Term Limits, Political Business Cycles, and Office Tenure

U.S., 2004-2015

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Abstract: *This paper examines the effect of term limits on U.S. governors by comparing differences in fiscal expenditure across term-limit regime and term number. Using state-level data ranging from 2004 to 2015, we find that ineligible, second-term term-limited governors use Political Budget Cycles (PBCs). Given that the aim of PBCs is to increase incumbents' chances of re-election, this finding leads us to consider that term-limits may help voters select governors with preferences close to theirs. To confirm this hypothesis, the first-term performance of re-elected versus non-re-elected governors is compared across term-limit regimes. Term-limited re-elected governors are found to spend significantly more than non-re-elected governors, while no difference is found in non-term-limited states. This paper therefore finds evidence supporting the theory that term limits create a positive selection effect.*

1. Introduction

Elections are a fixture of modern democracies. By allowing citizens to periodically select representatives to which policy-making can be delegated, they allow the formation of a professional political class and free up citizens to specialize in other careers. Though useful, delegating creates a principal-agent problem: agents (politicians) may have private preferences counter to public interest, which are unobservable to voters *ex-ante* (prior to the election). These can only be inferred *ex-post* from the policies they pursue once in office. Therefore, electoral accountability, by allowing voters to reward/punish politicians conditional on performance by voting them in or out of office, is an essential property of elections.

This threat of sanction creates incentives for incumbents to manipulate the economy to increase their chances of being re-elected. Assuming some type of voter 'decaying memory', the political payoff of these distortions increases as the election grows nearer: economic cycles are made to coincide with political cycles. These patterns, called 'Political Business Cycles' (PBCs), are well-documented in the political science literature.

Given that PBCs are a response to electoral incentives under asymmetric information, an exogenous change to the former ought to influence the amplitude of the cycles. Term limits are a prime example of an institutional feature that artificially changes electoral incentives: by constraining the length of politicians' careers in one specific office, they decrease the net present value of re-election. Since PBCs are a strategic investment aiming at improving the likelihood of reelection, term limits should, overall, decrease the size of Political Budget Cycles.

Term limits are also puzzling in themselves because they bind voters as much as politicians: incumbents *known* to be competent cannot be re-elected. Moreover, politicians ineligible for re-election (also known as 'Lame Ducks') have little incentive to deliver policy goods to their constituency during their last term. The popularity of term limits amongst voters has therefore been partially explained by their creation of a positive selection effect: given that the future rents of office are limited, politicians have less incentive to

conceal their true policy preferences (Smart and Sturm (2013)). Voters are therefore better able to select candidates with preferences similar to theirs.

This paper aims to broaden our understanding of the effect of term limits on politicians' behavior by examining differences in PBCs between term-limited and non-term-limited U.S. governors. Since the primary aim of PBCs is to signal either administrative competence or policy preferences to the electorate, we start off with a strong a-priori expectation that (self-interested, rational) term-limited governors will have smaller PBCs than non-term-limited governors. Moreover, PBCs ought to decrease over time, as their signaling value to incumbents diminishes.

These hypotheses are tested using a linear regression model with state and year fixed effects and heteroskedasticity-consistent standard errors. The dependent variables are eleven different categories of state expenditures, covering all U.S. states between 2004 and 2015[1], and are controlled using inflation, population[2], constant per capita income, the percentage of the population under eighteen years old, and the governor's political party. The independent variables, which are the interaction effects between election years, term number and term-limit regimes, allow us to compare the PBCs of every term number and term-limit regime combination.

Governors are found to use PBCs in significantly different ways depending on their term number and term-limit regime. Though non-term-limited governors behave much as we would expect given the literature, second-term term-limited governors defy our hypotheses by producing positive capital and current spending PBCs in their second term. This counter-intuitive finding seems to confirm Smart and Sturm's theory that term-limits create positive selection effects. To test this hypothesis, another regression is run, comparing the first-term behavior of re-elected governors to non-re-elected governors for both term-limit regimes. The term-limited re-elected governors are found to spend significantly more on average on total, direct, and capital expenditure. By contrast, the only difference found in non-term-

[1] 2004 included – i.e. twelve years total.

[2] Implicitly: the expenditure levels are converted into constant 2015 dollars per capita.

limited states between re-elected and non-re-elected governors is that the former spend *less* on first-term capital spending PBCs. This paper therefore presents evidence of a term-limit-induced positive selection effect.

Some alternative explanations are also considered. There could be self-sorting between states: voters in non-term-limited states, for instance, could have longer discounting periods and thus be less sensitive to PBCs, which implies that non-term-limited governors could benefit more by *spreading* their expenses across the term. These voters could also have different economic policy preferences. Though it could account for differences in spending patterns, it does not explain the use of PBCs by *second-term*, term-limited governors. However, the use of PBCs specifically (as opposed to higher average spending) isn't entirely explained by the 'sincerity' theory either – especially given that our regression on re-elected term-limited governors fails to find first-term PBCs. It seems likely that 'binding factors' not explicitly taken into account by this analysis, such as political parties or the value of one's reputation, could also be responsible for this particular finding and ought to be explored further in subsequent research.

2. Literature Review

The PBC literature, now almost fifty years old, is extensive. PBCS have been found in national (Brender and Drazen (2008)), regional (Blais and Nadeau (1992), Alt and Rose (2009)) and municipal (Veiga and Veiga (2007), Sakurai and Menezes-Filho (2010)) spending.

The original Political Business Cycle model, which is still at the core of most PBCs studies, stems from Nordhaus (1975). In this model, politicians are assumed to always seek re-election. Voters, on the other hand, have preferred economic outcomes and reward incumbents who deliver them. Given those conditions, incumbents have an incentive to manipulate the economy for electoral gain.

Nordhaus' theory has four additional assumptions: politicians have perfect information and can perfectly manipulate the economy through the Phillips Curve; voters have little-to-no knowledge of economic principles and have a strong "decaying memory". The latter implies that the political value of delivering

desirable outcomes (e.g. low unemployment) increases as the election draws near. Thus, politicians use macro-economic policy to decrease unemployment over the course of their term, at the expense of higher inflation. Voters, unaware of those trade-offs, are fooled repeatedly into attributing the positive changes to the incumbent while discarding inflation as an external shock. The result are "politically induced cycles" (Nordhaus (1975), 181) in the economy – or Political Business Cycles.

Nordhaus' model is vulnerable to its extreme assumption of voter ignorance. It also relies on monetary policy, which is both hard to time precisely and under the control of a politically independent central bank.

Rogoff (1990) developed an alternate model using rational and utility-maximizing voters. Elections take place every other time-period and oppose the incumbent to a candidate randomly drawn from the general population. Politicians are of varying administrative competence levels, which can only be observed by voters with a one-time period lag from their ability to distort fiscal policy. Incumbents therefore signal their ability to differentiate themselves from their competitors by increasing government spending in the pre-election time-period.

Rogoff's model provides an easily testable hypothesis but does not specify precisely which components of government expenditure should be used as dependent variables. Brender and Drazen (2008) have found, in a study of the effects of GDP growth and fiscal deficits (associated here to expansionary fiscal policy) on politicians' re-election prospects, that voters in developed nations do not respond to the former and *punish* the latter. Building upon this finding of "fiscal conservatism" (Brender and Drazen (2008), 2219), Drazen and Eslava (2010) put forward a model in which politicians signal their policy preferences by changing the *composition* of government spending. Expenditure is increased for highly visible categories and decreased for less visible items, thus keeping the budget balance intact. Drazen and Eslava tested their hypothesis using a dataset of local expenditures by Colombian municipalities from 1987 to 2002 and found significant increases in investment projects and decreases in current expenditures on pre-election years. Colombian voters were also found to respond negatively to large budget deficits.

Veiga and Veiga (2007) and Sakurai and Menezes-Filho (2010) have also found support for politically timed changes in composition of spending in Portuguese and Brazilian municipalities respectively. Sakurai and Menezes-Filho (2010), however, do not observe a pre-election increase in investment. They speculate that because capital expenditure projects take time to come to fruition, they may be *less likely* to be used for PBCs. Similarly, Vergne (2009) finds, in a study of national-level PBCs in developing countries, that current spending increases while capital spending decreases.

Overall, the exact expenditure items subject to PBCs change depending on the level of analysis. Thus, testing for the presence of PBCs in a large array of expenditure categories can yield further insight as to which items are most likely to be manipulated for electoral gain – and how.

Other studies have looked at how changes in politicians' incentives and institutional features influence Political Budget Cycles. Baleiras and Santos (2000) argued for the inclusion of alternatives to political office into politicians' decision-making optimization problem. They considered, in particular, the impact of 'revolving-door' appointments and term limits on the amplitude of Political Budget Cycles.

Klein and Sakurai (2015) studied empirically the differences in PBCs between first and second term mayors. They found significant divergences between the two: first term mayors increased capital spending and decreased taxes; second term mayors decreased capital spending and increased taxes. Unfortunately, they are unable to assess the effect of term-limits as a whole because they lack the counter-factual of non-term-limited mayors.

The broader political science literature has studied these changes in incentive by focusing on ideological and participatory 'shirking' in term-limited, 'Lame Duck' legislators. Carey et al. (2006) studied differences between 'Lame Duck' and re-eligible state legislators across the United States. Though there were no significant differences in participation rates, 'Lame Duck' politicians reported feeling less beholden to their constituents' interests and spent less time securing 'pork barrels' for their constituency than re-eligible legislators. Powell, Niemi and Smith (2007) also found that term-limited state legislators are less likely to pursue their constituents' interests. Similarly, Tien (2001) noticed that retiring members

of Congress were more likely to vote 'sincerely'. Jenkins and Nokken (2008) also found that, in 'Lame Duck' Congress sessions, legislators were more likely to deviate from their party's median line.

Moving beyond the U.S. legislature, Alt, Bueno de Mesquita and Rose (2011) used variation in U.S. gubernatorial term limits to measure separately the accountability and competence effects in fiscal expenditure. Their method was to match governors with the same term number across different term-limit regimes, then pair governors under similar term-limit regimes across different term numbers. They found that eligible governors had higher economic growth than ineligible governors (evidence of an accountability effect) and that economic growth is higher for second term governors than first term governors (evidence of a competence effect).

It thus appears that term limits restrict *both* the accountability and competence effects of elections. Smart and Sturm (2013) rightly find their popularity amongst voters given this context puzzling. They resolve this apparent contradiction by arguing that term limits create positive 'truthfulness' and 'selection' effects. In their model, politicians earn utility from being in office through their policy choices. Politicians are either 'good', if they have the exact same policy preferences as voters, or 'bad', otherwise[3]. When there are no term limits, both types pursue a policy which maximizes their chances of re-election, even when detrimental to voters' welfare. However, term-limits (including two-term limits specifically) decrease politicians' future re-election payoff so that each type behaves sincerely in both their first and second term. Thus, voters are better able to select 'good type' politicians[4] than without term limits.

The existing literature therefore suggests that the appeal of term-limits may be that it allows politicians to behave more sincerely, at the expense of electoral accountability. This paper could present new evidence of this 'sincerity' effect by examining differences in economic behavior (including PBCs) between term-limited and non-term-limited governors.

[3] Their policy preferences are subject to an exogenous shock: though they may prefer the same policies as a 'good'-type politician on one given period, their preferences are overall biased towards pursuing policies that *decrease* the utility of voters.
[4] This can either increase or decrease their welfare depending on the ratio of 'good' to 'bad'-type politicians and the weight of the policy bias in bad politicians.

While term limits have been acknowledged in the Political Budget Cycle literature, there has been scant study of their effect over a politician's tenure. The political science literature has generally found a strong 'incumbent effect' in the United States (Ansolabehere and Snyder 2004). Lott (1986) explained this by higher 'brand recognition' for incumbents, while Bernhardt and Ingberman (1986) argued that voters face less uncertainty (regarding the fulfillment of campaign promises) with incumbents. Either way, voters prefer "an incumbent who is competent for certain but who exerts low effort to a randomly drawn challenger who exerts high effort" (Alt, Bueno de Mesquita and Rose (2011), 173-174). If the aim of cycles is to signal administrative competence, as posited by Rogoff, we would expect the amplitude of the cycles to change over time as voters' estimate of the incumbent's ability level improves. In other words, Political Budget Cycles should, *a priori,* be decreasing over the incumbents' political career.

Though voters could respond to 'high reputation' politicians by adjusting their expectations upwards, Schwabe (2009) notes that this isn't a credible commitment as voters benefit from re-electing (known) competent politicians over unknown type competitors.

This paper's interaction of term number and term limits can therefore allow us to further observe how electoral incentives change over an incumbents' political career, for both term limit regimes.

An important caveat to the above analysis of term limits' effects on accountability is the presence of mitigating constraints such as political parties and personal reputations (Besley and Case 1995). For instance, Crowley and Reece (2013) found that being part of a political dynasty nearly cancels the effect of term limits for term-limited U.S. governors. Similarly, 'Lame Duck' incumbents seeking to be re-elected into another political office decreased taxes, when those who were not increased them. Crowley and Reece also find significant differences in fiscal policy between Democrats and Republicans.

This study is therefore able to contribute new empirical evidence of politically-induced differences in economic behavior to the political science literature. The existing literature has mainly focused on legislators, 'last term effects', and, when observing fiscal expenditure, on *average* levels of expenditure. This paper uses a different unit of analysis (U.S. state governors) and takes politically-timed changes in

expenditures (i.e. PBCs) into account. The inclusion of the latter is key, as it allows us to measure differences in a very specific type of electoral effort across term-limits. Finally, the study also broadens the PBC literature by providing new insight into the ways PBCs are used and by observing how their amplitude is affected by changes in incentives between term limit regimes and over tenure.

3. Hypothesis and Theory

The Political Budget Cycle theory posits that politicians use politically timed changes in expenditure to increase their chances of re-election. The core claim of the literature is therefore that there will be a significant change in spending in the year prior to the election. Brender and Drezen (2008), having found that voters are fiscal conservatives, refine this claim by arguing that PBC take the form of a change of composition in spending from less visible to more visible expenditures. Following Vergne (2009), the expected change at a state-level would be an increase in *current* spending and a decrease in *capital* spending. 'Administrative' categories, such as Interest on Debt and Salaries and Wages, are relatively fixed, as they are required to run state government, and are much less visible to the electorate. They are therefore unlikely to be used for PBCs. Finally, the 'visibility' of Assistance and Subsidies (i.e. public welfare) and Insurance Benefits and Repayments (i.e. social security) is harder to determine and subject to debate.

Term limits are expected to decrease the size of Political Budget Cycles by limiting the future rents of being in office. Politicians are assumed to be self-interested and forward-looking: PBCs are solely use to maximize their chances of re-election. Therefore, in states with a two-term limit, first-term governors will have higher PBC than second-term, term-limited governors. Similarly, second-term governors in non-term limited states will have higher PBCs than second-term, term-limited governors. More broadly, non-term-limited governors can also be expected to have higher PBCs than term-limited governors for any given term (though the difference may be less acute when compared to eligible term-limited governors).

The literature does not specify how Political Budget Cycles change over a politician's tenure. Thus, assuming PBCs are used as a *signal* to voters, their marginal return should decrease over time as the voters' estimate of the incumbent's type improves[5]. Political Budget Cycles are therefore expected to *decrease* over tenure for non-term limited incumbents.

4. Data

The dependent variable is fiscal expenditure, including total expenditure, intergovernmental expenditure, direct expenditure (both subsets of total expenditure), spending on current operations, capital outlays, assistance and subsidies, interest on debt, insurance benefits and repayments, and salaries and wages (all subsets of direct expenditures), as well as construction and other capital outlays (both subsets of capital outlays). These variables are all drawn from the U.S. Census Bureau, covering all U.S. states between the budget years 2003-2004 and 2014-2015, and are expressed in constant 2015 dollars per capita.

- Total Expenditure
  - Intergovernmental Expenditure
  - Direct Expenditure
    - Current Operations
    - Capital Outlay
      - Construction
      - Other Capital Outlay
    - Assistance and Subsidies
    - Interest on Debt
    - Insurance Benefits and Repayments
    - Salaries and Wages

Table 1: Expenditure Categories Outline

[5] Related to the footnote above, this carries the implicit assumption that PBCs require effort and that, without a corresponding increase in utility, they will not be used.

Following Brender and Drazen (2008) and Drazen and Eslava (2010), the two main dependent variables are current spending and capital spending. Other, more specific expenditure categories (e.g. construction spending, welfare payments, etc) may be used to isolate the items most prone to PBCs.

The first independent variable, following the PBC literature, is a gubernatorial election dummy which takes a value of 1 for the year during which the election takes place and 0 otherwise. The second is a term-limit regime dummy which takes a value of 1 for non-term limited states and 0 for term-limited states. Both are taken from a 2012 data set compiled by Harvard Professor Carl Klarner. The third is a term number variable which takes a value of 0 for first-term governors[6][7], 1 for second-term governors, 2 for third-term governors, coded by hand.

The first set of controls covers economic variables which influence the level of state government spending: the percentage of school-aged children (under 18 years old) and per capita income per state. State spending is expected to be directly proportional to the percentage of school-aged children and inversely proportional to income, as states are responsible for many education-[8] and welfare-related expenses. Though the literature typically uses both the percentage of school-aged children and elderly, these variables are strongly correlated[9] in this dataset, thus solely the former is used. The data on school-aged children is provided by the U.S. Census Bureau, while per-capita income comes from the U.S. Bureau of Economic Analysis. In addition, trends in spending are controlled for using a lag of the dependent variable.

The second set controls for political factors which have also been found to influence spending (Alesina and Sachs (1988), Besley and Case (2003), Fredriksson, Wang and Warren (2013)) by including a dummy

[6] The counter has been coded so that it only updates for *elected* governors. Therefore, a politician serving as governor for the first time following the resignation of their predecessor, is coded as term 0. Should this politician subsequently be elected as governor of the state, their first term would still be coded as 0.

[7] The counter also reflects the term number of the governor having spent the majority of the year in office. If governor A is in office from January 1 till May 15 and is followed by governor B from May 16 till December 31, the term number dummy will be equal to governor B's term number.

[8] Some indirectly, through state aid to local governments.

[9] The two variables have a correlation of -0.8.

recording the governor's political party. This dummy is provided by Klarner's dataset until 2012, after which it is directly are transcribed from the National Conference of State Legislatures. It is coded to take a value of 1 for Democrats, -1 for Republicans and 0 for independents.

The tables below show the summary statistics for all variables described above. The first table shows the dependent variables only.

Expenditure Categories Summary Statistics						
Statistic	N	Mean	St. Dev.	Min	Median	Max
Total	600	6,836	1,988	4,198	6,476	18,185
Intergovernmental	600	1,553	570	114	1,438	3,787
Direct	600	5,284	1,749	2,898	4,960	15,328
Current	600	486	266	153	423	2,111
Capital	600	4,002	1,358	1,989	3,675	11,653
Construction	600	412	233	121	355	1,837
Other Capital	600	74	48	19	64	358
Subsidies	600	142	61	36	126	393
Interest on Debt	600	174	113	29	146	633
Insurance Benefits	600	825	334	228	760	2,218
Salaries	600	987	422	295	890	2,835
Spending per Capita in constant 2015 dollars						

Table 2: Expenditure Categories Summary Statistics

Some dependent variables show considerable variation: current spending ranges from $1988.87 per capita in Nevada to $11,652.86 in Alaska. Similarly, total expenditure has a range of $13,987.18 per capita. Interestingly, capital and construction spending, categories often singled out by the literature for their propensity to be used for PBCs, have a relatively low standard deviation, especially when compared to current spending.

Independent Variables Summary Statistics						
Statistic	N	Mean	St. Dev.	Min	Median	Max
Election Year	600	0.26	0.44	0	0	1
Non-Term Limited	600	0.28	0.45	0	0	1
Term Number	600	0.46	0.70	0	0	5
Term Length	600	3.92	0.39	2	4	4
%Population Under 18	600	0.26	0.02	0.21	0.26	0.35
Per Capita Income	600	43,897.61	6,972.52	31,444.59	42,707.90	68,329.00
Governor's Party	600	-0.08	0.99	-1	-1	1

Table 3: Independent Variables and Controls Summary Statistics

The following table displays our independent and control variables. We can see from the table that a minority (14 out of 50, i.e. 28%) of states under observation do not have term-limits. Of term-limited states, Virginia is the only one with a one- instead of a two-term limit.

The term number variable is particularly interesting: firstly, the governor with the second longest tenure in our dataset, Governor Jerry Brown of California, with three terms, belongs to a term-limited state[10]. This is because California's term-limit rule isn't retroactive, and Gov. Brown served his first two-terms before the term limits came into effect. Similarly, Governor of Oregon John Kitzhaber was elected to four-terms in office. Oregon's term-limit rule prohibits Governors for serving more than two *consecutive* terms in office but has no ceiling to the number of non-consecutive terms. Other states have similar rules, but, in practice, no other term-limited Governors than Gov. Brown and Kitzhaber have served more than two terms[11]. In other words, the 'flexible' term limit rules allowing governors to serve more than two terms non-consecutively act as binding for our purposes, justifying our coding of our "limit" dummy as (0, 1) only. Secondly, despite ranging from 0 (one term) to 5 (six terms), its mean is of 0.46. Though it may seem to imply that the *majority* of governors in our sample did not serve a second term, the re-election rates for first-term governors were actually higher[12]: on average, 64.04% of non-term-limited

[10] Gov. John Lynch of New Hampshire and Gov. Jim Douglas of Vermont also served three terms, but those are two-year terms.

[11] Virginia's one-term-limit, for instance, is only for consecutive terms, but all Virginia Governors in this sample were first-term Governors.

[12] The discrepancy between the percentage of governors re-elected in the sample and the percentage of first-term governors in the sample is due to the fact that the first-term category includes temporary governors (governors replacing their predecessor after they've stepped down).

governors in this sample were re-elected, against only 56.03% of term-limited governors. This could either suggest that incumbents in non-term-limited states were of higher quality or that voters in term-limited states were more selective.

Table 3 also shows term length. All states but two (New Hampshire and Vermont) have four-year terms. Both have two-year terms, with no term limit. Thus, Virginia, New Hampshire, and Vermont are exceptions to the two-term limit, four-year term template that other states follow. Though included in our original regression, they are excluded in Table 9 and 10 (see the Appendix) as a robustness check.

The last three variables are our economic and political controls. Per capita income varies considerably between states, following a specific regional/geographic pattern: the states with the highest average per capita income (Connecticut, Massachusetts, New Jersey) are all located in the Northeast, while the states with the lowest per capita income (Mississippi, West Virginia, Arkansas) are in the South. This pattern was not found in our dependent variables[13]. Finally, the governor party dummy variable's mean of -0.08 suggests that Republican governors were slightly more common in our panel than Democrats[14].

5. Estimation Method

The regression is estimated using Ordinary Least Squares (OLS) as a dynamic panel data, using state and year fixed effects and robust standard errors.

The PBC literature often uses Generalized Methods of Moments (GMM) equations either in addition or as a complement to OLS to correct for the bias introduced into the equation by correlation between the lagged dependent variable and the error term. The use of a panel-data specific package[15] and

[13] Or to a lesser extent: the correlation between average total spending per capita and average income per capita was found to be 0.37.

[14] Though technically including a 0 for independent governors, the dataset only includes *three* such observations. Thus, having a mean close to 0 indicates an even number of Republican and Democrat governors, and not a high number of Independents.

[15] The "plm" package in R

heteroskedasticity-consistent standard errors were found to sufficiently alleviate these issues for our purposes.

The following equation has one significant caveat, however: it does not include a "limit" term. The regression output tables (Table 6) in the Appendix show the results obtained with a model including "limit". Though relevant to the analysis, the "limit" term is found to be highly collinear with the state fixed effects: indeed, given that a state's term limit regime is constant over this time-period, having both State and limit dummy variables creates a "dummy variable trap". Indeed, the regression including the limit term fails a linear dependence test[16]. The effects of multicollinearity are readily noticeable, as the signs of multiple independent variables (e.g. percentage of the population under 18 and the lagged dependent variable) change depending on which model is used. The "limit" term was therefore excluded from the equation.

The regression equation is thus:

$$Y_{it} = \beta_1 ElectionYear + \beta_2 TermNumber + \beta_3 ElectionYear \times TermLimit + \beta_4 ElectionYear \times TermNumber + \beta_5 ElectionYear \times TermLimit \times TermNumber + \beta_6 Y_{it-1} + \beta_7 X + a_i + b_t + \epsilon_{it}$$

where X is a set of controls and $a_i + b_t$ are state and year fixed effects. The baseline of this equation are term-limited, first-term governors.

We expect, firstly, to find significant 'election' coefficients. For more visible expenditure categories, these coefficients will be positive; for less visible expenditures, negative; and aggregate categories (e.g. Total spending) should be insignificant or close to zero. Secondly, if the Political Business Cycles of first term governors are higher than that of second-term governors in states with term limits, then the "election*term" coefficient ought to be negative ($\beta_4 < 0$). Thirdly, if the Political Business cycles of second-term non-term limited governors are higher than that of 'Lame Duck' term-limited governors, then the sum of "election*year" and "election*year*limit" ought to be positive ($\beta_4 + \beta_5 > 0$).Finally, if

[16] the `detect_lin_dep()` function in R, provided by the plm package, finds linear dependence between limit and all other state dummy variables

Political Business cycles are decreasing over tenure for non-term limited governors, then "election*year*limit" ought to be negative ($\beta_5 < 0$).

6. Regression Results

6.1. Primary Regression Results

The results below show the regression outputs of five of our dependent variables:

U.S. State Government Expenditure, 2004-2015					
	Dependent variable:				
	Expenditure Category				
	Total	Direct	Capital	Current	Construction
	(1)	(2)	(3)	(4)	(5)
Election Year	23.70	36.55	-9.29	38.58*	-3.70
	(29.53)	(25.00)	(9.19)	(22.90)	(7.72)
Term Number	27.39	22.97	-5.62	29.71***	-6.36
	(17.28)	(14.74)	(6.06)	(10.73)	(5.86)
Election*Term	-30.51	2.05	28.59**	-11.78	23.48**
	(64.40)	(51.97)	(11.30)	(47.90)	(10.61)
Election*Limit	-34.29	-38.69	23.93	-59.28**	20.98
	(42.96)	(33.60)	(14.53)	(29.44)	(14.18)
Election*Term*Limit	12.63	-2.70	-35.66**	10.22	-30.63**
	(68.79)	(53.00)	(15.15)	(49.37)	(14.61)
%Population Under 18	1,182.52	-4,063.87	1,249.47	-6,866.35*	1,535.43
	(4,953.27)	(3,754.39)	(1,426.99)	(3,600.65)	(1,279.69)
Per Capita Income	0.05***	0.03***	0.01***	0.02***	0.01***
	(0.01)	(0.01)	(0.005)	(0.01)	(0.004)
Governor's Party	34.06***	22.58**	5.71	7.39	5.51
	(10.82)	(9.11)	(4.58)	(10.30)	(4.22)
Lagged Dependent	0.71***	0.65***	0.50***	0.61***	0.51***
	(0.04)	(0.03)	(0.05)	(0.06)	(0.04)
N = 600					*p<0.1; **p<0.05; ***p<0.01
					State Year Fixed Effects OLS Model

Table 4: Initial Regression, Significant Dependent Variables

In non-term-limited states, first-term governors increase capital spending[17] by $23.93 per capita and decrease current spending by $20.98[18] during pre-election years. In their second term, their capital spending PBC decreases to $16.86 per capita while their current spending PBC remains unchanged. As expected under Drazen and Eslava (2010)'s PBC model, visible expenditures (e.g. construction spending) are increased while less visible expenditures are decreased, so as to minimize the changes in aggregate spending. Moreover, non-term-limited governors produce smaller capital PBCs over their tenure, confirming our hypothesis of decreasing returns-to-PBC signaling.

Term-limited governors behave significantly differently. In their first-term, they have *positive* current spending PBCs of $38.58 per capita; in their second-term, they *add* capital spending PBCs of $28.59 per capita to these current spending PBCs. This finding defies our hypothesis that 'Lame Duck' governors should exhibit smaller PBCs than non-term-limited governors.

One explanation for those differences in behavior across term-limit regimes could be that voters in different term-limit regimes have different policy preferences. However, this does not explain why second-term, term-limited politicians (i.e. politicians ineligible for re-election) would have higher positive PBCs than non-term-limited politicians (i.e. politicians eligible for re-election). Another explanation can be found in Smart and Sturm (2013)'s theory that term-limits lead to positive selection effects. If so, we would expect re-elected governors in term-limited states to have demonstrated preferences closer to that of voters than non-re-elected governors in the first term *and* for the differences between re-elected and non-re-elected governors to be greater in term-limited states than in non-term-limited states. These new hypotheses will be explored in the section 6.2.

All of our independent variables were found to be insignificant in the regressions of the six other dependent variables used (see Table 5 in Appendix), with the exception of a significant 'election year' coefficient for Other Capital expenditures. The latter is likely a by-product of the increases in construction

[17] though not shown by the table, the "election*limit" term is extremely close to being significant, with a p-value of 0.100262 and is therefore taken to be in the following analysis

[18] The sum of the "election" and "election*limit" coefficients.

spending[19]. Overall, this supports Drazen and Eslava (2010)'s hypothesis that PBCs occur in more visible (and flexible) categories. The lack of significance of total and direct spending PBCs also lends further support to their theory that PBCs are balanced across spending categories so as to leave aggregate spending roughly unchanged.

Per capita income and the lagged dependent variable were found to be consistently significant throughout all of the regressions. The governor's party is significant only for total, direct and intergovernmental spending. As expected given the fiscally conservative platform of many Republicans, Democrats are higher spenders overall, with total expenditure higher by $34.06 per capita. The percentage of the population under 18 is generally insignificant, with the exception of current spending, intergovernmental spending, and insurance benefits.

6.2. Re-Election Regression Results

To confirm our new hypothesis of a stronger positive selection effect in term-limited states, the first-term performance of re-elected is compared to that of non-re-elected governors for both term-limit regimes. A new dummy variable, "reelect", which takes a value of 1 for governors who were re-elected and 0 for those who weren't, is added to the dataset for this purpose.

The regression below is then run separately on first-term term-limited governors and first-term non-term-limited governors:

$$Y_{it} = \beta_1 ElectionYear + \beta_2 Reelect + \beta_3 ElectionYear \times Reelect + \beta_4 Y_{it-1} + \beta_5 X + a_i + b_t + \epsilon_{it}$$

Where X is a set of controls and $a_i + b_t$ are state and year fixed effects. The baseline of this equation are first-term, non-re-elected governors.

[19] both Other Capital and construction are *subsets* of capital spending: the increases in Other Capital could be due to the need for complementary expenditures to those in construction

The same OLS state-year fixed effects model with robust standard errors is used as in 6.1. This regression, however, is only run on the dependent variables which were found to be significant in 6.1, i.e. total, direct, capital, current and construction spending.

The variables of interest here are "reelect" and "election*reelect", the former being the average expenditure difference between re-elected and non-re-elected governors and the latter the difference in PBCs between the two. Unfortunately, the fact that they are run separately[20] prevents us from directly comparing aggregate spending and PBC amplitude between term-limit regimes. It is, however, possible for us to notice differences in independent variable significance between regressions.

We formulate the following two hypotheses: first, if second-term term-limited governors' positive PBCs are an expression of their real underlying policy preferences, we expect them to spend significantly more, for at least capital and current expenditures, than non-re-elected first-term governors. Thus, we expect "reelect" (β_2) and "election*reelect" (β_3) to be significant and positive for term-limited governors. Secondly, if the selection effect is stronger in term-limit regimes than in non-term-limited regimes, then both independent variables are more likely to be significant in the former than in the latter.

The tables below show the regression output for this regression:

[20] due to the aforementioned multicollinearity problem introduced by the "limit" term

Spending in Term Limited States between 1st Term Re-elected and non-Re-elected Govs					
	Dependent variable:				
	Expenditure Category				
	Total	Direct	Capital	Current	Construction
	(1)	(2)	(3)	(4)	(5)
Election Year	54.73	53.06	-5.82	30.68	0.48
	(48.90)	(43.06)	(12.66)	(50.78)	(10.52)
Re-Elected	109.29**	124.70**	37.47**	98.10	32.42**
	(54.76)	(60.83)	(17.00)	(72.36)	(15.81)
Election*Re-Elected	-81.10	-61.81	-12.12	6.91	-13.78
	(96.73)	(90.91)	(24.56)	(99.49)	(22.79)
%Population Under 18	-4,241.43	-983.39	1,450.39	-1,449.04	2,021.00
	(10,470.35)	(8,946.70)	(3,073.77)	(7,718.68)	(2,502.27)
Per Capita Income	0.07**	0.05*	0.01	0.03*	0.01
	(0.03)	(0.03)	(0.01)	(0.02)	(0.01)
Governor's Party	8.13	-22.98	2.42	-42.98*	0.90
	(21.28)	(18.69)	(9.33)	(24.11)	(7.95)
Lagged Dependent	0.55***	0.46***	0.37***	0.46***	0.32***
	(0.06)	(0.07)	(0.10)	(0.09)	(0.10)
N = 222					*p<0.1; **p<0.05; ***p<0.01
					State Year Fixed Effects OLS Model

Table 7: Re-Elected versus Non-Re-Elected Governors, Term-Limited States

Spending in Non-Term Limited States between 1st Term Re-elected and non-Re-elected Govs					
	Dependent variable:				
	Expenditure Category				
	Total	Direct	Capital	Current	Construction
	(1)	(2)	(3)	(4)	(5)
Election Year	201.86*	39.37	165.94***	22.15	136.63***
	(103.50)	(94.67)	(47.01)	(48.79)	(42.87)
Re-Elected	137.05	75.63	25.53	-5.74	30.42
	(92.70)	(58.38)	(40.86)	(44.10)	(32.84)
Election*Re-Elected	-92.33	-58.29	-103.21*	-38.77	-82.99
	(118.42)	(95.56)	(55.10)	(33.53)	(53.60)
%Population Under 18	-60,224.23***	-38,731.97***	2,627.01	-11,876.51	8,055.13
	(17,366.82)	(13,027.94)	(9,241.11)	(9,393.77)	(6,383.50)
Per Capita Income	-0.001	0.04*	-0.03**	0.03	-0.03***
	(0.02)	(0.02)	(0.01)	(0.03)	(0.01)
Governor's Party	109.03*	49.88	15.10	-15.52	12.65
	(60.19)	(44.16)	(18.31)	(37.52)	(15.62)
Lagged Dependent	0.12	-0.04	-0.06	0.12	-0.21
	(0.19)	(0.19)	(0.16)	(0.19)	(0.14)
N = 64					*p<0.1; **p<0.05; ***p<0.01
					State Year Fixed Effects OLS Model

Table 8: Re-Elected versus Non-Re-Elected Governors, Non-Term-Limited States

Both hypotheses find support in this regression: re-elected governors in term-limited states have significant "reelect" coefficients and do, in fact, spend significantly more on average in total, direct, capital and construction expenditures than their non-re-elected peers. In non-term-limited states, the sole

difference between re-elected and non-re-elected governors is that the former have smaller capital spending PBCs than the latter (those PBCs are, nevertheless, positive).

The smaller differences between non-term-limited governors could be explained (as briefly mentioned in section 4) by higher quality challengers, who would be attracted to non-term-limited states because of the higher future rents. Non-term-limited incumbents, facing stronger competition, would then find it harder to be re-elected. However, the higher rate of re-election of non-term-limited incumbents[21] discredits this alternate explanation.

Interestingly, this regression also finds significant positive first-term PBCs in total, capital, and construction expenditures for all non-term-limited governors[22]. The difference is likely due to the fact that the coefficients in 6.1. were too small to register as significant at the 10% level. The controls' sign and significance also differ depending on the term-limit regime analyzed, which is likely due to underlying differences between term-limit and non-term-limited states.

7. Conclusion

This research paper yields two main findings: first, non-term-limited governors were found to conform to our initial hypotheses, increasing more visible spending categories and decreasing less visible ones to keep the budget balanced. Those 'visible' categories were found to be capital and construction spending, corroborating a common finding in the literature: construction projects, though slow to complete, are no doubt very tangible to voters. Less flexible and visible categories, i.e. administrative expenditures such as interest on debt, salaries and wages, etc, were not found to be used for PBCs. Non-term-limited governors were also found to *decrease* their capital spending PBCs over time, as their signaling value diminishes[23].

[21] 64.04% against 56.03%, see section 4

[22] the corresponding coefficient in 6.1 is 'election*limit'

[23] though this is shown in Appendix Tables 9 and 10 to be driven partly by New Hampshire and Vermont.

Secondly, the use of PBCs by governors was found to vary significantly across term-limit regimes: for instance, current spending PBCs were negative for all non-term-limited governors and positive for second-term term-limited governors only. Though this difference may have been the result of an endogeneity problem, with voters in different term-limit regimes having different economic policy preferences, it does not explain the use of positive PBCs by 'Lame Duck' governors. An alternate explanation explored in this paper was that of a term-limit-induced truthfulness and selection effect, whereby term-limited governors are more likely to pursue the policies they favor in their first term of office, allowing those with personal preferences close to that of the electorate (e.g. favoring higher capital expenditures) to be re-elected. Section 6.2 found that re-elected governors in term-limited states did, in fact, have higher average spending than their non-re-elected peers, during their first-term, a difference not found in non-term-limited states. We propose that this finding, in conjunction to the second-term term-limited PBC, as evidence in support of the 'positive selection effect' hypothesis.

However, these results must be qualified for three reasons. The first is the afore-mentioned endogeneity problem. The second is the absence of a "limit" term in our initial regression, which prevents us from comparing differences in average spending across term-limit regimes. Thus, non-term-limited governors could spend differently in aggregate, substituting positive PBCs by higher overall expenditures. The third is that our key findings of positive, second-term term-limited governor PBCs is not satisfactorily explained by our theory, as those re-elected governors are not found to use PBCs during their first terms. A plausible alternative explanation for those second-term PBCs could be the presence of 'binding' constraints: for instance, term-limits might actually increase the value of a positive reputation for politicians by forcing them to (eventually) run for a different office[24]. Political parties may also create incentives for governors to use PBCs to 'hand over the baton'/office to their would-be successor. The interaction of term limits with other reputational constraints is an area of interest which would shed greater light on methods to minimize agent-principal problems in representative democracies.

[24] unlike non-term-limited governors, who can decrease PBCs over time as the value of signaling decreases

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Appendix

Tables

U.S. State Government Expenditure, 2004-2015						
	Dependent variable:					
	Expenditure Category					
	Intergovernmental	Other Capital	Subsidies	Interest on Debt	Insurance Benefits	Salaries
	(1)	(2)	(3)	(4)	(5)	(6)
Election Year	-14.80	-5.92*	0.23	1.33	7.42	11.18
	(12.26)	(3.23)	(2.03)	(2.04)	(8.11)	(12.13)
Term Number	3.02	0.60	0.85	0.14	1.70	7.18
	(6.60)	(1.53)	(1.48)	(1.17)	(5.69)	(9.33)
Election*Term	-29.08	5.47	-3.66	-1.62	-9.58	-12.25
	(19.63)	(3.78)	(3.69)	(3.43)	(16.37)	(14.56)
Election*Limit	4.70	3.19	3.02	-5.67	-4.83	-18.33
	(19.16)	(3.90)	(3.16)	(3.66)	(12.73)	(12.08)
Election*Term*Limit	13.57	-5.77	5.43	6.11	12.58	5.20
	(24.14)	(3.69)	(4.23)	(3.95)	(17.75)	(16.13)
%Population Under 18	5,730.49**	-225.20	2.79	-65.29	2,468.76**	-1,144.11
	(2,336.30)	(296.50)	(438.44)	(509.23)	(1,126.62)	(2,043.04)
Per Capita Income	0.02***	0.002***	-0.0004	-0.002**	0.001	-0.0003
	(0.01)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
Governor's Party	12.41**	0.14	1.29	-0.23	4.00	3.64
	(5.14)	(1.08)	(1.36)	(1.21)	(5.73)	(4.51)
Lagged Dependent	0.68***	0.34***	0.63***	0.71***	0.59***	0.70***
	(0.07)	(0.07)	(0.08)	(0.07)	(0.08)	(0.09)
N = 600						*p<0.1; **p<0.05; ***p<0.01
						State Year Fixed Effects OLS Model

Table 5: Initial Regression, Insignificant Dependent Variables

U.S. State Government Expenditure, 2004-2015					
	Dependent variable:				
	Expenditure Category				
	Total	Direct	Capital	Current	Construction
	(1)	(2)	(3)	(4)	(5)
Election Year	39.76	59.51	2.89	83.31	7.28
	(149.37)	(131.37)	(32.07)	(99.75)	(25.91)
Term Limit	-532.11***	-581.33***	-90.20***	-453.50***	-74.04***
	(58.83)	(56.64)	(15.51)	(48.56)	(13.67)
Term Number	8.81	-62.89	-17.39	-17.79	-16.45
	(89.44)	(68.88)	(12.66)	(57.32)	(11.09)
Election*Term	-35.28	-71.29	-7.42	-115.08	-8.25
	(299.49)	(307.51)	(38.39)	(260.60)	(32.53)
Election*Limit	-69.01	-62.48	-22.73	-23.90	-20.29
	(265.80)	(218.53)	(51.05)	(185.90)	(49.42)
Election*Term*Limit	180.37	205.97	21.30	259.90	18.95
	(413.84)	(363.16)	(68.18)	(294.31)	(60.07)
%Population Under 18	6,475.10***	2,119.22**	3,210.63***	-746.41	2,626.54***
	(1,116.84)	(991.20)	(262.29)	(722.17)	(252.90)
Per Capita Income	0.12***	0.10***	0.01***	0.06***	0.01***
	(0.01)	(0.01)	(0.002)	(0.003)	(0.002)
Governor's Party	52.53	-7.01	-13.78***	-36.47	-14.94***
	(38.32)	(54.18)	(4.52)	(48.83)	(4.26)
Lagged Dependent	-0.08***	-0.13***	-0.10***	-0.15***	-0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N = 600					*p<0.1; **p<0.05; ***p<0.01
					State Year Fixed Effects OLS Model

Table 6: Regression with 'Limit' Term, Significant Dependent Variables

Robustness Check

U.S. State Government Expenditure, No Outliers, 2004-2015					
	Dependent variable:				
	Expenditure Category				
	Total	Direct	Capital	Current	Construction
	(1)	(2)	(3)	(4)	(5)
Election Year	23.72	41.27	-8.28	44.21*	-2.30
	(32.62)	(27.61)	(10.03)	(24.44)	(8.33)
Term Number	25.28	22.15	-5.10	29.14**	-6.29
	(18.55)	(16.22)	(6.78)	(11.79)	(6.63)
Election*Term	-33.08	0.74	27.40**	-11.12	22.66**
	(65.54)	(53.21)	(11.35)	(48.77)	(10.70)
Election*Limit	-45.42	-34.33	27.60*	-54.57*	24.69
	(46.59)	(35.89)	(15.86)	(31.24)	(15.62)
Election*Term*Limit	36.13	12.48	-32.37	19.25	-28.80
	(71.56)	(57.13)	(20.24)	(52.99)	(19.59)
%Population Under 18	-3,292.49	-5,877.52	381.98	-7,215.57	861.05
	(5,601.12)	(4,825.31)	(1,733.99)	(4,424.94)	(1,549.44)
Per Capita Income	0.05***	0.03***	0.01***	0.02***	0.01***
	(0.01)	(0.01)	(0.005)	(0.01)	(0.004)
Governor's Party	38.13***	24.96***	7.14	6.92	6.86
	(10.54)	(9.26)	(4.63)	(10.56)	(4.28)
Lagged Dependent	0.72***	0.66***	0.52***	0.61***	0.52***
	(0.04)	(0.03)	(0.05)	(0.06)	(0.04)
N = 564					*p<0.1; **p<0.05; ***p<0.01
					State Year Fixed Effects OLS Model

Table 9: Regression excluding 'policy outliers', Significant Dependent Variables

U.S. State Government Expenditure, No Outliers, 2004-2015						
	Dependent variable:					
	Expenditure Category					
	Intergovernmental	Other Capital	Subsidies	Interest on Debt	Insurance Benefits	Salaries
	(1)	(2)	(3)	(4)	(5)	(6)
Election Year	-20.29	-6.35*	-0.14	1.57	6.38	14.60
	(13.03)	(3.47)	(2.24)	(2.24)	(8.56)	(13.51)
Term Number	2.00	1.11	-0.01	-0.31	1.78	10.91
	(6.60)	(1.62)	(1.37)	(1.23)	(5.82)	(8.77)
Election*Term	-29.64	5.02	-2.93	-1.88	-10.51	-16.55
	(20.05)	(3.85)	(3.69)	(3.55)	(16.72)	(14.72)
Election*Limit	-10.74	2.83	3.18	-7.41**	-6.49	-18.35
	(16.88)	(4.09)	(3.31)	(3.56)	(13.36)	(11.31)
Election*Term*Limit	21.23	-4.03	4.79	5.03	18.69	21.39
	(22.59)	(3.92)	(5.07)	(4.76)	(18.73)	(15.58)
%Population Under 18	3,102.34	-411.22	-138.04	-791.55	2,517.73*	-1,845.34
	(2,184.29)	(391.95)	(578.17)	(634.49)	(1,494.97)	(2,316.52)
Per Capita Income	0.02***	0.003***	-0.0004	-0.001	0.001	-0.0001
	(0.01)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
Governor's Party	12.96***	0.18	1.70	0.67	4.65	2.82
	(4.95)	(1.16)	(1.34)	(1.15)	(6.11)	(4.57)
Lagged Dependent	0.71***	0.34***	0.63***	0.67***	0.59***	0.71***
	(0.06)	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
N = 564						*p<0.1; **p<0.05; ***p<0.01
						State Year Fixed Effects OLS Model

Table 10: Regression excluding 'policy outliers', Insignificant Dependent Variables

The data overview in section 4 singled out New Hampshire, Vermont and Virginia as 'policy' outliers to the four-year, two-term limit norm exhibited by all other states. Those three states are therefore removed to verify whether our results are robust to these outliers. Using the same regression equation as in 6.1, we find the regression results above.

Overall, our regression can be said to be robust. Of our independent variables, our most interesting finding, that of the significant second-term term-limited PBCs hold for both capital and construction. The "election year" and "term number" coefficients for current spending also remain significant. The most notable changes are the positive first-term "election*limit" coefficient for capital (which we had already taken for significant in 6.1) and the loss of significance of "election*term*limit" term (though it remains significant at the 15% level). This implies the strength of the negative "election*term*limit" coefficient was partly driven by New Hampshire and Vermont, two non-term-limited states with a higher-than-average number of terms per governor. The controls' sign and significance are very close to those found in 6.1.