

The Effects of Tax and Expenditure Limitation (TEL) Stringency on the Level of State Expenditures in the United States

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Abstract

This paper analyzes the impact of different types of state tax and expenditure limitations (TELs) on state expenditures. TELs with differing levels of stringency are compared to evaluate the effect of TEL stringency on state expenditures. This study analyzes the effects of state TELs' stringency on the different types of state government expenditures for all 50 states for the period of 2006-2011. The findings indicate that a more stringent state TEL results in an increase of state spending on administration and corrections. Further, the findings suggest that higher levels of stringency of a state TEL lead to a reduction in total state spending on education. The level of stringency of a state TEL has no significant effect on the level of direct general expenditures, nor on the spending for police, hospitals, highways, and parks.

Keywords: Tax and expenditure limitations; Public finance; State government; Stringency TELs; State expenditures

Introduction

In response to times of fiscal crisis, state governments have been forced to rely on limited resources to manage essential public services. According to Chernick and Reimers [1], "with almost all states subject at least to some degree to balanced budget requirements, the greater the decline in revenue during recessions, the greater the pressure to cut services or raise taxes." When states face budget crises that demand drastic action, Tax Expenditure Limitations (TELs) become a popular option [2,3]. TELs are one of the tools available to state and local governments to limit the size and growth of government. They are legislative or constitutional regulations that either restrict governmental spending or place a cap on a government's ability to levy taxes [4]. TEL initiatives are essentially caps on taxation and/or spending that require the approval of either the voting public or elected legislators. These initiatives are primarily viewed as a conservative movement that seeks to limit the role of government in favor of states' rights and sovereignty. In enacting a TEL, state and local governments often believe that they will create a surplus of reserve funds and/or relieve taxpayers of a perceived undue financial burden.

TELs can be categorized in numerous ways. Many scholars classify TELs by institutional characteristics [5-8]. Another way to categorize TELs is by stringency, or the degree of restrictions related to a specific TEL [2,5]. This paper also contributes to a literature focused directly on tax and expenditure limits stringency. This research evaluates the effect of TEL policy stringency on state expenditure structures using panel data for all 50 states from 2006 to 2011. This study employs a state TEL stringency index developed by Amiel et al. [5] to analyze the effects of state TEL stringency on the size of state government expenditure. A random effect GLS regression model was employed to control for time trends and serial correlations.

The first section explains the history of TELs and variations of TELs in different states. The second section provides reviews of existing empirical studies concerning the effects of TELs. Section three describes the data, discusses the methodologies, and the variables employed in the study. Section four presents the empirical findings. The article concludes with a discussion of the summary findings, the policy implications, and directions for future research.

Historical Background

One of the earliest examples of TEL in the U.S. occurred in

California in the 1970s. "Most TELs were enacted in two periods, the late 1970s and the early 1990s, times when states experienced serious budget deficits, mainly because of economic recessions" [2]. Wildavsky [9] posits that the TEL movement, beginning with the taxpayer revolt of the late 1970s, was inevitable: "Over the years public spending has been growing much faster than the economy". The aims of Proposition 13 were to provide relief from increasing property tax and to explicitly limit the growth of the government of California [10-14]. According to Sears and Citrin [12], the Tax Revolt "reached its apogee with the passage of Proposition 13 (the "Jarvis-Gann amendment") in California, in June 1978 by a margin of two-to-one."

In 1992, the Taxpayer Bill of Rights (TABOR) [15] initiative was proposed in Colorado as a state constitutional amendment to place tight controls on the way the state government levied taxes and how the revenue was spent. TABOR was placed on the ballot as Initiative 1 on November 3, 1992. The initiative was approved by the voters and enacted soon after the election. The purpose of the measure was to require broad voter approval for any tax increases that exceeded certain set thresholds. Amendment 23 was added to the Colorado State constitution in 2000. This stipulated that education spending should not be governed by the tenets of the TABOR amendment and should proceed at an appropriate rate regardless of revenue forecasting. This was an effort to negate some of the unintended detrimental consequences of TABOR on publicly-delivered education.

The Bell Policy Center created a document in 2003 to review the first ten years of Colorado under TABOR. The Bell Policy Center found that TABOR, in its first ten years, did limit the growth of government in Colorado as it was intended to do. TABOR also limited Colorado's

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ability to successfully meet unexpected needs of the citizenry and to respond quickly to unanticipated phenomena like economic downturns [16]. Additionally, TABOR created an environment in which not all governmental programs are impacted equally. Higher education and public health have suffered the most under TABOR. However, due to their dependence on outside forces, such as federal legislation and other mandates, programs like corrections and Medicaid have been able to avoid much of the negative impact thrust upon other programs under TABOR [16].

The Bell Policy Center also conducted an experiment in regard to the relative amount of tax dollar spending that Colorado engaged itself in during the first ten years of TABOR. Ten peer states were chosen for comparison by the Center, and analysis revealed that Colorado's increases in spending were less than half of the average growth reported in the peer states [16].

Further reform came to TABOR in 2005 in the form of Referendum C, which, among other changes, allowed for lawmakers to use the best of the previous five years worth of revenue data in order to allocate spending, rather than limiting their focus to the previous year. The goal of this referendum was to smooth out the potentially devastating effects of any short-term aberrations on the state's economy. Additionally, there have been lawsuits filed regarding the constitutionality of the TABOR initiative. The most recent of lawsuits, *Kerr vs. Hickenlooper*, resulted in a U.S. Court of Appeals for the Tenth Circuit decision that the general assembly has the standing to challenge the constitutionality of the TABOR amendment.

Before the economic downturn in 2007, the nation experienced another extended period of recession and inflation that led to massive TELs proposals in many states. However, in November 2006 new TEL proposals fail in three states: Maine, Nebraska, and Oregon. TELs were rejected by the courts in five states: Florida, Michigan, Missouri, Montana, Nevada, and Oklahoma.

Literature Review

Effects of state-level TELs

Many scholars have analyzed the effects of state-level TELs on state and local government spending [17-24]. These studies have produced mixed results. Some studies found that state-level TELs significantly reduced state government growth [17,18,25,26]. Shadbegian [23] found that the effects of state-level TELs depended on fiscal capacity: TELs allowed high-income states to increase government size and growth, while they restricted government expansion in low-income states. Maher et al. [27] found that "state-constructed tax and expenditure limitations have little effect on state capacity to react to fiscal shocks." According to Maher et al. [28], "more restrictive TELs imposed on municipalities by the states have a weak negative impact on credit ratings which will likely force municipalities to face higher interest costs." Kulik et al. [3] found that states with Tax Expenditure Limitations (TELs)- in addition to financial factors- are associated with lower levels of general state expenditures and higher state outlays on debt interest payments. Mullins and Joyce [29] suggested that TELs, "... have little effect on the overall size of the state and local public sector". They also have found that TELs have led to state governments having to shoulder a larger burden for spending of most types of expenditures except for welfare.

Other studies have failed to confirm this result [6,23,30,31]. McGuire and Rueben [15] did not find any significant positive effects of Colorado's TABOR on state economic performance. Bae and Gais [2]

found no statistically significant impact of state-level TELs on spending in four other functional areas: education, health and hospitals, quality-of-life and amenities, and public welfare.

James and Wallis [32] proposed that TABOR "severely limited [Colorado's] capacity to adjust to recessionary cycles". James and Wallis [32] also emphasize that TABOR brings with it a so-called, "ratcheting effect". This ratcheting effect is resultant from a growth formula whereby the revenues that are allowable under TABOR are calculated using spending figures from the previous year [32]. This means that Colorado is always locked-in to the results of the previous years and is not as able to "bounce back" [32] from unforeseeable one-time economic downturns or other emergencies. This is a major drawback of TABOR because no matter how well the legislation may be in returning surplus revenues and managing expenditures, it does not have sufficient contingency planning built-in to respond to emergencies or downturns in the economy.

The Economic Policy Institute issued a briefing report on the economic effects of TABOR after a vote in Colorado in 2005 led to a five-year suspension of TABOR. To analyze why this happened, they engaged in an empirical study of TABOR's effects on Colorado's economy during the time it was in force. They utilized an empirical strategy of comparing Colorado with other similar states to analyze their pre- and post-TABOR outlooks. For the purposes of their study, 1978-1992 was pre-TABOR and 1993-2003 was post-TABOR. Growth in real per capita income in Colorado rose from 1% to 2.10% in the pre- and post-TABOR climates [15]. However, this growth rate was found to be typical of the surrounding region. Colorado also experienced a growth in employment rates from 2.39% to 2.42% during this period, however most (4%) was concentrated in the first post-TABOR year while 1998-2003 saw figures of less than 1% [15]. McGuire and Rueben [15] found that TABOR did not have a significant positive impact on the economy of Colorado. Colorado did, in the authors' estimation, experience a five-year short-run boost, but this trend did not continue. The authors found that during 1998-2003 Colorado's employment growth was less than similar states in the region.

Stringency of TELs

Stringency in TELs is a measure of their restrictiveness. TELs vary widely in their stringency. Many authors have analyzed stringency in TELs and how it affects state revenues and expenditures [5,17,24,33]. Using panel data and time-series cross-sectional analysis of 48 states over 37 years from 1969 to 2005, Staley [24] found that "states with more stringently binding tax and expenditure limitations-in addition to other political, demographic, economic, and geographic factors-are associated with greater levels of state revenue volatility". Staley takes the study of TELs one step further and introduces the concept of stringency analysis. TELs, in Staley's estimation, can vary in level of stringency, and therefore their effects on state economies should be judged by their relative stringency. Amiel [5] found that, "the most restrictive TELs are those that limit the growth of revenues and expenditures to the rate of inflation or population growth."

Bae and Jung [17] studied the effects of TEL stringency during the period of 1976-2006 on total expenditure, direct general expenditure, total own source revenue and general own source revenue. Bae and Gais [2] propose TELs may have different effects on different areas of spending. For instance, when the stringency and restrictiveness of state-level TELs are taken into account, state-level TELs have significant negative effects on the level of state and local public safety spending. Also, when the stringency and restrictiveness of state-level TELs are

accounted for, state-level TELs have significant positive effects on the share of transportation spending in total spending (though not its actual level).

Bae and Jung [17] found that highly stringent TELs did not reduce direct general expenditure or general own source revenue in a significant way. However, they suggested that more stringent TELs did reduce combined state and local total spending, as well as state-only direct general spending and combined state and local direct general spending, but that they did not have an effect on state-only total expenditure. Their results indicated that high TEL stringency did not have a noticeable effect on either state expenditure or revenue levels. From their research, it is clear that increasing the stringency of a TEL is not a predictor of increased success. According to Kousser et al. TELs “attempt a tough trick: locking in the preferences of a set of political principals by constraining the future actions of potentially unknown and hostile agents”. The states with lower resources will face “significantly lower levels of government services, significantly higher own-source revenue burdens, or some combination of the two.” [3]

Mitchell [33] examined how the stringency of TELs relates to their effectiveness and found that the most stringent TELs have a noticeable impact on state spending. Sun [4] used an instrumental variable approach and found that states which employ TELs of varying degrees of severity can be successful in reducing property taxes, but at the same time substantially increase their sales taxes, income taxes, and user charges per capita.

Methods

Data

This study uses a panel of 50 states for period from 2006 to 2011. The longer time frame used in this study allows us to capture the effects of TELs before, during, and after the start of the 2008 recession. Data were collected from a variety of sources. The financial data were collected from the US Census Bureau’s [34] Annual Survey of State Government Finances and Census of Government.

Data was collected from the National Conference of State Legislatures across all 50 states regarding TELs on the state level, year by year for the calendar years 2006 through 2011. Data were also collected regarding whether any tax expenditure limitations were in effect in those states during time period. This study employs a state TEL stringency index developed by Amiel et al. [5]. Amiel [5] constructed an index in the spirit of Poulson [35] that allows for a more systematic examination of the impact of TELs: “By building an annual index over a long time-frame we can also account for lags in how governments are able to respond to the imposition of change in a TEL”.

Additionally, data were collected about total revenues and expenses by type incurred by those states during that same time period. Table 1 presents a summary of our variables and their sources of data.

Research model

This study estimates the impact of TELs of different stringencies on state expenditures and aims to evaluate the effect of TEL policy stringency on state expenditure structures through a set of regressions expressed in the following equation:

$$Exp_{it} = \alpha_1 TEL_{it} + \alpha IGR_{it} + \beta TR_{it} + u_i + \theta_t + \epsilon_{it}$$

where Exp_{it} is different type of state expenditure for state i in year t in different model specifications, TEL_{it} is TEL stringency index for state i in year t , IGR is per capita intergovernmental revenue, TR is

N	Variable	Abbreviation	Source
2	TEL stringency index	tel	National Conference of State Legislatures
3	State spending for police per capita	policepc	United States Census Bureau
4	State direct general expenditures per capita	genexppc	United States Census Bureau
5	State spending for corrections per capita	corrpc	United States Census Bureau
6	State spending for education per capita	educpc	United States Census Bureau
7	State spending for highways per capita	highwyspc	United States Census Bureau
8	State spending for parks per capita	parkspc	United States Census Bureau
9	State spending for administration per capita	natrespc	United States Census Bureau
10	State spending for hospitals per capita	hospitalspc	United States Census Bureau
11	State spending for healthcare per capita	healthpc	United States Census Bureau
12	State tax revenue per capita	debtintpc	United States Census Bureau
13	Intergovernmental revenue per capita	general dint	United States Census Bureau
14	Total revenue per capita	totalrevpc	United States Census Bureau

Table 1: Variables and sources of data.

a per capita state tax revenue, u_i is a state-specific intercept, θ_t is a time-specific intercept, ϵ_{it} is the overall error term, and i and t are, respectively, the state and time subscripts. IGR and TR_{it} are important variables that should be positively correlated with state expenditure.

All variables are per capita variables. The vector of independent variables contains two types of variables: the control variables and the hypothesis variables.

Independent variable: Tax Expenditure Limitations stringency index. Bae and Jung [17] relied on TEL stringency index from a study conducted by Amiel et al. [5]. Amiel et al. [5] assigned points based on TEL stringency which are summarized in Table 2. Based on Amiel et al. [5] suggested points of TEL stringency index and data from the National Conference of State Legislatures. In this research, the TEL stringency index was calculated based on Amiel et al. [5] methodology for 50 states from 2006 to 2011.

Control variables: Our benchmark specification included two control variables: per capita intergovernmental revenue and per capita state tax revenue. The intergovernmental revenue per capita (IGR) is an important control variable. IGR can be positively or negatively correlated with state tax revenues. On one hand, IGR can be counted as additional income for state residents and thus negatively affects state own-source revenue. On the other hand, in the case of matching grants or if state government has the goal of maximizing of budget, the substitution effect may disappear and thus IGR can be positively associated with state tax revenue. The state’s tax revenues per capita (TR) provide control for the state’s fiscal solvency. This variable is expected to be positively associated with different types of states expenditures.

Dependent variables: There are dependent variables:

1. Direct general expenditures that do not count intergovernmental transfers or grants between different levels of government.
2. Spending on police per capita

Types	Characteristics of restrictions	State TEL index	
Types of Restrictions	Revenue and expenditures	6	
	Revenue (all)	5	
	Expenditure	4	
	Appropriations	3	
	Tax revenue (only)	2	
	General Fund Expenditures	1	
Statutory/Constitutional	Constitutional	1	
	Less than or equal to inflation and / or population growth rate	7	
	Less than or equal to the rate of personal income growth	6	
	Limited to the rate of growth in the state economy	5	
	Less than seven percent of state income	4	
	Restricted to a percent greater than or equal to seven percent of state income	3	
Growth Restriction	Equal to a share of total revenue or expenditures	2	
	No new taxes or fees	1	
	Method of approval	Constitutional Convention	4
		Legislative referendum	3
		Citizen initiative	2
	Override provision	Legislative vote	1
No override allowed		4	
Voter approval to raise taxes and expenditures of surplus wages		3	
Supermajority vote		2	
Declaration of emergency funds		1	
Exemptions		Budget reserves	-1
	Grants	-1	
	Capital projects	-1	
	Debt services	-1	
	Court mandates	-1	
	Non-recurring general fund appropriations	-1	

Source: Amiel et al. [5]

Table 2: State TEL stringency index.

Variable	Obs	Mean	Std. Dev.	Min	Max
Tax expenditure limitation stringency index	300	0.623333	0.48536	0	30
State's tax revenues per capita (thousand \$)	300	6.4043	2.540106	1.51	23.71
Direct general expenditures per capita (thousand \$)	300	5.374833	1.58334	3.3	14.17
Spending on education per capita (thousand \$)	300	1.915767	0.464785	1.14	3.71
Spending on hospitals per capita (thousand \$)	300	0.1753	0.133721	0.01	0.5
Spending on healthcare per capita (thousand \$)	300	0.1951	0.106261	0.04	0.54
Spending on highways per capita (thousand \$)	300	0.4345	0.254393	0.17	2.03
Spending on police per capita (thousand \$)	300	0.050433	0.027042	0.01	0.16
Spending on corrections per capita (thousand \$)	300	0.156	0.053324	0.08	0.39
Spending on natural resources per capita (thousand \$)	300	0.1034	0.104384	0.02	0.75
Spending on parks per capita (thousand \$)	300	0.024267	0.015895	0.01	0.08
Spending on administration per capita (thousand \$)	300	0.209433	0.127455	0.06	0.86
Intergovernmental revenues per capita (thousand \$)	300	5.374833	1.58334	3.3	14.17

Source: Calculated by authors

Table 3: Descriptive statistics of variables.

3. Spending on corrections per capita
4. Spending on education per capita
5. Spending on highways per capita
6. Spending on parks per capita
7. Spending on hospitals per capita
8. Spending on administration per capita

Table 3 summarizes the descriptive statistics of all variables. All monetary terms have been adjusted for inflation using the Consumer Price Index (CPI) with 2011 as the base year.

Functional form tests

When estimating the OLS models, it was assumed that the errors and the covariates were uncorrelated and that the errors were uncorrelated with each other. The regression for functional form was tested using the Ramsey RESET test. The Ramsey RESET test results ($p > 0.01$) indicate that misspecification is not present in the model. The Breusch-Pagan/Cook-Weisburg test demonstrates the presence of that heteroskedasticity. To test for the presence of state-specific error, the Breusch-Pagan Lagrangian multiplier test was performed after running a random effects model. The Breusch-Pagan test assumes that the variance of state-specific error is equal to zero. If this null hypothesis

Variables	Direct general state spending	State spending for police	State spending for corrections	State spending for education	State spending for high-ways	State spending for parks	State spending for hospitals	State spending for administration
TELS stringency index	0.0001	0.0001	0.0014***	-0.0077**	0.0011	0.0001	-0.0004	0.0018**
Intergovernmental Grants	0.804***	0.011***	0.0131***	0.2094***	0.117***	0.0028***	-0.0163	0.0704***
State Tax Revenues	0.829***	0.009**	0.0265**	0.2462***	0.15***	0.0063***	0.0087	0.0587***
Constant	0.302*	0.001	0.053**	0.9973***	-0.14***	0.0045***	0.21***	-0.091***
Wald chi2	745.5	166.19**	199.77**	308.21	356.45	52.5	194.11	131.21
Hausman test	0.474	0.474	0.995	0.461	0.348	0.2136	0.1126	0.1116

† if p<0.10, * if p<0.05; ** if p<0.01; *** if p<0.001.
Source: Calculated by authors

Table 4: Results.

holds, then OLS is an appropriate model. The null hypothesis was rejected in favor of the alternative that state-specific error is greater than zero (mixed- $X^2=935.76$, $p<0.001$). The result discussed above suggests that a panel model is more efficient than an OLS model.

Time series data traditionally brings about issues related to autocorrelation. It is reasonable to expect contemporaneous correlation of variables across all fifty states; however, if serial correlation is present in an idiosyncratic error, then a first-differenced model is more efficient than a fixed effects model. Econometrically, we had to choose between running a fixed effect or random effect model. We ran the Hausman test and determined that the random effect model was the proper specification as it had better p-values. The null hypothesis for the Hausman test assumes that the differences in the coefficients between the RE and the FE models are not systematic or that the state-specific error is uncorrelated with the covariates. The fixed effects model was rejected in favor of the random effects model based on results of the Hausman test.

A second econometric problem concerns the autocorrelations of the disturbances that can involve biased coefficients affecting the interpretation of our results. We solved this problem by applying the standard Durbin-Watson d statistic to test for autocorrelated errors. Woolridge's first differenced test was used to test for serial correlation in the idiosyncratic error [36]. For this test, the current period residuals were regressed on the previous period residuals. If the idiosyncratic errors are homoscedastic, the first-differenced errors will have a correlation coefficient of -0.5. When the current period residuals were regressed on the previous period residuals, the first-differenced errors had a correlation effect of 0.007. This was significantly different from -0.5 at the 0.001 level. This test indicates that either a fixed effect (FE GLS) or random effect (RE) GLS regression should be employed.

Results and Discussion

Results of the random effects models provided in Table 4. Per capita expenditures for correction were determined to be statistically significant with a $P>|t|$ result of 0.0001. Per capita expenditures for education and administration were determined to be statistically significant with a $P>|t|$ result of 0.01. Spending on education per capita was significant at 0.0002. Spending for government administration per capita was significant with a $P>|t|$ result of 0.004. Per capita state spending for highways, parks, police and hospitals were not statistically significant.

The findings suggest that a more stringent state TEL results in an increase of states' spending on administration and correction but leads to a reduction in total state spending on education during the period of time studied from 2006 to 2011. These findings are consistent with

findings by Baker et al. [16] that higher education and public health have suffered the most under TABOR but programs like corrections and Medicaid have been able to avoid much of the negative impact. This research found that TELs have a positive impact on state spending on correction. According to NASBO, corrections expenditures, increased by 1.1% in 2011 and continued increasing by 2.5% in 2012.

The findings suggest that the level of stringency of a state TEL has no effect on the level of general state expenditure, on spending on hospitals, highways, and parks. TELs were not helpful for states in terms of keeping expenses down relative to total general revenues in these important state expenditure categories.

Conclusion

Proponents of TELs believe that limiting the taxation ability of governments will lead to a limitation in their spending.

This study evaluated the effect of the level of stringency of TEL policy on state expenditure structures and what types of expenditures are reduced during the period of time studied (2006-2011). The findings indicate that a more stringent state TEL results in an increase of state spending on administration and correction. This study shows that education had suffered the most under a more stringent state TEL.

Implementation of TELs in states could lead to unforeseen circumstances. It is difficult to predict the scope and scale of issues inherent in TELs with each new piece of legislation, but it would be important for state governmental officials, administrators, and citizens to be aware of the possibility of creating additional issues. As has been laid out above, TELs come in varying levels of stringency, and it can sometimes seem that the more serious the budget crisis, the stricter TELs is needed to combat it. However, consequences like the reduction of state resources, reduced readiness to respond to emergencies and disasters, and unexpected changes in funding for state services should be considered before embarking on such a route.

Future studies could explore several avenues of TEL implementation and administration: (1) TELs' effects on the structure of state revenues? (2) states' responses to unexpected negative consequences from instituting TELs; (3) the decisions about stringency of a TELs upon implementation. These are just a few of the future studies that can be further explored in TEL research. TELs are constantly evolving, and as long as budget crises appear, so will TELs. In a world where TELs may become more and more common, there will be more data for future researchers to analyze.

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