income. Studies in the other camp include Rueben (1997), who found no effect of a TEL using OLS or fixed effects models, and Knight (2000), who found that SMRs have a significant effect but that a TEL does not. Besley and Case (2003) also concluded that TELs do not shrink state budgets, but that SMRs do have a significant effect.[4]

Much of the difficulty in this literature stems from the fact that the introduction of a tax or expenditure limit or a supermajority rule is endogenous to the process of determining the size of state government budgets. Typically, these measures are introduced when a significant proportion of the state's legislators, or the state's voters in states that have the initiative process, become convinced that state spending or taxing is "out of control." Rueben (1997) and Knight (2000) dealt with this problem by creating an instrument for the TEL or SMR. The estimates

using the instrument found effects for either TELs (Reuben) or SMRs (Knight) that were much larger and more precisely measured than their other results suggested. By focusing on a state's spending within a subset of its budget, we avoid the problem of whether or not a TEL or SMR is endogenous. There exists no theory and/or evidence to suggest that increases in higher education spending alone were the trigger for the initiation of a TEL or an SMR.

The Slowdown in State Appropriations for Higher Education

Students of higher education finance are indebted to the Grapevine project at Illinois State University for carefully collecting data on state appropriations for higher education. Figure 1 displays these data for all states.[5] The data are for state higher education tax effort, measured as appropriations per $1,000 of state personal income. State tax effort measures the willingness of state taxpayers to pay taxes and appropriate the proceeds to run state-supported colleges and universities. The figure shows two distinct trends. Citizens' willingness to support higher education grew from 1961 to the late 1970s and decreased thereafter.

The basic pattern described by Figure 1 is repeated in each state. In every case, the data exhibit a hump-shaped pattern. Table 3 shows the years of peak effort for each state. Effort in 29 states peaked between

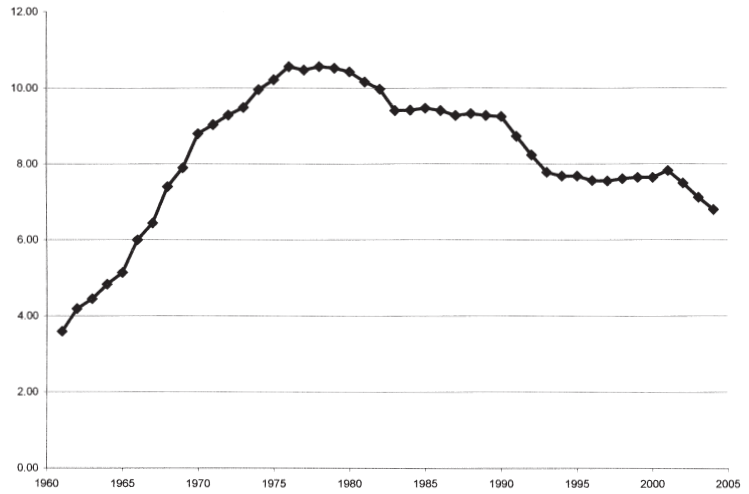

FIG. 1. State Appropriations for Higher Education for $1000 of Personal Income, Fiscal Years 1962–2004

1974 and 1980, which is consistent with the peak in aggregate data in Figure 1. There are, however, clearly some outliers. Effort peaked in South Dakota in 1969 and did not peak in Massachusetts, Ohio, Wyoming, and Iowa until 1988 or thereafter.

Table 4 gives more detail on effort by state by displaying the data in rank order for 1961, 1970, 1980, 1990, and 2000. While picking patterns out of such a busy table is not easy, there are some noteworthy findings. Some states seem to have very consistent patterns. Massachusetts displays consistently low effort, ranking either first, second, or third in all 5 years. Michigan is usually in the middle; its rank varies from 16th to 29th. North Dakota is usually very high; it ranks above 45 for every year but 1980, in which it is 31st. There are also states that clearly moved around in the rankings. Vermont started out above average at 26th in 1961 and improved to 30th in 1970, but its ranking fell precipitously thereafter, to eighth in 1980, third in 1990, and second in 2000. There is

TABLE 3
Years of Peak Effort by State

Years	States					
1966	SD					
1967						
1968						
1969						
1970						
1971	CO	HI	IL	MT	OR	
1972	IN	LA				
1973						
1974	AZ	GA	ME	WA	WI	
1975	FL	PA	SC			
1976	DE	MD	MI	NH	NY	WV
1977	ID	MO	NV			
1978	CT	MN	NE	NJ	UT	
1979	KS	KY	MS	RI	TN	VA
1980	CA					
1981						
1982	AK	NC	ND	TX		
1983	OK					
1984						
1985	NM					
1986	AL	AR				
1987						
1988	MA					
1989	OH	WY				
1990						
1991	IA					

a similar story for Colorado. It started well above average at 34th in 1961, but declined to the 10th-ranked state in 2000. New York, by contrast, rode a roller coaster that ended roughly where it began, among the lowest-effort states. Yet in the middle year (1980), New York had risen to 16th.

The fact that these state-level data share a basic pattern suggests that the declines in state appropriations have common causes. On the other hand, the variation among states means there also must be influential state-specific factors. In our analysis below, we attempt to determine the effect of both types of factors.

Previous Literature

There have been a great number of books and articles written about increases in college tuition.[6] There is also an extensive literature on the relationship between tuition at state-supported colleges and universities, state financial aid spending, and state appropriations (see Griswold & Marine,1996; Hearn, Griswold, & Marine,1996; Lowry, 2001). To the best of our knowledge, however, there are no studies that try to measure the effects of tax revolt provisions on higher education spending.

Hossler, Lund, Ramin, Westfall, and Irish (1997) provided a good example of a typical discussion of the fall in state appropriations for higher education. They argued that the most significant trends affecting state appropriations include "competing demands for state-funds, declining federal commitment to student financial aid, sluggish state economies, declines in disposable family income, and increased demand for post-secondary education" (p. 161). Since the effort variable we use controls for state personal income, declines in disposable family income are not part of the explanation in our case. Of the other issues, Hossler et al. focused on the effects of falling appropriations on tuition and financial aid spending. This is an important topic, but it not our interest in this paper.

Koshal and Koshal (2000) estimated a model of state appropriations using a single cross-section of states in 1990. They built a two-equation structure with one equation for tuition at state-supported institutions and one equation for state appropriations for higher education. They posited correctly that the causation between tuition and state appropriations is two-way. While they confirmed the two-way causation that was their focus, their model does not provide us much guidance. In particular, per capita state revenue was an important explanatory variable in their equation for state appropriations. In our study, we do not want to hold tax revenues constant. The tax revolt limitations may well affect appropriations to higher education by affecting tax revenues. To capture this, we have to allow tax revenues to vary.

TABLE 4

State Appropriations for Higher Education per $1,000 of Personal Income in Rank Order, FY 1961, 1970, 1980, 1990, and 2000

	1961		1970		1980		1990		2000	
Rank	State	Effort	State	Effort	State	Effort	State	Effort	State	Effort
1	MA	$.98	MA	$3.89	NH	$4.28	NH	$3.23	NH	$2.72
2	NJ	1.35	NJ	4.25	MA	6.47	MA	6.45	VT	4.30
3	MD	1.54	NH	4.38	NJ	7.44	VT	6.47	MA	5.07
4	NY	1.64	CT	6.09	OH	7.53	CT	6.51	NY	5.44
5	CT	1.78	MD	6.30	CT	7.53	NJ	6.58	RI	5.50
6	PA	1.80	OH	6.31	PA	7.61	PA	6.66	NJ	5.53
7	OH	2.04	PA	7.71	ME	7.62	RI	7.04	CT	5.57
8	MO	2.73	NV	7.74	VT	7.72	MO	7.13	PA	5.67
9	ME	3.08	DE	7.77	NV	8.09	FL	7.19	NV	5.88
10	TN	3.11	VA	7.93	MO	8.30	NV	7.50	CO	6.07
11	VA	3.11	NY	8.07	MD	8.71	OH	7.89	FL	6.52
12	DE	3.12	OK	8.07	IL	8.78	IL	8.09	MD	6.59
13	NH	3.13	TN	8.20	WA	8.98	MD	8.56	MO	7.03
14	RI	3.16	MO	8.28	FL	8.99	NY	8.62	OH	7.04
15	IL	3.34	AL	8.36	IN	9.27	GA	8.82	IL	7.11
16	TX	3.54	RI	8.73	NY	9.70	MI	8.87	ME	7.23
17	SC	3.67	IN	8.91	RI	9.74	SD	8.90	MT	7.31
18	FL	3.86	MI	8.99	MI	9.94	CO	8.97	TN	7.34
19	KY	4.09	ME	9.10	MT	9.99	OR	8.99	SD	7.45
20	AK	4.12	IL	9.11	DE	10.29	ME	9.12	WA	7.58
21	GA	4.14	CA	9.18	SD	10.32	DE	9.24	AZ	7.67
22	NC	4.25	NE	9.19	GA	10.42	LA	9.37	VA	7.68
23	WI	4.32	FL	9.50	CO	10.45	IN	9.50	OR	7.72
24	CA	4.40	GA	9.59	VA	10.45	VA	9.72	GA	7.76
25	AL	4.49	AK	9.79	OK	10.63	TN	9.86	WI	7.80
26	VT	4.71	MS	9.80	OR	10.77	AZ	9.93	MI	7.88
27	IN	4.86	SD	9.83	TN	10.91	CA	9.94	TX	7.95
28	MN	5.30	MN	10.00	IA	11.45	OK	10.03	DE	8.03
29	MI	5.35	LA	10.03	AR	11.63	WI	10.18	IN	8.22
30	NV	5.35	VT	10.06	LA	11.66	MT	10.23	CA	8.27
31	NE	5.39	TX	10.12	ND	11.68	TX	10.28	LA	9.06
32	HI	5.64	AR	10.40	NE	11.91	WA	10.40	MN	9.19
33	WV	5.71	SC	10.70	AZ	12.18	AR	10.51	SC	9.38
34	CO	6.02	IA	10.94	WI	12.20	KS	10.83	KS	9.57
35	UT	6.05	KY	10.99	KY	12.24	WV	10.94	WV	9.87
36	MS	6.09	KS	11.01	WV	12.28	KY	11.02	OK	9.92
37	KS	6.14	WI	11.09	TX	12.32	NE	11.67	AK	10.30
38	WA	6.26	MT	11.72	KS	12.67	ID	11.85	ID	10.32
39	OK	6.35	WV	12.13	ID	12.75	IA	12.46	KY	10.50
40	AZ	6.36	CO	12.15	WY	12.78	MN	12.53	HI	10.74
41	NM	6.41	AZ	12.62	CA	12.81	SC	12.78	UT	10.93
42	WY	6.46	OR	12.69	AL	13.83	UT	13.17	NE	10.97
43	AR	6.54	NC	12.77	MN	14.08	HI	13.69	AR	11.25
44	IA	6.62	UT	13.40	UT	14.45	AL	13.94	AL	11.40
45	OR	7.09	NM	13.42	HI	14.64	MS	14.37	WY	11.52
46	SD	7.81	WY	13.66	NC	14.91	NC	14.56	IA	11.56
47	ID	8.46	ND	13.77	NM	16.17	NM	14.93	NC	11.79
48	LA	8.76	HI	14.16	MS	16.18	ND	15.51	ND	12.48
49	ND	8.91	ID	14.76	SC	16.63	AK	16.54	NM	14.76
50	MT	9.61	WA	15.16	AK	19.13	WY	16.69	MS	15.94

Kane et al. (2003) also estimated a model of state appropriations for higher education. They used panel data for 48 states from 1977–2001, though data availability did not allow them to use all years in some cases. They hypothesized that other spending priorities, specifically spending on Medicaid and Corrections, have crowded higher education spending out of the budget. They provided evidence for this hypothesis in the case of Medicaid but failed to find any support in the case of Corrections. Like Koshal and Koshal, Kane et al. also include total state revenue as an explanatory variable.

In microeconomics terms, using state revenue as an explanatory variable allows these authors to determine the extent to which higher education spending, the corrections budget, and health spending are net substitutes within a given state budget (i.e., holding the budget constant). Within a budget of a given size, if spending on Medicaid is rising because of federal mandates or incentives, some other components of the budget must fall. Kane et al. have demonstrated that higher education spending is one such component. However, if the budget itself is endogenous, these expenditure categories may be gross complements instead. In other words, if revenues rise (fall) by 5%, spending on higher education and on Medicaid may both increase (decrease). Their results therefore captured the effect of limited revenues on higher education appropriations when there are pressures to increase spending on other budget items, but they were silent about the determinants of these revenues, which is part of our story.

Koshal and Koshal (2000) and Kane et al. (2003) both used data that start after the slowdown shown in Figure 1. Our aim is to explain the whole picture, both the increases in funding in the 1960s and early 1970s and the decreases in funding in the late 1970s and the 1980s and 1990s. Our data will start with fiscal year 1961. This is important because, with data starting in the early 1960s, our identification of an effect of the tax revolt institutions will be based not only on cross-section variation among states with and without these provisions but also on time series variation within the states that adopted the provisions during our sample period.

Empirical Model

To evaluate the relationship between state higher education effort and the institutional variables that capture the tax revolt's impact, we estimate an empirical model that takes the following form:

$$E_{it} = E(TEL_{it}, SMR_{it}, , P_{it}, SS_{it}, , D_{it}, , St_i, Yr_t). \quad (1)$$

The dependent variable is state appropriation effort for higher education. The subscript *i* codes for the state and the subscript *t* refers to year. The two institutional variables are tax and expenditure limits (TEL) and supermajority requirements (SMR). If the institutional constraints have an impact on effort, our statistical model should pick up this independent effect in the coefficients on TELS and SMRs. The variables $P_{it,}$ SS_{it}, and D_{it} are vectors of state-level political variables, other state spending, and demographic controls, respectively. These variables are discussed in detail below.

Because we are pooling cross-section and time series data, we include state (St_i) and year (Yr_t) fixed effects in addition to the other controls. State fixed effects control for long-lasting but unobservable differences between the states that influence higher education effort, while the time fixed effect controls for unobservable year effects that are common across the states. Fixed effects models of this sort have advantages and disadvantages. Adding dummy variables for each state and for every year consumes degrees of freedom, and since the coefficients on these dummy variables are capturing the effects of many unobserved influences, we must be careful not to attribute specific meaning to their sign and magnitude. On the other hand, alternatives to fixed effects models, such as error-components models, make explicit assumptions about the structure of the error term that we cannot justify. Since we have a large data set, the fixed effects model (using ordinary least squares) is the appropriate estimation technique.

Dependent Variable

The dependent variable for our analysis is state appropriations per $1,000 of personal income. State appropriations for higher education are tax fund appropriations for the current operations of state institutions of higher education, for state coordinating boards, and for state scholarship programs. They explicitly exclude appropriations for capital outlay and appropriations of resources derived from other sources (e.g., federal sources or tuition), and they do not include funds derived from lotteries. These data are collected by the Grapevine project at the Illinois State University. State personal income is estimated by the Bureau of Economic Analysis of the Department of Commerce.

The effort variable captures something important in higher education finance, and the common time series pattern of effort across virtually all the states is evidence of this. But choosing effort as our dependent variable means we have made an assumption about the income elasticity of nominal higher education appropriations. By choosing this dependent variable, we are implicitly assuming

that this elasticity equals one, or that the correct function for nominal higher education appropriations (A) is:

$$A = E(TEL_{it}, SMR_{it}, D_{it}, SS_{it,} P_{it}, St_i, Yr_t) \bullet \text{Personal Income.} \quad (2)$$

Given that effort is our dependent variable, we cannot add *nominal* income to the set of controls. There is no logical link between nominal income and state effort. On the other hand, there might be some effect on effort (though probably small) of differences in real state income per capita. Trying to account for this possibly tenuous effect would create more problems than it might solve. The Bureau of Labor Statistics does not collect price level data by state, so constructing a good variable for real state income is impossible. Using the national price index or even regional price indexes as deflators can introduce serious bias since price levels vary predictably between rural and urban areas.

Tax Revolt Variables

We use indicator variables for the presence of TELs and SMRs. As we explain below, we also separate our TEL variable according to various properties of the TEL.

Variables for Other State Spending

State expenditures on higher education may be related to state needs in other areas, particularly spending on health care and on corrections. We use data from the Bureau of the Census on state government finances for Total Direct Expenditures on Corrections and Total Direct Expenditures for Health and Hospitals to capture these effects. We express these variables as expenditures per $1,000 of state personal income.

Since expenditures on health and hospitals and expenditures on corrections are determined by the same political process as are expenditures on higher education, we test whether these variables can be used as exogenous variables in a regression determining higher education effort. To determine if we should use an instrumental variables procedure instead of OLS for our estimates, we performed a Hausman test (see Pindyck & Rubinfeld, 1991). We used state-level statistics on the rate of major crimes and on the crude death rate as instruments.[7] The Hausman test indicated that there is not a systematic difference between the instrumental variables and ordinary least squares regression coefficients.[8] We also performed a Bound, Jaeger, and Baker (1995) test for weak instruments. In this case, we could reject the hypothesis of weak instruments.[9] These test results give us confidence that the ordinary least squares results we present are not tainted by simultaneous equations bias.

Control Variables for State Politics

Our equations need to control for state ideology and party affiliation of elected officials. We use seven variables. The first variable is a measure of state citizen ideology from the work of Berry, Ringquist, Fording, and Hanson (1998).[10] This variable combines ratings for the ideology of the state's congressional delegation from the Americans for Democratic Action and the AFL-CIO's Committee on Political Education. This rating is designed so that the maximum score of 100 is given to an extreme liberal and the minimum score of 0 is given to an extreme conservative. The ratings for the members of the state's congressional delegation are averaged to get the rating for the state's citizens.

For party affiliation, we included three indicator variables each of which is equal to one if the Democratic Party controls, respectively, the governorship, a majority of the lower house in the legislature, or a majority of the upper house in the legislature, and zero otherwise. To capture potential shifts in the ideological content of party affiliation, we also interacted each of these variables with an indicator variable equal to one in 1980 and thereafter. We chose 1980 as the break because of the profound effect of the Reagan presidency and the political transformation of the south. As Lamis (1984) has demonstrated, the number of statewide elected officials (governors and senators) from the Republican Party in the south increased dramatically in 1980. In addition, the work of Black and Black (2002) has suggested that the rise of southern Republicans that started in 1980 caused southern Democrats to shift ideological positions. They argued that in many cases Democratic Party elites were outflanked on the right by the new Republicans, so the party leadership became more moderate.[11]

Other Control Variables

All of our regressions have a full set of indicator variables for state and year effects.[12] In addition, to control for the possibility of scale effects that might vary by state size and differences in the age structure of states, we include the four variables Besley and Case (2003) used as controls in their regressions. These are the percentage of the state population in the 5–17 age group, the percentage of the state population over age 65, the state population, and the state population squared. Lastly, we have included the percentage of the state population in the prime college-going age group, 18–24-year-olds.[13]

Following Besley and Case (2003) and Kane et al. (2003), we started with a panel data set of the 48 continental states from 1960 through 2000. Including variables for party affiliation in the upper and lower houses of the state legislature required us to eliminate Nebraska because

of its unicameral legislature. Furthermore, the state of Minnesota did not have partisan elections for the state legislature prior to 1973, so there is no information on the party affiliation of legislators in Minnesota for 1960 through 1972. Because of these considerations, we have a data set with 1914 observations, 46 states for 41 years, and one state for 28 years.[14] Table 5 gives the means, standard deviations, and sources for the variables we used in the regressions reported below.

TABLE 5
List of Variables

Variables	Mean	Standard Deviation	Source
Higher Education Appropriations per $1,000 of State Personal Income	$9.08	3.11	Grapevine Project www.coe.ilstu.edu/grapevine/
TEL	0.2158	0.4114	www.limitedgovernment.org
SMR	0.1301	0.3365	www.limitedgovernment.org
Corrections spending per $1,000 of State Personal Income	$2.41	1.20	Census Bureau and Bureau of Economic Analysis
Health and Hospitals spending per $1,000 of State Personal Income	$7.63	2.79	Census Bureau and Bureau of Economic Analysis
Ideology	46.14	16.34	Berry, Ringquist, Fording, and Hanson (1998) and www.icpsr.umich.edu: 8080.ICPSR-STDYy/01208.xml
Democratic Governor	0.5596	0.4966	*Book of the States*
Democratic Majority Lower House	0.6484	0.4776	*Book of the States*
Democratic Majority Upper House	0.6249	0.4843	*Book of the States*
Population Percentage 18–24	11.28	1.75	Census Bureau
Population Percentage 5–17	22.15	3.56	Census Bureau
Population Percentage > 65	11.16	2.21	Census Bureau
State Population	4,760,232	4,975,360	*Statistical Abstract of the United States*

Results

Table 6 contains our results.[15] Model 1 uses the simplest measures of the tax revolt variables, indicator variables for the presence of a TEL and the presence of an SMR. Both variables have statistically significant coefficients of the expected sign. The two tax revolt provisions reduce higher education taxpayer effort. Together they can explain over half of the observed decline in effort over the period.

The two variables for other state spending have positive signs, which indicates that spending on corrections and on health and hospitals are complements to higher education spending. As we noted earlier, results suggesting that other state spending crowds out higher education come from regressions that control for total state spending—that is, they demonstrate that, for a given level of state spending, more spending on corrections and/or health and hospitals will lead to less spending on higher education. Our regressions do not control for total state spending. They indicate that where and when there is more spending for corrections, and particularly for health and hospitals, there is also more spending for higher education. This result likely reflects differences in tastes for public goods that overpower any effect from budget tradeoffs. The results for corrections and health and hospitals are very consistent across the various specifications of the TEL variable in the remainder of the table.

The control for state ideology also has a statistically significant coefficient. States that are more liberal have higher state appropriation effort for higher education. The coefficient on this variable is very stable across the various specifications of the TEL variable in the remainder of the table. The two variables measuring the effect of a Democratic governor suggest that prior to 1980, states with Democratic governors had lower state appropriations for higher education, but in 1980 and thereafter, when the effect of a Democratic governor is measured by the sum of the two coefficients, the sign of the coefficient for Democratic Governor changes. The sum of the two coefficients is not statistically significant in the first two specifications, but it is in the second two.[16] The coefficients on the variables for the party affiliation of the legislature also show that the break in 1980 is important. The results for the lower house mirror those for the party affiliation of the governor. Prior to 1980, having a majority of the lower house from the Democratic Party had a detrimental effect on state spending on higher education. In 1980 and thereafter, when the effect of a Democratic majority is found by summing the two coefficients, the effect changes sign. In this case, the sum of the two coefficients is not statistically significant in any of the specifications.[17] The results for the upper house are different. In this case, both before

TABLE 6
Regression Results for Tax Revolt, Other State Spending, and Political Variables

Independent Variable	1	2	3	4
TEL	–0.8759			
	(7.84)			
Restrictive TEL		–0.7986		
		(5.78)		
Non-Restrictive TEL		–0.9812		
		(6.99)		
TEL Includes Tuition			–2.1066	
			(13.14)	
TEL Excludes Tuition			–0.3737	
			(2.91)	
TEL Includes Tuition, Moving Base				–2.7932
				(15.84)
TEL Includes Tuition, Fixed Base				–1.3316
				(5.79)
TEL Excludes Tuition, Moving Base				0.0906
				(0.59)
TEL Excludes Tuition, Fixed Base				–1.2067
				(6.66)
SMR	–0.4783	–0.4960	–0.3501	–0.2018
	(2.75)	(2.84)	(2.03)	(1.24)
Corrections	0.1477	0.1482	0.1143	0.0965
	(3.20)	(3.21)	(2.61)	(2.20)
Health and Hospitals	0.2159	0.2157	0.1965	0.1990
	(11.81)	(11.79)	(10.85)	(11.16)
Ideology	0.0123	0.0125	0.0133	0.0114
	(2.87)	(2.90)	(3.17)	(2.76)
Democratic Governor	–0.3598	–0.3652	–0.2685	–0.2332
	(4.25)	(4.30)	(3.20)	(2.73)
Democratic Governor 1980	0.4742	0.4810	0.4759	0.4759
and after	(4.29)	(4.36)	(4.42)	(4.46)
Democratic Lower House	–0.5120	–0.5105	–0.4786	–0.5146
	(4.13)	(4.11)	(4.05)	(4.43)
Democratic Lower House	0.6996	0.6976	0 .5770	0.6157
1980 and after	(4.68)	(4.66)	(3.99)	(4.30)
Democratic Upper House	0.3041	0.3023	0.2523	0.2644
	(2.44)	(2.43)	(2.12)	(2.21)
Democratic Upper House	–0.2080	–0.2045	–0.2085	–0.2359
1980 and after	(1.50)	(1.47)	(1.58)	(1.80)
R^2	.8801	.8802	.8857	.8895

t statistics are in parentheses below the estimated coefficients

and after 1980, a Democratic majority is associated with increased higher education funding, but the effect after 1980 is much diminished. In fact, in 1980 and thereafter, when the effect is measured by the sum of the coefficients, none of the summed coefficients is statistically significant.[18]

Model 2 investigates the distinction between restrictive TELs and non-restrictive TELs suggested in Besley and Case (2003). The coefficients on the two indicator variables have the same sign and roughly the same magnitude. This distinction does not appear to be meaningful for the effect of a TEL on taxpayer effort to support higher education.[19] We interpret this to mean that the presence of an explicit limit, even one that is only advisory or easy to circumvent, has a dampening effect on higher education effort. In the results that follow, we will not continue to use this distinction.

Model 3 distinguishes between broad-based TELs that include tuition and narrow-based TELs that do not. The result here is striking. The coefficient on TELs that include tuition is very large and highly statistically significant, while the coefficient on TELs that do not include tuition is much smaller, though still statistically significant. This suggests that very broad-based TELs create much stronger downward pressure on spending because there is little leeway for legislatures or governors to find unrestricted funding sources for activities. In these states, the TEL has considerably more bite than in other states. The coefficient for SMR is still statistically significant, though its magnitude is diminished compared to the first two equations.

We bring the distinction between fixed-base and moving base TELs into our final estimation. Conveniently for our study, exactly three of the six states that include tuition in their TEL have a moving-base TEL while the other three have a fixed-base TEL. The results in Model 4 indicate that for states with broad-based TELs, a moving-base formula has led to a greater effect than a fixed-base formula. This is what we expected. In both of the cases, broad-based TELs restrict higher education effort, but it is more severely restricted in the states with limits on the growth of state spending rather than on its level. The results for the states that do not include tuition in the TEL are puzzling. In this case, moving-base TELs do not appear to affect taxpayer effort for higher education, while fixed-base TELs have the expected negative effect. In this specification, the coefficient on the SMR variable is no longer statistically significant.

The tax revolt clearly has had a statistically significant effect on taxpayer effort on behalf of higher education, though the magnitude of this effect varies with the type of TEL. The data behind Figure 1 indicate that nationwide taxpayer effort peaked in 1976 and 1978 at $10.56 per $1,000 of personal income and fell to $7.84 in 2001. With the exception of two earlier SMRs in Arkansas (1934) and Florida (1971), all of the tax revolt policies were initiated in 1976 or thereafter. Our indicator variables therefore primarily affect estimates for the period in which

national average taxpayer effort fell a bit less than $3.00 per $1,000 of personal income. The coefficients for TEL of -.8759 and for SMR of -.4783 in Equation 1 then are quite large. The presence of a TEL accounts for slightly more than one third of the average decline, while the presence of an SMR accounts for roughly one fifth of the average decline. Our other results suggest that this effect has not been uniform across states. States with very broad-based TELs have experienced much greater declines in higher education effort than have other states.

Table 7 gives the average values of the coefficients for the state indicator variables from Model 1 by region along with the F-value for the hypothesis that this average value equals zero. The omitted state was Alabama, so the coefficients for the state indicator variables measure, other things held constant, the state-specific effects relative to the state of Alabama. The table indicates our results are consistent with earlier findings concerning regional effects on higher education appropriations (see, for example, Hearn et al.,1996). Specifically, our results show that the Northeast (New England and Middle Atlantic), the Upper Midwest (East and West North Central), and the South Atlantic have systematically lower tax effort for higher education than Alabama, while states in the remainder of the regions do not. In each case, these regional averages are statistically significantly different from zero. The regional averages for the remaining regions are not statistically different from zero. The results for New England clearly are the most striking and can probably be traced to the prevalence of private colleges and universities in this region.[20]

We can extract two conclusions from our empirical results. First, our findings clearly indicate that the tax revolt provisions do affect higher education spending. As we discussed in the second section, previous attempts to measure the effects of tax revolt provisions have had mixed

TABLE 7
State Effects Averaged by Region

Region	States	Average Coefficient	F-Value
New England	ME NH VT MA RI CT	–6.1302	282.96
Middle Atlantic	NY NJ PA	–2.7918	34.39
East North Central	OH IN IL MI WI	–1.1760	11.68
West North Central	MN IA MO ND SD KS	–1.1203	12.11
South Atlantic	DE MD VA WV NC SC GA FL	–1.3973	25.01
East South Central	KY TN AL MS	0.0246	0.01
West South Central	AR LA OK TX	–0.2171	0.54
Mountain	MT ID WY CO NM AZ UT NV	0.2885	0.58
Pacific	WA OR CA	0.2776	0.63

results. These other studies all focused on the total state budget, while we focus on one of its components. If the studies that found a significant link between the tax revolt provisions and the total budget are correct, then our finding is that higher education spending is reduced by these provisions along with the rest of the budget. Alternatively, the tax revolt limitations may affect the composition of spending and not its level. If this is true, our results suggest that higher education spending is more vulnerable than are other spending categories.[21] In any event, our results clearly suggest that the tax revolt provisions do matter. The second conclusion is a corollary to the first. Since the tax revolt provisions account for a significant portion of the slowdown in taxpayer effort directed toward higher education, studies of state higher education spending should not ignore institutions such as TELs and SMRs. In addition, given the importance of these institutions, strategies to improve higher education funding that ignore them may not be useful.

Policy Implications

The notion that a TEL can have a very influential effect on higher education policy will not surprise anyone familiar with recent changes in higher education financing in Colorado. Starting in fall 2005, Colorado dramatically reduced its funding for colleges and universities while instituting a voucher that goes directly to students.[22] While there is a constituency for funding college and university students directly using vouchers, the fiscal environment created by Colorado's TEL probably had more to do with the passage of this reform.[23] The TEL in Colorado, called the Taxpayers Bill of Rights (TABOR), is of the most restrictive type. In the language of this article, it is a TEL that includes tuition and has a moving base. The appeal of the voucher proposal to the major universities is a legal provision allowing state entities receiving less than 10% of their revenues from state appropriations to achieve "enterprise status." With this status, they are exempted from the TABOR limitations. This exemption will allow them to use tuition increases more freely to make up for lost direct funding from the state and to meet future cost increases.

Though extreme, the Colorado case illustrates the problems public colleges and universities face in most states as the financial compact between the states and their public higher education institutions continues to erode. A good higher education system has two basic attributes: high quality and full access for qualified students regardless of means. From the end of the Second World War to roughly 1980, most states used some form of the low-tuition, low-financial aid model to achieve these goals.

So long as sufficient resources are flowing from the state, low tuition can guarantee access without compromising educational quality. But when resource constraints tighten, the states—and their public universities—must face an unpleasant trade-off between access and quality. Higher tuition can preserve quality, but does so at the cost of diminished access.

High quality and full access also can be achieved using a high-tuition, high-financial aid policy. Supporters of the high-high policy argue that the state appropriations needed to finance low tuition for all students amount to a very poorly targeted state subsidy.[24] Many students attending state-supported colleges and universities are from very well-to-do families fully capable of paying much more than the current tuition. Subsidizing them improves neither quality nor access, while it increases the fiscal footprint of higher education.

While not denying this logic, proponents of the low-low strategy argue that the substantial need-based financial aid required for full access under a high tuition policy would be hard to sustain politically. Attempts to implement the high-high strategy would not yield high-high but rather high-low. This argument for a low-low strategy is based on the concept of targeting within universalism (Skocpol, 1995; Wilson, 1987). Social security is an example. If social security were available only to low-income elderly, the program likely would not have very wide support, but because everyone over age 65 is eligible, it has great political appeal. Advocates of social security will admit that some of the beneficiaries have no need for the money. While this may be unfortunate, the more important point is that members of the target group—the low-income elderly—are being aided. To get the government assistance to the target group, the benefit has to be embedded in a universal program. The parallels to tuition policy should be clear. Low tuition for all creates a broad base of political support for spending on higher education, and it keeps the price down for low-income students.[25]

Although the political appeal of the low-low strategy seems clear, state appropriations for higher education have not kept pace with the cost of providing a high-quality education. As a result, many states have allowed tuition increases that far outpace the inflation rate. These large tuition increases have received a great deal of national attention. Authority to increase tuition has not been as forthcoming in other states, and as a result, the quality of the education offered by state-supported colleges and universities in these states has declined. This outcome has received much less national attention. Neither outcome is desirable. Unless states that have allowed tuition to soar also have increased their spending on financial aid accordingly, they are moving in the direction of the high-low strategy that

restricts access for low-income students. If tuition is kept low but the institutions are starved, access may seem to have been preserved, but if course offerings are reduced or places in classes are rationed, then access is circumscribed in other ways. And if program quality suffers, access to the resulting institution is unlikely to be as worthwhile.

Our results imply that turning the clock back to the early 1970s is a difficult enterprise. Attacking the tax and expenditure limitations or the supermajority requirements would require a pro-tax coalition that is stronger than the anti-tax forces that implemented them. But there is no evidence that support for these explicit limitations is waning. Higher education advocates are forced into the uncomfortable position of arguing that incremental budget support for higher education is more important than other state services. This is a difficult case to make, given the demands of budget competitors like K–12 education, Medicaid, and highway infrastructure.

If a return to low-low is unlikely, the road to high-high has some potholes as well. First, a college president or the leader of a state system often is hired for and evaluated on his or her expertise in extracting funds from the legislature. Advising that leader not to resist tuition increases and to support increased funding for need-based financial aid instead of support for his or her institution is advice to fail at state fundraising. In addition, in the current environment, state need-based aid is growing much less rapidly than is state merit-based aid. Need-based aid is not the popular option. Many states are expanding merit-based aid, and one state (Georgia) has replaced its entire need-based program with one based on merit.

Yet the case for high-high remains viable. Advocates of low-low implicitly assume that the aid needed to make high-high work must come from the state, and that this makes high-high politically unsustainable. But states are increasingly willing to let their public institutions behave more like private universities in a number of dimensions. Public universities could treat the published tuition as a list price and offer internal discounts based on need as private universities have done for years. In this way, much of the aid needed to preserve access would come from internal grants. Continued state support of university operating budgets and aid funds would help keep the list price lower than it otherwise would be, but state financing would not be the single key to making high-high work. This degree of independence from the state is likely to be an attractive option for the strongest state-supported institutions, those that compete effectively with private colleges and universities currently.[26] It is not likely to be a successful strategy for community colleges or less well-known state colleges and universities.

Conclusions

Our results clearly support two conclusions. First, the two tax revolt institutions—tax and expenditure limits and supermajority requirements—have had a significant adverse effect on state appropriations for higher education per $1,000 of state personal income. Second, not all tax and expenditure limitations have the same effect. Broadly based limitations have much stronger effects than more narrowly based ones. We show that these provisions, which became popular starting in the late 1970s and expanded in the 1980s and 1990s, play an important role in explaining the difficulties that have plagued many state higher education systems in maintaining state appropriations during the same time period. In states with these provisions, the rules have changed to the detriment of higher education.

On their face, these results might not seem surprising. If there are legal limits on taxes or expenditures, these limits likely affect spending on higher education along with other spending. On the other hand, although TELs and SMRs are products of the tax revolt, they are not the only products. Attitudes about government and legislative behavior changed too. Strong resistance to increases in taxes or spending is a feature of many a successful legislative campaign in states that do not have a TEL or an SMR. Our results suggest that, even in an environment that is very hostile to taxes and government spending, the presence of explicit limitations has a noticeable effect. The fact that a majority of these provisions are cast in constitutional concrete adds more significance to the results. It will not be easy for supporters of increases in funding for higher education to succeed in states that have these provisions.

Notes

[1]This is the basis for work by Matsusaka (1995) and Gilligan and Matsusaka (1995) on the role of the popular initiative and of logrolling as determinants of state spending.

[2]Tabellini and Alesina (1990) show how strategic choices made by a current majority can constrain future majorities that may disagree with them using tools (like budget deficits) that may not be socially optimal.

[3]Information on all of the tax revolt provisions, including the languages in the statutes and constitutional amendments, is available at www.limitedgovernment.org (accessed March 31, 2004).

[4]Some of their results actually suggest perverse effects of TELs.

[5]These data can be accessed at www.coe.ilstu.edu/grapevine/ (accessed June 11, 2004).

[6]Two excellent books on tuition are Hauptman (1990) and Ehrenberg (2000).

[7]The rate of major crime comes from the *Uniform Crime Reports* published by the Department of Justice, and the death rate comes from *Vital Statistics of the United States* published by the Department of Health and Human Services.

[8]The null hypothesis for the Hausman test is that the coefficients from OLS and Instrumental Variable regression are not systematically different. In our case the test statistic of 18.85, which is distributed Chi-Squared with 99 degrees of freedom, is clearly in the fail to reject region.

[9]The null hypothesis for the Bound, Jaeger, and Baker (1995) test is that the instruments are weak. For Health and Hospitals the test statistic, which is distributed F with 2 and 1805 degrees of freedom, was 4.85, clearly in the reject region. For Corrections, the test statistic, which has the same distribution, was 10.45, yielding another rejection.

[10]This measure has been updated through 2002. These data can be found at www.icpsr.umich.edu:8080/ICPSR-STUDY/01208.xml (accessed June 11, 2004).

[11]We recognize the ad hoc nature of this procedure. While the evidence in Lamis (1984) suggests that 1980 is a likely candidate for a break, we cannot be sure it is the best break point. In our defense, this is the only break we investigated. It is not the result of a data mining exercise.

[12]The presence of indicator variables for the states precludes using similar variables for regions, which are often found in analyses of state higher education policy. There are very likely to be regional differences in higher education policies, but including regional variables rather than state variables forces each state in a region to have the same coefficient and leads to a poorer fitting model. We provide an analysis of regional differences below.

[13]The Bureau of the Census did not publish annual estimates of state population that included the 18–24-year-old population for the 1960s. Our data for the 1960s were our own estimates based on data for population by individual ages from the 1960 census. We then aged these population figures with an allowance for migration and mortality. Details of these estimates are available on request from the authors.

[14]For comparability with Besley and Case (2003) and Kane et al. (2003), we did produce results for all 48 states by eliminating the legislative variables. These results were very similar to the results we present below.

[15]The full results, including all the control variables and the state and time indicator variables, are available on request from the authors.

[16]The F statistic for the test that the sum of the two coefficients 1 and 1809 degrees of freedom. It is 2.00, 2.59, 8.71 and 12.69 for columns 1, 2, 3, and 4 respectively. The first two are not statistically significant, but the last two are.

[17]The F statistic for the test that the sum of the two coefficients 1 and 1809 degrees of freedom. It is 2.29, 3.78, 1.06, and 1.16 for columns 1, 2, 3, and 4 respectively. None of these F statistics is large enough to allow us to reject the hypothesis that the sum of the coefficients is zero.

[18]The F statistic for the test that the sum of the two coefficients 1 and 1809 degrees of freedom. It is 1.00, 1.17, 0.25, and 0.11 for columns 1, 2, 3, and 4 respectively. None of these F statistics is large enough to allow us to reject the hypothesis that the sum of the coefficients is zero.

[19]The test statistic for the difference between these two coefficients is distributed F with 1 and 1810 degrees of freedom. This test statistic is 1.18, which is not sufficiently large to reject the hypothesis that his difference is zero—that is, the two coefficients have the same value.

[20]We did not include the prevalence of private colleges and universities as an explanatory variable because this effect is largely captured in the state indicator variable, as this regional example demonstrates.

[21]Even if TELs and SMRs do not reduce state spending, they may slow its growth. Higher education's share of the budget might not do well in the resulting budget crunch. Since colleges and universities have tuition as an alternative revenue source—while, for example, prisons do not—legislators may use reductions in higher education appropriations to cushion other parts of the budget.

[22]See Russo (2004) for a discussion of the changes in Colorado.

[23]See Archibald and Feldman (2004) for a discussion of the reasons to support direct funding of students at state-supported colleges and universities.

[24]This view is typically advocated by economists. For early expressions of this view, see, for example, Friedman (1968), Hansen and Weisbrod (1969), and the Carnegie Commission on Higher Education (1973).

[25]The arguments in the high-high vs. low-low debate are much more subtle and extensive than our brief discussion may suggest. Interested readers should see the excellent review of this literature in Hearn et al. (1996).

[26]Three universities in Virginia are proposing to become quasi-private entities that control tuition and financial aid policy. See Burdman (2004) for a discussion.

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