Separation of Powers, Line Item Veto and the Tax Level: Evidence from the American States Draft 1

Lucas Ferrero and Leandro M. de Magalhães*

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Abstract

Line item veto, a feature present in most American States, gives the governor the power to veto single appropriation items from the budget. Its effects on the tax level, however, are still controversial in the empirical and theoretical literature (cf. Holtz-Eakins (1988) and Besley and Case (2003)). Line item veto is mostly a time invariant feature and to asses its effects previous studies have interacted it with political control variables such as a divided government. The endogenity problems that arise from using a political variable to explain a policy variable, however, have not been dealt with in these studies. We use three empirical approaches to tackle the problem and show that line item veto does have a significant negative effect on the tax rate in the States: diffs-in-diffs estimation with instrumental variables (election results in lower offices at the state level), regression discontinuity design, and a dynamic panel. Our prior on its effects comes from adapting the separation of powers model by Persson, Roland and Tabellini (2000) to the American States setup: we add line item veto and an executive. Our model delivers a clear prediction on the tax level, on the amount of public good, and on the importance of group specific transfers.

*Contact: leandro.machado@unibocconi.it

1 Introduction

Line item veto is mostly seen as a tool to cut down the pork and trim the budget. Most states have had this feature since the end of the 19^{th} century. It was recently adopted by Maine in 1995 and North Carolina in 1997, bringing the total number of States with line item veto to 45. At the Federal level its adoption has been controversial. Many Presidents urged Congress to give this power to them. During the Reagan and Bush years, a Democrat controlled Congress refused to yield. When Republicans became the majority under Clinton they approved it, only to see it judged unconstitutional by the Supreme Court in a 6-3 decision. To this day the President can only block veto the budget proposed by Congress[1].

Many other institutional features aimed at limiting the size of the budget and the tax rate have been adopted across states. In the seventies tax and expenditure limitations were introduced by many. Recently, supermajority requirements to raise taxes have been adopted by some[2]. Moreover, all states except Vermont have some form of balanced budget requirement and no-carry-over deficit rules. All these rules have been adopted with the electorate hoping to keep taxes down and expenditures under control[3]. A large empirical and theoretical literature has study these institutions and their effects on state's finances, theoretically and empirically. A comprehensive review is found in Besley and Case (2003)[7].

The part of the literature that has dealt with line item veto has not been conclusive either in their theoretical predictions nor in their empirical results. This is the question we address in this paper. Is line item veto actually efficient in keeping the tax level down?

Burton Abrams and William Dougan (1986)[1] based solely on a cross-section find no effect of line item veto on the tax level. Bohn and Inman (1996)[8] work with a panel on 47 states from 1970 to 1991. Since line item veto is time invariant, they regress the fixed effects on the institutional features. They find

[1]For a more detailed account of the Supreme Court ruling see Urofsky and Finkelman (2002)[22]

[2]Brian Knight(2000)[13] has found a significant negative effect on supermajority requirements on the tax level controlling for the endogeneity arising from self selection into treatment.

[3]Here we follow most of the literature and take the presence of line item veto in a State as exogenous. De Figueiredo (2002)[10] looks into the reasons of adopting line item veto in the first place.

that states with line item veto and no-deficit rules have lower deficits. Closer to our work, Holtz-Eakins (1988)[12] studies a panel from 1966 to 1983. He runs a fixed effect model interacting the time invariant line item veto with partisan variables that indicate different levels of control of state institutions. He finds a negative impact on spending but a *positive* impact on the overall taxation. This is not seen as unexpected by Holtz-Eakins (1988). He had no prior on the direction the line item veto would affect the tax level. In his model the governor represents the preferences of the median voter in the state and the chambers represent the preferences of the median legislator. Line item veto brings the outcome closer to the governor's preferred point. Since the governor's preferred point is unknown, the direction of the line item veto effect on tax and expenditure is not predicted.

The most recent empirical work to our knowledge on the effects of line item veto is Besley and Case (2003)[7]. They present no model but argue that the line item veto should improve the bargaining power of the governor. They have a longer data set and interact line item veto with a dummy for divided government. In their estimates a divided government in a state with line item veto has a negative effect on the tax level. The use of political variables (divided versus aligned government) to explain the tax rate, however, presents serious endogeneity problems.

Implicitly, a divided government in a State with line item veto is considered to be the 'treated' group, and the control group are the states with an aligned government or those without line item veto all together. For this approach to be consistent, assignment to 'treatment' must be random. This is not the case since assignment is the result of an election. Omitted variables and reverse causation are issues to be considered[4]. Moreover, serially correlate outcomes, which are common in the diffs-in-diffs literature, may result in inconsistent standards errors[5]. These potential problems are not accounted for, however, in the above exercises. The main contribution of this paper is to deal with these endogenity problems and show that line item veto does have a negative effect on the tax rate when interacted with a divided government. We use a panel of 47 states in the last 40 years. First we present a diff-in-diffs estimate and

[4]For a thorough discussion of these endogeneity issues in the context of diff-in-diff, see Besley and Case(2000)[6].

[5]Bertrand, Duflo and Mullainathan (2004) study this problems with simulations in a diff-in-diffs context.

instrument for our political variable with election results of offices other than the House or Senate. We then restrict our sample to the observations around the line that separates a minority government from a fully aligned government, this is the research discontinuity design approach. Lastly we let the tax level be lagged and estimate a dynamic panel using election results for non legislative offices in the states as an additional instrument for divided government. All over, to take into account the serial correlated nature of outcome variable, the tax rate, we use clustered errors by state as advised in Bertrand, Duflo and Mullainathan (2004)[4].

Before going through the details of our estimation strategies in Section 3 we develop a model in the next section to understand the actual institutional mechanism that delivers a low tax level. We call the relevant institutional feature *financial separation of powers*, and it is achieved when the power with the prerogative to raise taxes is not the residual claimant of a tax increase. As we shall see, not all regimes that present separation of powers, as most presidential regimes do, present financial separation. The model is an adaptation to the American States case of the separation of powers model in Persson, Roland and Tabellini (2000)[16], henceforth PRT. Our model delivers a clear prediction on the tax level, on the amount of public good, and on the importance of group specific transfers. Line item veto works in keeping taxes low because it allows a minority governor to prevent the opposition controlled chambers, which control both taxation and allocation, from being the residual claimant of a tax increase.

2 Financial Separation of Powers in the States

In the American States, by constitutional or statutory requirements, the power to initiate tax increasing bills and to approve the budget lies with both chambers. Even if the budget is written by the governor or by independent agencies, it can be amended and rewritten at will once it reaches the House and Senate[6]. The chambers have all the agenda setting power, they propose a tax rate and how to allocate revenues. Stringent deficit carry-over rules imply that deficit is not a financial option in the States, it is mostly due to unexpected events and must be zeroed in the following budget. The governor's powers are mostly reactive; depending on the particular State she may veto individual items or

[6]For detail information on states budget procedures see [15]NCSL website.

block veto the whole budget. The chambers may override the veto by super-majority[7]. Other budgetary powers are related to the implementation stage, specially regarding unforseen revenues or shortfalls, but we assume them away here for simplicity.

The model assumes that revenues come from a state wide individual lump sum tax. Expenditures cannot be financed by deficit. The resources are used to pay for the politicians rents, a public good, and group specific transfers. Here we think of groups as Democrats, Moderates or Independents, and Republicans[8]. All three groups receive equal utility from the public good, but they only care for their own non-transferable group specific transfer. Voters set reservation utilities once they learn the role their representative plays. If they are met they reelect their politicians. A separately elected governor may then veto single items in the allocation proposal if the state allows for line item veto, or only block veto the budget otherwise. Line item veto will deliver financial separation if the governor and the representative who controls the agenda in the chambers are not from the same group.

We focus on three cases. The first we call a Simple Legislature: it represents the case of an aligned government. Both the legislative agenda and the executive are controlled by the same group-party. Since the powers are completely aligned, line item veto or block veto do not play any role. We abstract from the executive and give the result as presented in PRT, a congress with three legislators, one of which is assigned the agenda setting power. We then add an separately elected executive with *block veto*, and show the result does not change. Finally we present the case with *line item veto* and the outcomes it implies.

2.1 Set-up

There are three groups of voters (or electoral districts) $i = 1, 2, 3$ of size (mass) unity. The preference of voters in group i in period s are given by:

$$u_s^i = \sum_{t=s}^{\infty} \delta^{t-s} b^i(q_t),$$

[7]Five States have a simple majority requirement to override a line item veto: Alabama, Arkansas, Illinois, Kentucky and Tennessee.

[8]The third group is essential to our argument. Even though a polarization between the two parties is fact in American politics as seen in Poole and Rosenthal (1984)[18]

where δ is a discount factor and q_t is a vector of policies $q_t = [\tau_t, g_t, f_t^i, r_t^l]$. The policy vector consists in τ, a percapita lump sum tax; f^i, a group specific transfer to group i; g, a public good; and r^l, the rents to each politician. The utility function in each period for a group i is given by:

$$b^i = c^i + H(g) = y - \tau + f^i + H(g),$$

where $H(\cdot)$ is a concave and monotonically increasing function. We also assume: $H_g(0) > 1$. All policy variables are constrained to be nonnegative. Individual income y is normalized to 1.

Politicians want to appropriate rents, r. Each politician $l = 1, 2, 3$ maximizes her own rents:

$$W_s^l = \sum_{t=s}^{\infty} \delta^{t-s} V^l(q_t) D_t^l,$$

where D_t^l is one if in office in period t and zero otherwise and $V^l(q_t) = r_t^l$.

When choosing policy, politicians face the following government budget constraint:

$$3\tau = g + \sum f^j + \sum r^l = g + f + r.$$

What would a benevolent central planner do? She would maximize the sum of voters utilities by setting rents to zero, choose g optimally: $H_g^{-1}(\frac{1}{3})$, and share transfers equally. If taxation were somewhat distortionary, transfers would be set to zero. Taxes would be just high enough to pay for that.

2.2 Simple Legislature

Now, let us consider the following legislative game. Three incumbent politicians are in office. They set policy, and then they face re-election. Each politician is elected in a single member district under plurality rule. Districts coincide with the groups described above; thus, each group decides whether or not to re-elect one of the politicians. Voters in each group i choose a backward looking strategy taking the form: I vote for the incumbent politician running for re-election in my district if my utility is above a given threshold ω^i, which depends on the role my representative plays. Voters coordinate their votes within district but

not across district.

The timing of events is as follows:

1. *Nature* chooses L as the only legislator with proposal power[9].
2. Voters set their reservation utilities, ω^i, contemporaneously to the the other groups and taking into account the subsequent stages of the game.
3. L makes a proposal for the allocation of resources : $[g; r^L, r^2, r^3; f^L, f^2, f^3]$ and a tax level, τ^L.
4. The Legislature votes. If two politicians vote 'Yes', L's proposal is implemented. If two vote 'No', a status quo is implemented. The status quo consists of an exogenously given $\overline{r}$ to each politician: $0 < \overline{r} = \tau < 1$; and of $g = f^i = 0$.
5. Elections are held.

Since we are only reproducing the results in PRT [16] the equilibrium concept is the same.

An equilibrium of the simple legislature is a vector of policies $q_t^L(b_t)$ and a vector of reservation utilities b_t^L, such that, in any period t, when all players take as given the equilibrium outcomes of periods $t+k, k \geq 1$:

1. for any given b_t at least one legislator $i \neq L$ weakly prefers $q_t^L(b_t)$ to the default outcome;
2. for any give b_t^L, the agenda-setting legislator L prefers $q_t^L(b_t)$ to any other policy satisfying the condition above
3. the reservation utilities b_t^{iL} are optimal for the voters in each district i when one takes into account that policies in the current period are set according to $q_t^L(b_t)$, takes as given the reservation utilities in the other regions b_t^{-iL} and the identity of the agenda setter.

PROPOSITION: There is a unique stationary equilibrium that satisfies these conditions:

$$\tau_L = 1;$$

[9]To simplify exposition let's assume without loss of generality it is legislator 1.

$$r^L = 3 - \delta W - \overline{r},\ r_j = \overline{r} - \delta W,\ r_{-j} = 0\ for\ j = 2, 3;$$

$$g^* = min[H_g^{-1}(1), 2\delta W];$$

$$f^L = 2\delta W - g^*,\ f_j = 0\ for\ j \neq L;$$

$$\omega^L = H(g^*) + f^L,\ \omega^2 = \omega^3 = H(g^*);$$

and all politicians are reelected.

W is the continuation value of being in office. In the case of a simple legislature, at each period one of the politicians has probability one-third of being chosen as the agenda-setter:

$$W = \frac{1}{3}r^L + \frac{1}{3}r^j + \delta W\ \rightarrow\ W = \frac{1}{1 - (\delta/3)}.$$

Let us go through the intuition of the proof of the above proposition[10]. The rents politicians receive in equilibrium must make them indifferent between running away with everything and being reelected. Suppose politicians run away, the agenda-setter L sets $\tau = 1$ and grabs $3\tau - \overline{r}$. She must pay another politician to accept her proposal, hence the $\overline{r}$. In equilibrium politicians are reelected. They get a positive continuation value W in the next period. Voters allow the agenda-setter to appropriate $r^L = 3 - \delta W - \overline{r}$ while paying $\overline{r} - \delta W$ to a coalition partner.

Voters add the rents for politicians as a constraint in their maximization problem. Voters in group L maximize knowing their representative is the agenda-setter. They ask for positive group specific transfers since they do not internalize the full cost of taxation, which is spread equally among groups. The level of the public good, g, is chosen in the point where the marginal benefit from g equals the marginal benefit from the transfers, f^L, that is, at $g = H_g^{-1}(1)$. This implies there is underprovision of the public good. Transfers to the other groups are zero because voters play a Bertrand game when trying to be included in the minimum winning coalition. They underbid each other offering lower transfers.

Taxes are maximum because both the voters in group L and legislator L himself are able to allocate any extra dollar of resources to either rents for legislator L or transfers to group L. Since only one third of the costs of taxation are born by voters in group L, but they receive all the marginal benefit with

[10] For a detailed proof see PRT[16]

transfers, they are willing to maximize the tax level. Both the voters in group L and legislator L are the residual claimants of a tax increase. They dispute only wether it should go to transfers or to rents. The underlining assumption on the governor's role is that, when powers are aligned, it is as if both the executive and the legislative belonged to politician L. There is complete alignment between the interests of the legislator and the executive of the same party. There is no financial separation when powers are aligned.

2.3 Block Veto

Out of the 50 states, 7 do not allow their governors to cut single items from the budget[11], but they do allow their governors to veto the budget as a whole. The economic outcomes are the same as in the Simple Legislature.

We add a governor to the above model in the simplest way possible[12]. For any given election, each voter casts a vote to their legislator and to governor. There are 3 candidates to the executive office, one from each group. Voters treat the governor as the other politicians, if their reservation utilities are met, they reelect their legislator in their district and recast their vote for governor to their own group candidate. To simplify analysis we let Nature choose the winner of a three way race for the executive office[13]. A governor then, is not reelected for sure if the reservation utilities are met, but he is not denied the chance to run for a second term. The candidates that run and loose get a chance to run

[11] Indiana, Maine, North Carolina, New Hampshire, Nevada, Rhode Island, and Vermont.

[12] An interesting empirical exercise for the PRT model without the adding of a governor is found in the financial committees in the American States parliaments. Crain and Muris (1995)[9] classify and argue that states where there is a clear distinction between revenue and spending committees have lower taxation. They test their hypothesis with a cross-section. We were, however, unable to reproduce their classification regarding the role of each committee over taxation and allocation.

[13] We stand by these simplifying hypothesis since we are interested in the mechanism that delivers low taxation once a government is in power. Even though the reelection of politicians is an equilibrium outcome, we simplify the election results by letting Nature assign the role of agenda setter and governor. Allowing voters to decide between divided and aligned governors would be interesting, but would move the focus away from the financial separation results. For a discussion on the endogeneity of divided government see Alesina and Rosenthal (1996)[2] and for the understanding of divided government in the United States at the federal and state level see Fiorina(1996)[11]. At the empirical estimation we take this endogenity problems into account.

again. Formally, we are just adding a politician to the model. The vector of proposal has to include the rents of the governor, r^E. If the governor chooses to veto the approved budget the status quo is implemented: $\overline{r} = r^l$ for every legislator l and for the governor; $g = f^i = 0$ for the citizens. We assume away for simplicity the possibility of an override, but it would not change the results. The cost of this new politician has to be included in the constraint of the voters maximization. Apart from these adjustments the equilibrium does not change.

PROPOSTION 1: In the unique equilibrium only group L receives positive transfers.

Proof. Suppose there is an equilibrium in which the voters in group E, the group of voters the governor responds to, set their reservation utilities asking for positive transfers. To proof the proposition it suffices to show that it is an optimal deviation to voters in group L to ask for all transfers to themselves as in the Simple Legislature case. With this deviation, the optimal proposal by legislator L is to deliver her voters reservation utilities with zero transfers to group E, $f^E = 0$. The proposal is approved by the third legislator, whose constituency underbids group E asking for less transfers. Neither the governor E nor the the legislator that belongs to the governor's party, call her G, will be reelected. The governor still receives $\overline{r}$ not to veto the proposal, she will always accept it because at that stage her reservation utility is the status quo outcome. The case in which the governor and the agenda power all belong to the same party, L=G, is the one dealt with in the Simple Legislature. The case where the third group asks for positive transfers is discarded by the Bertrand competition the voters go through to be included in the minwin coalition.QED.

Since only group L receives positive transfers, they ask for taxes to be set at the maximum: $\tau = 1$ and the public good to be set as before at $g = H_g^{-1}(1)$. With block veto nothing changes, taxes are still high, only one group receives positive transfers and the public good is underprovided. This is no longer true if we allow the governor to veto single items of a budget proposal.

2.4 Line Item Veto

Within the model, line item veto is defined as the power to eliminate or reduce specific group transfers, f^i or the public good, g. Any funds from the cuts go

towards lower taxation. We do not allow rents to be vetoed as individual items, but the governor may still block veto the proposal back to the status quo, where $f = g = 0$ and $r = \overline{r}$ for every politician. One may think of rents as off-budget items. The more important assumption is that the funds from the cut cannot be allocated to any other purposes. If the governor had any proactive powers, for example, to redirect funds from certain items to group specific transfers, the results would change.

The timing of the game is given by:

1. *Nature* chooses L among the legislator to make a tax and an allocation proposal and E among the candidates to be the governor and veto the proposal. By assumption L and E are from different parties. We call G the legislator from the same party as the governor.

2. Voters set their reservation utilities according to the role their representatives play.

3. L makes a proposal τ^L and $[g; r^L, r^G, r^3, r^E; f^L, f^E, f^3]$.

4. Congress votes both the tax and the allocation proposal together. If two politicians vote 'Yes', L's proposal is implemented. If two vote 'No', a status quo is implemented. The status quo consists of $g = f^i = 0$ and of an exogenously given $\overline{r} = \tau$ to each politician, $0 < \overline{r} < 1$.

5. E may choose to veto the approved proposal by cutting items.

6. Elections are held.

An equilibrium of the Line Item Veto regime is a vector of policies $q_t^V(b_t)$ and a vector of reservation utilities b_t^V, such that, in any period t, when all players take as given the equilibrium outcomes of periods $t + k, k \geq 1$:

1. for any given b_t, at the veto stage, the line item veto legislator E prefers $q_t^V(b_t)$ to any other policy vector $p_t^V(b_t)$ approved by Congress in which $f_t^V(b_t)$ or $g_t^V(b_t)$ is greater or equal than in $q_t^V(b_t)$;

2. for any given b_t, at stage 4, at least one legislator $i \neq L$ weakly prefers $q_t^V(p_t^V(b_t))$ to the default outcome;

3. for any give b_t^V, the agenda-setting legislator L prefers $q_t^V(p_t^V(b_t))$ to any other policy satisfying the conditions above;

4. the reservation utilities b_t^{iV} are optimal for the voters in each district i, when one takes into account that policies in the current period are set according to $q_t^V(b_t)$ and takes as given the reservation utilities in the other regions b_t^{-iL} and the identity of the agenda setter and of the governor.

PROPOSITION 2: There is a unique stationary equilibrium:

$$\tau^* = g^* + r^* \leq 1;$$

$$f^E = f^L = f^3 = 0;$$

$$r^* = r^l + r^L + r^E = 3 - 2\delta(W + Z), \ for\ l = G\ or\ 3;$$

$$g^* = min[H_g^{-1}(\frac{1}{3}), 2\delta(W + Z)];$$

$$\omega^i = H(g^*), \ for\ all\ i;$$

all legislators are re-elected and all candidates for governor run again[14].

Proof of Proposition 2

First, let's determine the outside option for politicians. If politicians decide to forego reelection, the optimal deviation is for L to set $\tau = 1$ and grab $3 - 2\overline{r}$. She has to pay $\overline{r}$ to one of the other two politicians an to the governor not to have the proposal vetoed.

In equilibrium politicians do not run away and, hence, receive δW, or δZ if you are one of the candidates for governor. These represent the continuation value of being in office. They will be determined in equilibrium. Therefore, voters allow politicians to appropriate:

$$r^L = 3 - 2\overline{r} - \delta W - \delta Z;$$

$$r^l = \overline{r} - \delta W, \quad r^E = \overline{r} - \delta Z.$$

The budget constraint facing the voters becomes:

$$g + f + 3 - 2\delta W - 2\delta Z \leq 3\tau.$$

[14] W and Z are the continuation values of being in office for the legislator and the continuation value of running for governor for the politicians. They are determined in equilibrium.

LEMMA 1. There are zero transfers in equilibrium.

proof. In any equilibrium foreseeing positive transfers to group 3, it would be an optimal deviation of voters in group E to set their reservation utilities in such a away that the transfer to group 3 are vetoed. This would increase E voters welfare by decreasing taxes.

If there were positive transfers to group E, group 3 would underbid the offer and be part of the minwin coalition. L would allocate zero transfers to group E. Governor E is sure not to be reelected and is paid $\overline{r}$ not to veto the proposal. As in the Simple Legislature case the Bertrand competition takes care of any positive transfers to a group other than group L.

For the case of positive transfers to group L we need the extra assumption that $g^* < \delta(W + Z)$. It guarantees uniqueness and it means that the optimal level of public good in one period has to be less than the discounted continuation value of being in office for the politicians[15].

When group L is asking for positive transfers and the assumption above holds, it is optimal for voters in group E to deviate and ask for zero transfers to group L. L can not meet her voters reservation utility, she sets $\tau = 1$ and faces two options when running away: if she doesn't deliver any public goods, no politician will be reelected an hence they cost $\overline{r}$ each (the status quo would kick in with $f = g = 0$); if she delivers g^*, they cost $\overline{r} - \delta W$ each and $\overline{r} - \delta Z$ for the governor . Hence, for it to be optimal for L to run away delivering g^* it must be that:

$$3 - g^* - (2\overline{r} - \delta W - \delta Z) > 3 - 2\overline{r} \ \rightarrow \ g^* < \delta W + \delta Z.$$

If this is the case, group E deviates and asks for transfers to group L to be vetoed. QED.

Since there are no transfers, all voters have the same problem to maximize:

$$max \ H(g) - \tau$$

$$s.t. \ g \leq 3(1 - \tau) + 2\delta(W + Z).$$

which yields:

$$\omega_E = g* = min[H_g^{-1}(\frac{1}{3}), 3(1 - \tau) + 2\delta(W + Z)].$$

[15] A similar condition is necessary in PRT to maintain the uniqueness of their equilibrium in the Coalition-Presidentialism case: $g^* < \delta W$.

Note the interesting result that the first best level of public goods is achieved. This was not the case in the separation of powers case in PRT. The presence of line item veto and the sequential nature of the game allow for no transfers in equilibrium. Voters can ask for the first best level.

LEMMA 2. $\tau^* \leq 1$.[16]

proof. Voters in group L, given the above result, wish to set just enough taxes so as to pay for g^* and for the price to keep politicians from running away:

$$3\tau = g^* + 3 - 2\delta(W + Z).$$

The maximum tax level will be reached when $g^* = 3(1 - \tau) + 2\delta(W + Z)$. In this case $\tau = 1$. Hence: $\tau^* \leq 1$.QED.

The continuation value of being in office depends on the probability of being assigned to be the proposer, which is $\frac{1}{3}$:

$$W = \frac{1}{3}r_l + \frac{1}{3}r_L + \delta W,$$

that is,

$$W = \frac{1}{3}(3 - \delta W - \overline{r}) + \frac{1}{3}(\overline{r} - \delta W) + \delta W,$$

which yields $W = \frac{1}{1+\delta/3}$.

For the governor:

$$Z = \frac{1}{3}r^E + \delta Z,$$

that is,

$$Z = \frac{\overline{r}}{3 - 2\delta}.$$

QED.

The main intuition about this result is that at the veto stage the governor only cares to reach the reservation utilities of her constituency by cutting transfers to other groups. Moreover, Betrand competition between group E and group 3 guarantees L will not assign positive transfers to group E. Taking this into account it is optimal for voters to ask for the first best level of public goods.

[16] If we assume that y is big enough so that there is always enough taxable income to pay for the optimal level of g, for the rents and for positive transfers, the inequality in Lemma 2 holds strictly.

Taxes should be just high enough to pay for g^* and for the politician's rents.

2.5 Comments on Separation of Powers and Financial Separation

The definition of Presidentialism and the concept of separation of powers are strictly linked. Presidentialism is usually defined with the presence of an independently elected executive which does not depend on a vote of confidence by the parliament[17]. By these definitions, the American States qualify as presidential regimes, there is separation of powers. *Financial separation of powers* as we have defined here, however, is only present in the States with line item veto when a divided government is in place. Only when financial separation is present should we expect a low tax level in presidential regimes[18].

We built our model based on Persson, Roland and Tabellini (2000)[16]. They differentiate between a parliamentary regime, in which there is no separation of powers and behaves much like the Simple Legislature case with high taxes and positive transfers, and a coalitional-presidential regime. In the latter, one legislator has power over taxation and another over allocation. Financial separation is present because the legislator who has power over taxation is not the residual claimant of the tax increase; taxes are low. From this result they predict that presidential regimes should present lower tax levels than parliamentary regimes.

As we have just shown, the mechanism that delivers a low tax level is financial separation of power and it may not be present in presidential regimes such as the American States. The Federal government itself does not present financial separation since the President only has block veto over the budget. In the Latin America presidential regimes, for example, most executives may initiate tax increasing bills, write the budget bill, have decree power, and even veto rights with amendment powers[19]. It is no surprise that in an empirical

[17] These features are shared in the definitions by Lijphart(1999)[14] in 'Patterns of Democracy' and by Shugart and Carey (1992) [19] in 'Presidents and Assemblies'. Lijphart also requires a one person executive, and Shugart and Carey include in the definition some law making power to the executive.

[18] We have not investigate wether a parliamentary regime may also present financial separation. The degree of political independence of the finance minister may be a good indicator.

[19] In [21] we see that 10 Latin American countries have the power to propose amendments when vetoing the budget.

study by Persson and Tabellini looking for the effects of presidentialism on the tax level, 'The Economic Effects of Constitutions'(2003)[17], the IV result on a panel of countries depended on the exclusion of a Latin America dummy.

The definitions of presidential and parliamentary regimes in the political science literature are based on the mechanisms that determine how the executive is brought to power or is ousted, either by the end of a predetermined mandate or by a government crisis and a vote of no confidence. When comparing regimes using this classification the object of study is mostly duration, stability, or representativeness of the electorate. If the objects of study are policy outcomes within a government that is in place, however, other classifications are more relevant. One example is the number of veto players as described in Tsebelis(2002)[20]:'Veto Players, How Political Institutions Work'. The object of study in this case is change in status quo policies. For there to be change, agents with veto power must agree, these are called veto players. The number of veto players in each regime and the order in which they act allow us to identify the range o possible departures from the status quo. These two characteristics are given by the constitutional features of a regime[20]. The model presented in our paper can be read as trying to classify the American States according to the numbers of veto players. In a state with line item veto, when the powers are not aligned, there are two or three veto players and the status quo should be hard to change (raise taxes). When all chambers and the governorship are aligned we only have one veto player and expect more changes (complete redirection of transfers for example).

In the case of the tax level, what matters is financial separation, that is, the power with the prerogative to raise taxes should not be the residual claimant of the tax increase. And these are the constitutional features one should look for in a country or state in order to make predictions on the tax level.

[20]Tsebelis (2002)[20] pg. 5 notes that the USA and Italy, who do not share any of the usual characteristics used to classify regimes, are together when classified by the number of veto players. They have a high number of veto players, which implies high policy stability as opposed to countries such as Britain or Greece with only one veto player and, therefore, prone to big policy changes.

3 Empirical Analysis

3.1 Data

We use a sample of 48 US states for the period 1960-98[21]. Most political, fiscal and control variables are the same as in Besley and Case (2003)[7][22]. The instruments we use come from Ansolabehere and Snyder (2002)[3]. Some institutional and procedural variables, instead, have been collected from the National Association of State Budget Offices (NASBO) and the National Conference of State Legislatures (NCSL). We also conducted three informal e-mail surveys directed to state budget officers and legislature public officials to clarify ambiguous information and a few inconsistencies in the data.

The outcome variable we are interested in explaining is the tax level. The measure we use is the *average tax rate* defined as the sum of state sales, corporate and income taxes over state income. Socio-economic controls such as state population, state income in 1982 dollars, proportion of aged (over 65) and kids (5 to 17) in the state will always be included in the regressions. Additional institutional controls will be added: a dummy for the presence of a supermajority requirement to increase taxes, another for the presence of restrictive tax limitations, one for a democrat governor and one for a independent governor. Another two controls, percentage of the population that is black and the amount of federal grants may be added at the cost of loosing some observations.

Our empirical strategy is borrowed from the empirical micro literature developed to estimate the effect of various treatments. In our estimation the treated will be the states with line item veto (a dummy taking value 1 if line item veto is present and zero otherwise) interacted with a divided government (a dummy taking value 1 if the government is divided and zero otherwise). The identification comes from comparing our treated with themselves in periods in which the government was aligned, with other states with line item veto and an aligned government at that period, and with the states without line item veto. We always control for state and year fixed effects in addition to the socio-economic and institutional controls we mentioned above.

We can visualize out treatment areas with Figures 1 and 2. On the y-axis we have the percentage of members in the upper house that are from the same

[21] There isn't enough data to include Alaska and Hawai.

[22] We thank Tim Besley for making the data set available to us.

party as the governor and on the x-axis the percentage of members in the lower house that are from the same party as the governor[23]. The upper right hand corner are the observation in which the government is fully aligned, the governor has a majority in both Houses. Our variable of interest, *DivGovLIV*, will be zero in the upper hand corner and in the states without line item veto and 1 otherwise. In the model we haven't dealt with two chambers for simplicity, the implicit assumption here is that whenever the agenda is not fully controlled by the governor's party, we have financial separation and taxes are low.

Another theoretical omission is the impact of override requirements once the line item veto has been used. In the model we have assumed the veto simply stuck. For 35 out of 47 states the override requires a two-third majority. Another five states have an override requirement of one half of the votes in both chambers[24]. We will place them together with the other 35 states. So we have 40 states with line item veto and seven with block veto[25]. In figure 2 we can see different areas according to political control in the states with line item veto and a two-third override requirement. The variable *DivGovLIV* will be zero in the upper right side square and 1 otherwise. The override requirement may imply that the lower left hand side square may have a different tax dynamic not captured in our model. There, the opposing party has an override majority in both chambers, so unless there are override costs the veto would play no role. We abstain from this discussion here[26] and classify those observations as a zero.

3.2 Fixed Effects

To start with we assume strict exogeneity holds for all explanatory variables. We are turning a blind eye to endogeneity problems and assuming that states fall in and out of treatement randomly. Thus, we begin using standard fixed effects. The fixed effect estimation is the closest to what the literature has done with line item veto[27]. We do take into account that our outcome variable may be serially correlated and always show robust and clustered standard errors. Bertrand, Duflo and Mullainathan (2004) show that when the sample of states is large,

[23] Nebraska, the only unicameral state, is not included in the sample.

[24] Alabama, Arkansas, Illinois, Kentucky and Tennessee.

[25] Indiana, Maine, North Carolina, New Hampshire, Nevada, Rhode Island and Vermont.

[26] A possible way to identify this override effect would be with regression discontinuity design. Not enough data is available however.

[27] See Holtz-Eakins(1988)[12] and Besley and Case(2003)[7]

fifty or so, the use of clustered errors fairs well in face of serial correlation.

The estimating equation is given by

$$\tau_{st} = \zeta_s + \delta_t + \beta' x_{st} + \lambda DivGovLIV_{st} + \varepsilon_{st},$$

where τ_{st} is the average tax rate (tax revenues over state income) for state s at year t; ζ_s is a state fixed effect that allows us to control for time invariant state characteristics that can be correlated with institutional variables; δ_t is a year dummy; x is a vector of controls, including socioeconomic and demographic characteristics, as well as other fiscal institutions; $DivGovLIV_{st}$ is our explanatory variable of interest.

The results from the fixed effects strategy can be seen in the **Table 1**. The 47 states give us overtime 1834 observations. In all regressions we control for state income and its square, state population and its square, proportion of aged and proportion of kids. Robust and clustered standard errors are in parenthesis. Our variable of interest, the interaction between a dummy for states with line item veto a a dummy for divided government, is significant to the inclusion of further controls: a dummy for restrictive tax limitations, and dummies for the party identity of the governor. All along we show clustered errors by state.

A concern is that we are not capturing the effect of line item veto, but of a divided government. To illustrate the point, in **Table 2** we let a dummy for divided government over all 47 states be our explanatory variable. As we can see in column 1 and 2 it is significant and has a negative sign. If however we restrict our sample to the states without line item veto (column 3), the effect of a divided government looses its significance. A divided government matters when line item veto is available to the governor.

A fixed-effects strategy assumes that $\mathbf{E}(\varepsilon_{st}|\mathbf{z}_s) = 0$, for all time periods and all controls including state fixed effects ($\mathbf{z}_s$)—strict exogeneity assumption. In particular, it implies that no omitted variable is correlated with explanatory variables of interest, and that there is no (significant) reverse causality. An example of reverse causality would be voters deciding to have a divided government given that the tax level is high. This type of endogeneity may be responsible for the positive correlation between the tax level and a divided government in Holtz-Eakins(1988)[12]. An obvious omitted variable example is voter preferences: if they change towards a lower tax rate in a particular state politicians would respond accordingly and voters may find it optimal to have

a divided government. We would be overestimating the effect of the a divided government on the tax rate.

3.3 Instrumental Variables

We propose two instruments that are appropriate for our study: the fraction of democrats in the lower offices of a State, that is, not the House or Senate and the a dummy for whether there were unopposed races in the State. Both variables were gently provided by Ansolabehere and Snyder (2002)[3][28]. They are partially correlated with our variable of interest: divided government as we can see in column 1 of **Table 3**, the first stage regression of our IV estimate. And our identification assumption is that the change in political power at the lower levels of the state are not directly correlated with tax policy. As we can see in columns 2 to 4, the effect is still significant, but smaller. This indicates an upward bias in the simple fixed effect estimate. And the point estimate is too sensitive on the choice for controls.

3.4 Discontinuity design

Regression discontinuity design (RDD) is a clear way to reduce the size of the bias due to unobservables. This strategy consists in reducing the sample size to those observations near the exogenous *eligibility requirement* for treatment. In our context, the exogenous requirement is given by the simple majority alignment border of upper right hand side square in figure 2. Observations near these lines are likely to have similar values for unobservables. It means that voters preferences, for example, in a government holding 51% of the seats or 49% of the seats are the same once we control for state and years fixed effects and other observables. In practice we restrict the sample to the observations around the border of the upper right had side square in figure 2, that is, all the observation in which the governor's party had from at least 47.5 to 52.5 percent in one of the houses. We end up with 160 observations out of 32 states. On **Table 4** we see that the small number of observation takes its tow. The point estimation is also higher than in the simple fixed effect but the standard errors are less

[28] In most states data for lower election results are available every second or third year. Not to loose too many observations we have filled in the missing data in the years following a result until the next result with the las election result.

precise and depend a lot on the controls used. Mainly, the control for a dummy for states with restrictive limits to taxation is mandatory for a significant result.

3.5 Dynamic Panel

The next step is to allow for our outcome variable to be serially correlated. Strict exogeneity rules out an important feedback effect: variations in taxes in $t-j$ affect voters's decisions at time t, either changing the size of a governor's support in the legislature, or changing the party identity of a governor for a given composition of the legislature. This a clear violation that can bias our estimates systematically, and one major concern. More formally, our variable of interest may be predetermined (weakly exogenous) since it can be correlated with the error component in previous periods through the feedback:

$$DivGovLIV_{st} = \xi' \mathbf{z}_{st} + \sum_{j=1}^{4} \rho_j \tau_{s,t-j} + \psi \zeta_s + v_{st}. \tag{1}$$

Both sources of biases can be addressed combining dynamic panels and instrumental variables estimates for our treatment variables. We use the standard Arellano and Bond (1991) Generalized Method of Moments estimator for the dynamic specification in (2). The approach requires us to specify the set of strictly and weakly exogenous variables, remove ζ_s by first differencing (2), and define the set of instrumental variables. The equation to estimate is:

$$\tau_{st} = \zeta_s + \delta_t + \beta' x_{st} + \lambda DivGovLIV_{st} + \sum_{j=1}^{4} \rho_j \tau_{s,t-j} + \varepsilon_{st}, . \tag{2}$$

With sequential or weakly exogenous variables $\mathbf{x}$, the implied moments conditions are $E\left(\mathbf{x}'_{sj} \Delta \varepsilon_{st}\right) = 0$, for $j = 1, 2, ..., t-1$. These conditions open up a variety of estimation procedures, with $\mathbf{x}_s^{t-1} \equiv (x_{s1}, x_{s2}, ..., x_{st-1})$ and its linear combinations as potential instruments for Δx_{st}, for the equation in first differences.[29] With other forms of endogeneneity, the set of potential instruments made up of lags (and leads), varies according to the maintained assumptions. Instruments not in the structural equation can be included as a source of exogenous variation. This is what we do in column 4; we add the *share of votes for democrat candidates* in low office elections, such as, Attorney General. We

[29] As a practical matter, GMM estimators using many overidentifying restrictions are known to have poor finite sample properties (see Wooldridge, pp. 305, 2002).

follow Besley and Persson (2005)[5] and argue that this variable has no direct effect on local taxes but is correlated with the extent of political competition in a given state.

In columns 1, 2 and 3 we treat all regressors but the lagged dependent variables as strictly exogenous. In this version, we use the complete set of available instruments under the maintained assumptions: for τ_{st-j}, we use $(\tau_{s1}, ..., \tau_{st-j-1})$ as instruments. We allow for four lags of our dependent variable. In column 3 we test our predictions with a distributed lag model with one lag in our variables of interest. Is a way to account for the two year interval of parliamentary elections. In column 4 we also add the the outside instrumental variable.

The results in **Dynamic Table** show that, on impact, the effect of non-separation of powers under alignment with line item veto negative an significant. These results are robust to different sets of controls. The short-run effect ranges from 0.04 to 0.13 percentages of state taxes over state GDP. This implies that, for an average state with 6% of taxes over state GDP, taxes increase up to 2.2% on impact when switching status from separation to alignment—once the dynamic structure, other economic, political, demographic and time-invariant unobserved characteristics have been controlled for. The dynamic specification allows us to compute the expected long-run effect of non-separation of powers due to party alignments. In steady state, the multiplier $\widehat{m} = \frac{1}{1-\sum_{j=1}^{4} \widehat{\rho}_j}$ ranges from 3.13 to 4. Under the maintained assumptions, the long run negative effect on the average tax rate ranges from .15 to .52 per cent of state GDP, and from 4 to 9 per cent of state taxes.

Our results are still preliminary, specially in the dynamic estimation. The Sargan tests of over-identifying restrictions are always very high. That is, the null that all instruments used are exogenous is rejected. Being the number of overidentifying restrictions too high, this is not surprising and requires revision. Another issue is the autocorrelation of order two test, which is not always rejected at the 5 per cent. This can be an additional source of biases for our estimates. We intend to continue of this work and have more robustness checks, controlling for federal transfers and deficit for example. Also adding another outside instrument so that we can test them, a candidate is the share of women in the houses. With two we can test overidentifying restrictions and it may make sense to use the instruments also in the fixed effect estimation. Overall

once we start dealing with the endogeneity problems and the serial correlation of our outcome variables the result that a divided government in states with line item veto delivers a lower tax level is strong.

4 Concluding Remarks

With our model we have shown that *financial separation of powers* is the institutional mechanism that delivers a low tax rate. In the American States it is observed only when line item veto is present and the government is divided. Empirically this is the first work to tackle the endogeneity problems that arise when trying to measure the effect of line item veto interacted with a political control variable such as divided government. Once we take care of these issues the result is strong: when there is financial separation of powers taxes are lower. This should be valid to any work looking for constitutional effects on the tax level. Not all presidential regimes have financial separation of powers, and we only guess that maybe some parliamentary regimes do. How the executive is elected or ousted is not relevant for tax rate comparison, what matters is who is the residual claimant of a tax increase.

Appendix

A.1 Simple Majority Override

The timing is identical to the case before. Here, however, L'proposal and its vetoed version compete for a simple majority: two out of three legislators must support it.

PROPOSITION 2: in equilibrium:

$$\tau^* = g^* + r^* + f^{L*} \leq 1;$$

$$f^{L*} = \frac{3 - g^* - r^*}{2};\ f^E = f^3 = 0;$$

$$r^* = r^l + r^L = 3 - \frac{2\delta}{1 + \delta/3},\ for\ l = E\ or\ 3;$$

$$g^* = min[H_g^{-1}(1), \frac{2\delta}{1 + \delta/3}];$$

$$\omega^i = H(g^*),\ for\ i = E, 3;$$

$$\omega^L = H(g^*) + f^{L*};$$

and all politicians are re-elected.

Proof. First note that in the case L decides to forego reelection we have the same result as before. L sets taxes to maximum and offers any of the other legislators $\overline{r}$. Hence the voters face the same budget constraint as above: $3(\tau - 1) + 2\delta W \geq g + f$.

When choosing their optimal reservation utilities, E voters face an additional constraint: one of the other legislators must be at least indifferent between the vetoed version and the proposed version.

L's voters also face an additional constraint: for them to be included in the winning coalition with probability 1, L's proposal should make them the least expensive group.

LEMMA 1. L's proposal that maximizes his voter's utilities is $\tau = 1$, $[g^*; f^L = \frac{3-g^*-r^*}{2}, f^3 = \frac{3-g^*-r^*}{2}, f^E = 0, r^*]$.

Proof. Voters in group L choose g^* optimally as before:

$$g* = min[H_g^{-1}(1), 3(1-\tau) + 2\delta W].$$

Their optimal choice of transfers is residually given by:

$$f^L = 3 - g^* - r^* - f^3,$$

condition on $f^3 \geq f^L$, which implies:

$$f^{L*} = \frac{3 - g^* - r^*}{2}.$$

QED.

Note that the reservation utility of L voters is given by g^*, f^{L*} and τ just enough to pay for those and for r^*. The same is true for E.

LEMMA 2. $\tau \leq 1$.
Voters in E group will demand a reservation utility with τ just enough to pay for g^*, f^{L*} and r^*:

$$3\tau = g^* + 3 - 2\delta W + f^{L*}.$$

If $g^* = 3(1-\tau) + 2\delta W$, $\tau = 1$ and $f^L = 0$. If $g^* < 3(1-\tau) + 2\delta W$ and f^{L*} is low enough, $\tau < 1$
If voter in E ask for positive transfers in equilibrium the best response from voters in L's group still is to ask for f^* and just enough taxes. At the veto stage, E will face two proposals. Both deliver the same amount of transfers $f^E = 0$: one with low taxes (the veto) and one with $\tau = 1$. E comes closer to delivering his voters reservation utilities choosing low taxes. Whatever positive transfers E voters ask, it is not a credible threat, L's voters are still able to achieve their optimal.QED.

In this case we also have $W = \frac{1}{1+\delta/3}$. Hence, we have the results in Proposition 2. **QED**.

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TABLE 1 – Fixed Effects

	(1)	(2)	(3)	(4)
	ttax_gdp	**ttax_gdp**	**ttax_gdp**	**ttax_gdp**
DivGovLIV	-0.13	-0.14	-0.15	-0.14
	(0.03)*** (0.07)*	(0.03)*** (0.06)**	(0.03)*** (0.06)**	(0.03)*** (0.06)**
stinc	0.00	0.00	0.00	0.00
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
stincsq	0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
stpop	-0.00	-0.00	-0.00	-0.00
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
stpopsq	0.00	0.00	0.00	0.00
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
aged	4.22	4.94	4.82	6.26
	(2.29)*	(2.28)**	(2.27)**	(2.50)**
kids	7.87	7.22	7.17	8.04
	(2.49)***	(2.45)***	(2.43)***	(3.00)***
supmaj		-0.34	-0.34	-0.29
		(0.06)***	(0.06)***	(0.06)***
restrict		0.16	0.16	0.16
		(0.03)***	(0.03)***	(0.03)***
demgov			-0.03	-0.03
			(0.03)	(0.03)
pbl				0.03
				(0.01)***
grant				0.00
				(0.00)***
State and Year effects	**Yes**	**Yes**	**Yes**	**Yes**
Observations	1834	1834	1834	1646
R-squared	0.84	0.84	0.84	0.85

Robust/Clustered by state standard errors

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 2 – Fixed Effects with Divided Government

	(1)	(2)	(3)	(4)
	ttax_gdp	**ttax_gdp**	**ttax_gdp**	**ttax_gdp**
Divided	-0.10	-0.11	0.01	-0.16
	(0.03)*** (0.06)*	(0.03)*** (0.06)**	(0.06) (0.07)	(0.03)*** (0.07)**
demgov		-0.02	0.06	-0.06
		(0.03)	(0.05)	(0.03)*
supmaj		-0.34	-0.02	-0.30
		(0.06)***	(0.26)	(0.06)***
restrict		0.16	0.30	0.19
		(0.03)***	(0.09)***	(0.03)***
Income and population controls	YES	YES	YES	YES
State and Year effects	YES	YES	YES	YES
Line Item Veto States	YES	YES	No	YES
States without Line Item Veto	YES	YES	YES	No
Observations	1834	1834	297	1537
R-squared	0.84	0.84	0.94	0.84

Robust/Cluster by state standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 3 – Instrumental Variable

	(1)	(2)	(3)	(4)
	DivGovLIV	**ttax_gdp**	**ttax_gdp**	**ttax_gdp**
DemLowOff	-1.07			
	(0.19)***			
UnopposedRace	-0.11			
	(0.04)***			
DivGovLIV		-0.62	-0.81	-0.73
		(0.18)*** (0.35)*	(0.20)*** (0.34)**	(0.22)*** (0.38)*
restrict			0.19	0.19
			(0.04)***	(0.04)***
supmaj			-0.32	-0.30
			(0.07)***	(0.08)***
Income and Population Controls	Yes	Yes	Yes	Yes
Pbl and federal grant	No	No	No	Yes
State and Year effects	Yes	Yes	Yes	Yes
Method	**First Stage**	**IV**	**IV**	**IV**
Observations	1679	1679	1679	1511
R-squared	0.32	0.80	0.78	0.80

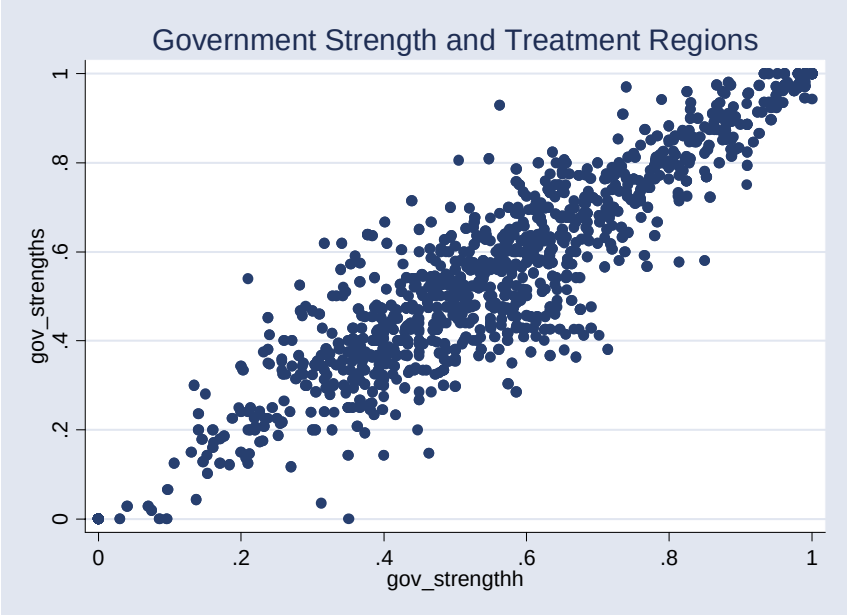
Robust/Cluster by state Standard errors in parentheses for IV
* significant at 10%; ** significant at 5%; *** significant at 1%

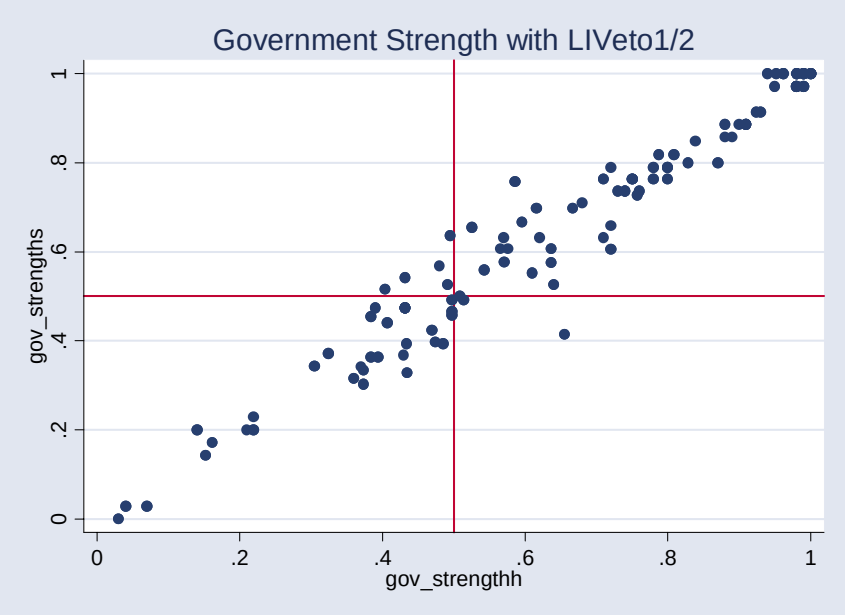
TABLE 4
Regression Discontinuity Design
Sample restricted to Governor Support between [47.5%, 52.5%]- min of both Houses

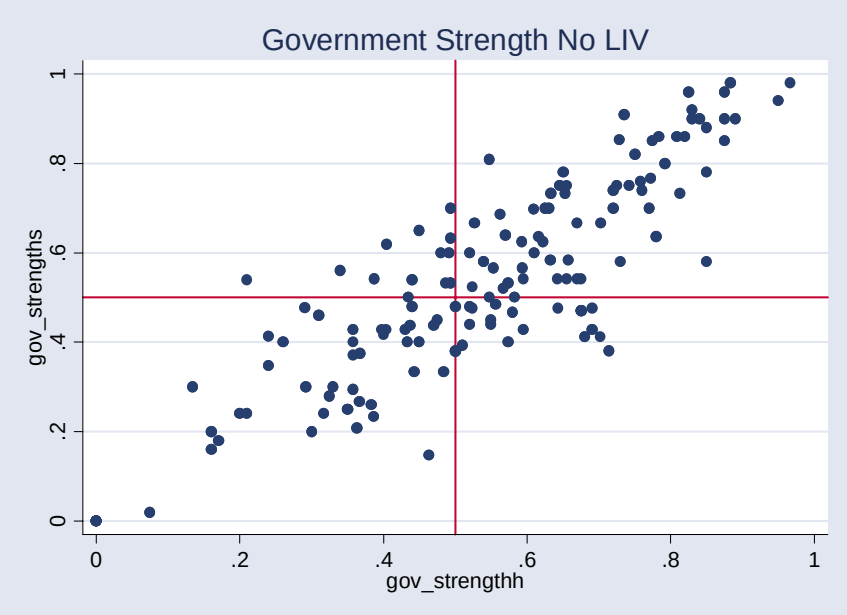
	(1)	(2)	(3)
	ttax_gdp	**ttax_gdp**	**ttax_gdp**
streatmentLIV	-0.22	-0.31	-0.28
	(0.15) (0.22)	(0.16)** (0.25)	(0.11)** (0.14)**
restrict			-0.51
			(0.09)***
pbl	NO	YES	NO
Income and Population Controls	YES	YES	YES
State and Year effects	YES	YES	YES
Observations	160	150	160
R-squared	0.95	0.96	0.97

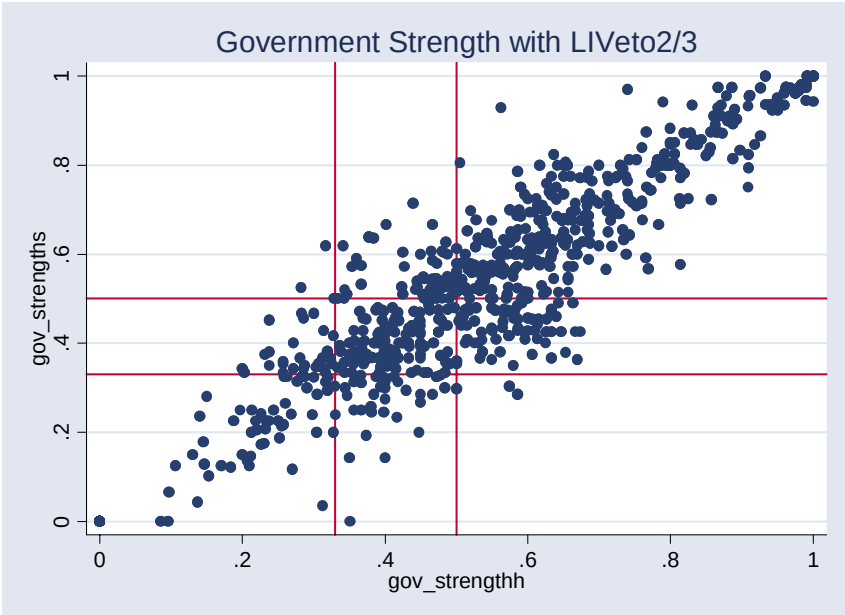
Robust/Clustered by state standard errors
* significant at 10%; ** significant at 5%; *** significant at 1%

Figures 1 to 4









Dynamic Table

	(1)	(2)	(3)	(4)
	ttax_gdp	ttax_gdp	ttax_gdp	ttax_gdp
DivGovLIV	-.04	-.06	-.13	-.12
	(.02)* (.02)*	(.02)** (.02)**	(.03)*** (.04)***	(.03)*** (.04)***
indgov		-.18	-.27	-.34
		(.14) (.25)	(.15)* (.28)	(.15)** (.31)
demgov		-.02	-.06	-.06
		(.02) (.04)	(.02)*** (.05)	(.02)** (.05)
supmaj		-.20	-.28	-.25
		(.06)*** (.08)**	(.07)*** (.08)***	(.07)*** (.09)***
Restrict		.11	.13	.15
		(.03)*** (.04)	(.03)*** (.05)***	(.03)*** (.05)***
L1D	.65	.65	.61	.62
	(.03)***	(.03)*** (.03)***	(.03)*** (.04)***	(.03)*** (.05)***
L2D	.02	.02	.03	-.04
	(.03)	(.03)	(.03)	(.03)
L3D	.03	.03	.06	.05
	(.03)	(.03)	(.03)**	(.03)
L4D	.07	.07	.10	.09
	(.02)***	(.02)*** (.03)**	(.02)*** (.03)**	(.02)*** (.03)***
Controls	Yes	Yes	Yes + lagged DivGovLIV	Yes + lagged DivGovLIV s +IV
Time dummies	Yes	Yes	Yes	Yes
Number of obs	1632	1632	1632	1632
Number of groups	48	48	48	48
Observations per group	34	34	34	34
AR Test ar(1)	-32.84	-32.39 -6.01	-26.20 -5.98	-26.88
AR Test ar(2)	0.18	0.34 0.44	4.81** 2.01**	4.68**
Sargan test	chi2(693) = 844.20	chi2(693) = 832.65	chi2(693) = 919.06	chi2(693) = 950.12
Wald chi2(42-44)	3169.70 36452.74	3238.05	Wald chi2(52) = 2773.82	Wald chi2(53) = 2780.47

Arellano-Bond dynamic panel-data estimation. Group variable (i): state_code One-step results.