Political Competition, Policy and Growth

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1 Introduction

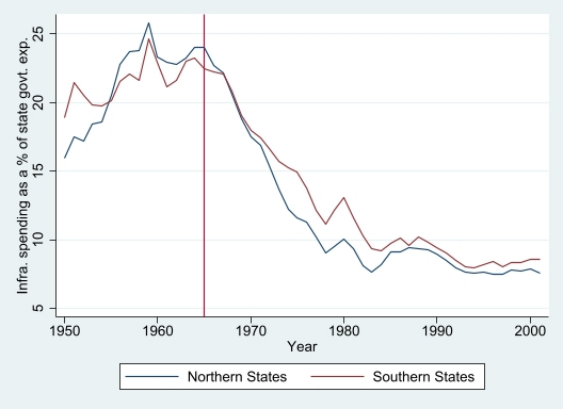
The authors in [1] have developed a theoretical model for determining the impact of political competition on the policy adopted by the government. The main implication of their theoretical model is that greater political competition prompts politicians to implement growth-promoting economic policies. As an extension to their main proposition, the authors also explore the reduced form relationship between economic growth and political competition. The designed model applies only to two party system scenarios. The authors choose the United States as their field of experiment because of the following reasons - the predominance of the two-party system, the ready availability of the election and economic data, and the existence of numerous treatment units.

The measure of political competition is constructed using data from [2]. The dataset reports the average vote share of Democrats in state s at time t - d_{st}. Political competition κ_{st} is calculated using $\kappa_{st} = -|d_{st} - 0.5|$. Note that it only varies between -0.5 and 0 and rises as κ_{st} moves closer to 0. While the US States have witnessed significant variation in political competition since its foundation, authors take particular advantage of the changes, brought in by the Voting Rights Act (VRA) (1965), in political competition in US South states to formulate a Differences-in-Differences (DD) model to test their propositions. VRA, 1965 enabled "black and poor white" citizens - who are a major part of the Republican voter base - to vote in the state elections. Their effective enfranchisement led to a sharp increase in political competition in the US South in the decade of 1960 which kept on increasing gradually afterward till it reached the level of political competition in the US-North (as shown in Figure 1d).

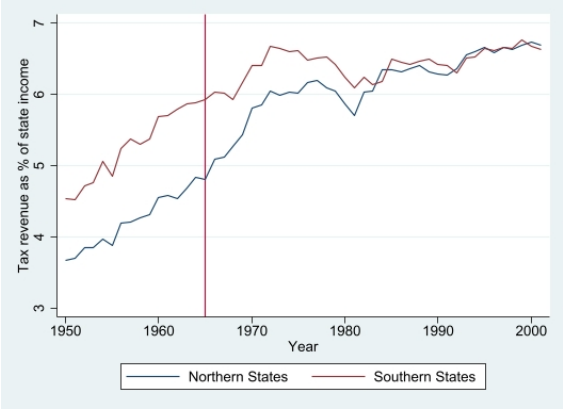
To measure the policy stance of a state government, authors use three different real-world variables - total state tax revenue as a percentage of state personal income (*share_taxes_inc*), percentage share of capital outlays in total state government expenditure (*share_cap_exp*) and whether a state has a right to work law (*rtw*). It is assumed that lower *share_taxes_inc*, higher *share_cap_exp* and the presence of *rtw* signify pro-growth economic policies.

1.1 Evidence regarding the validity of the DD exercise

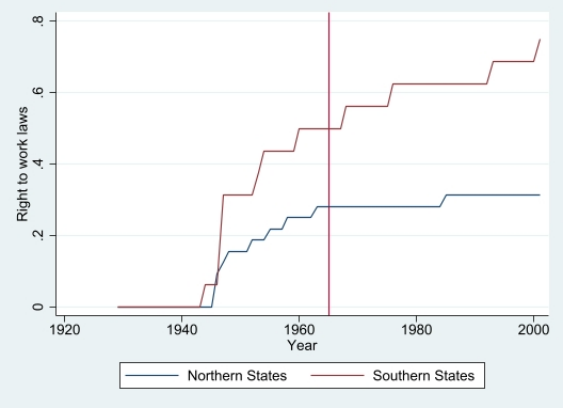
A necessary assumption for us to rely on the results of the regression DD method is to have parallel time trends in outcome variables. It would be more sensible to look for parallel trends in US South and North collectively rather than looking for trends in individual states. Tax revenue as a % of state income for the US South is greater than US North and their trends are parallel before 1965. After 1965, when the political competition in US South starts rising, % tax revenue of the US South does not rise as much as it should have had there been no change in levels of political competition. As a result, the gap starts to close and eventually, both trends merge with each other after the 1980s as depicted in Figure 1b. The fact that



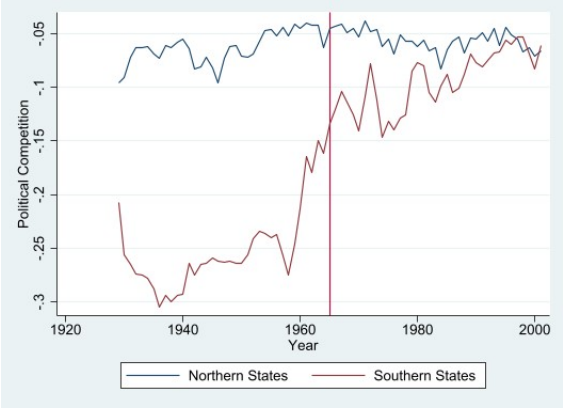
(a) Infra. spending as a share of govt. expenditure time trend for US South and North states



(b) Tax revenue as a share of state income time trend for US South and North states



(c) Presence of Right to work laws time trend for US South and North states



(d) Time trend in political competition for US South and North states

Figure 1: Graphs for checking "Parallel Trends Assumption"

the rise in political competition stymied the rise of "Tax revenue as a % of state income" for the South lends support to the authors' initial claim. Similar behaviour can be seen in the time trend of "Infrastructure spending as a % of state government expenditure". For the most part of the period before 1965, the outcome variable's level for US South is below that of the level of the North. After 1965, the outcome variable's level of the US South becomes greater than that of the North with trends in both sets of states following each other Figure 1a. Variable concerned with Right to Work laws also fulfill parallel trends assumption in a similar fashion as shown in Figure 1c.

2 Basic Results

2.1 Political competition and Policy

Regression Differences-in-Differences (DD) approach (equation 1) with political competition as the treatment variable has been used to analyse the main proposition. Results of this basic specification are presented in Columns (1), (2), and (3) of Table 1. Since outcome variables related to policy stances of state governments are broadly in conformity with parallel trends assumptions, the results of our approach would be reliable to a large extent. DD estimates for all the policy variables are significant at 1% level and have signs as we expected i.e.

rise in political competition leads to a drop in tax revenue as a % of state income, a rise in infrastructure spending as % of government expenditure, and increases the chances of having a right-to-work law.

Let's interpret the estimates. The estimate in Column (1) of Table 1 means that an increase in political competition by 0.3 (average increase in political competition in US South due to VRA, 1965) decreases the state tax revenue as a share of state income by 0.91% points. We can similarly see, from Column (2) of Table 1, that a 0.3 increase in political competition will lead to a rise of 1.49% points in infrastructure spending as a share of government expenditure. The best way to understand the coefficient on right-to-work laws policy variable is to treat it as the probability of having a right-to-work law. Hence, we can say that there is a 29.2% increase in the probability of having a right-to-work law if we consider the same change in political competition.

$$\tau_{st} = \theta_s + \upsilon_t + \delta\kappa_{st} + \epsilon_{st} \tag{1}$$

To allow for different trends in US South and North in a non-parametric way, basic regression DD has been tweaked by adding an interaction term between year and an indicator variable for 16 US South states. Note that this is not the same as allowing for state-specific time trends. Findings from this approach are very similar to the ones from the basic approach where the estimates of the coefficient on the political competition are significant at 5% level. The results are displayed in Columns (4), (5), and (6) of Table 1.

In another modification of the basic regression, political competition is instrumented with a variable that is a proxy for the intervention of the federal government in US South politics. This was necessary to remove the exogenous effect of the federal intervention in southern politics through the legislation of the 1965 VRA. Note that in the absence of the instrument, estimates for political competition are biased downwards. After adding the instrument variable, the absolute value of the estimates of the coefficient on political competition (Columns (7), (8), and (9) in Table 1) for all the policy variables increases and the estimates are still statistically significant. One additional benefit of performing the IV is that it would possibly remove the downward bias associated with measurement errors due to high-frequency fluctuations which poorly approximate the true level of political competition.

2.1.1 Robustness checks

To check if the results are not biased due to the ideology of the party which is in power, the authors control for the party affiliation of the governor and the party which dominates both houses of the legislature by introducing three new dummy variables. Since the dataset is such that either the governor is Republican or Democrat, we only need one dummy to indicate the party of the governor. However, we need two dummies to indicate which party controls both the state house and the senate because of the possibility that no party controls both the houses in which case the value of the two dummies would be zero, and if either party controls both the houses then one of the dummies would be one. The popular perception that the Republicans favour pro-growth policies more than the Democrats is reflected in the signs of the point estimates of the newly added dummy variables. However, the point estimates are not statistically significant. More important is the fact that the DD estimates are similar to the estimates of the earlier regressions with reasonable levels of significance. The detailed results are in Columns (1), (2), and (3) of Table 2.

One of the secondary implications of the authors' theoretical model is that both parties change their policy stance in the same direction when they get executive power. To check for this, the political competition variable (κ_{st}) is replaced by two variables that have interactions of political competition with the dummy which indicates the governor's party. The results

Table 1: Policy and Political competition : Basic results

Variables	(1) Taxes as a % of state income	(2) Capital outlays as a % of state expenditure	(3) Right-to-Work laws	(4) Taxes as a % of state income	(5) Capital outlays as a % of state expenditure	(6) Right-to-Work laws	(7) Taxes as a % of state income	(8) Capital outlays as a % of state expenditure	(9) Right-to-Work laws
Political competition	-3.036***	4.975***	0.973***	-2.362***	5.070**	0.817***	0.817***	8.459**	1.504***
	(0.590)	(1.651)	(0.221)	(0.662)	(2.449)	(0.242)	(1.325)	(3.656)	(0.306)
South-year interactions	No	No	No	Yes	Yes	Yes	No	No	No
Method	OLS	OLS	OLS	OLS	OLS	OLS	IV	IV	IV
Observations	2,496	2,496	3,504	2,496	2,496	3,504	2,496	2,496	3,504
R-squared	0.828	0.836	0.722	0.837	0.843	0.730	0.821	0.835	0.714

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Policy and Political competition : Robustness checks

Variables	(1) Taxes as a % of state income	(2) Capital outlays as a % of state expenditure	(3) Right-to-Work laws	(4) Taxes as a % of state income	(5) Capital outlays as a % of state expenditure	(6) Right-to-Work laws	(7) Taxes as a % of state income	(8) Capital outlays as a % of state expenditure	(9) Right-to-Work laws
Political competition	-2.312***	4.889***	0.760***				-3.295***	6.767*	1.011***
	(0.669)	(2.463)	(0.238)				(0.961)	(3.520)	(0.311)
Political competition x Democratic Governor				-2.853***	5.910**	1.071***			
				(0.830)	(2.829)	(0.247)			
Political competition x Republican Governor				-0.413	1.310	-0.287			
				(0.585)	(2.935)	(0.277)			
Democratic Governor	0.024	-0.240	-0.022	-0.119*	0.028	0.060**	0.017	-0.352	-0.024
	(0.055)	(0.213)	(0.015)	(0.063)	(0.325)	(0.024)	(0.088)	(0.330)	(0.025)
Democrats control both houses	0.167**	-0.586*		0.176**	-0.604*		0.220	-0.632	-0.103*
	(0.080)	(0.312)	-0.080***	(0.078)	(0.312)	-0.083***	(0.142)	(0.506)	(0.050)
			(0.029)			(0.030)			
Republicans control both houses	-0.117	0.075	0.088**	-0.111	0.064	0.084***	-0.193	0.124	0.129**
	(0.091)	(0.460)	(0.033)	(0.091)	(0.461)	(0.031)	(0.183)	(0.697)	(0.062)
South-year interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year sample	1950-2001	1950-2001	1929-2001	1950-2001	1950-2001	1929-2001	1950-1999	1950-1999	1930-1999
Method	OLS	OLS	OLS	OLS	OLS	OLS	5-year averages	5-year averages	5-year averages
Observations	2,478	2,478	3,467	2,478	2,478	3,467	479	479	671
R-squared	0.839	0.843	0.742	0.841	0.843	0.749	0.872	0.898	0.768

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

in Columns (4), (5), and (6) of Table 2 are broadly consistent with the model except for the policy variable of right-to-work law.

As a further robustness check, authors re-run the DD regression which controls for party affiliation of the governor and the dominant party in both the houses along with south-year interaction terms on lower frequency data by estimating five-year averages of all the variables used in the regression (Columns (7), (8), and (9) of Table 2). Estimates of the coefficient of political competition are close to the ones of the basic regression with acceptable levels of statistical significance. Even the point estimates of additional control variables are also consistent with the model's predictions.

2.2 Political competition and Economic Growth

Now we turn to study the effects of political competition on economic growth in the US States. Here also regression DD is the standard approach followed by authors. An additional term βy_{st-1} is added to allow for the Solow-style convergence of per capita income. Since income convergence implies that growth decreases as income increases, β must be negative. Equation 2 is our basic regression DD and it is found that growth is positively correlated with political competition consistent with the model's predictions (Column (1) in Table 3).

$$g_{st} = \theta_s + \upsilon_t + \beta y_{st-1} + \delta \kappa_{st} + \epsilon_{st} \tag{2}$$

The basic equation is modified by adding south-year interaction terms (Column (2) in Table 3) and instrumenting political competition with external federal intervention (VRA,1965) (Columns (3) and (4) in Table 3). The positive association between political competition and growth holds even in alternative specifications. The results are statistically significant to at least 10% level in all the specifications.

Table 3: Growth and Political competition : Basic results

Variables	(1) Personal Income Growth	(2) Personal Income Growth	(3) Personal Income Growth	(4) Personal Income Growth
Political competition	-0.045***	0.028**	0.082***	0.051**
	(0.013)	(0.013)	(0.020)	(0.022)
Lagged personal income	-0.095***	-0.104***	-0.105***	-0.108***
	(0.014)	(0.015)	(0.015)	(0.014)
Method	OLS	OLS	IV	IV
Observations	3,456	3.456	3,456	3,456
R-squared	0.651	0.677	0.649	0.676

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3 IV Model

An additional specification can also be explored in which it is assumed that growth depends on state policies and political competition acts as an instrument. Additional control variable, "Lagged personal income", has been controlled for to allow Solow-style convergence. Since three policy measures were considered throughout the essay, the model is tested on all of them. The results are presented in Columns (1), (2), and (3) of Table 4.

Although the results are consistent with our initial assumptions about the relationship between the policy variables and the growth, we need to make sure that the IV model satisfies three necessary assumptions - instrument relevance, exclusion restriction, and random assignment of the instrument.

Instrument relevance could be easily checked using the t-stat value from first-stage regression. As a rule of thumb, the instrument is considered relevant if the magnitude of the t-stat value is greater than 3.2.[3] The assumption is fulfilled only when the policy considered is "tax revenue as % of state income" (t-stat value is -3.26). The instrument is not relevant for the other two policies because the magnitude of first-stage t-stat values is less than 3.2.

Exclusion restriction requires that there is no direct channel through which the instrument (political competition) affects the outcome (growth). We are in direct violation of this assumption as we have already established that political competition affects growth in section 2.2. Even if the political competition is as good as randomly assigned, violation of instrument relevance and exclusion restriction is enough for us to cast doubts over the results of the IV regression.

Table 4: IV Model : Growth, Political competition (instrument) and Policy

Variables	(1) Personal Income Growth	(2) Personal Income Growth	(3) Personal Income Growth
Taxes as a % of state income	-0.015***		
	(0.007)		
Capital outlays as a % of state expenditure		0.009**	
		(0.005)	
Right-to-Work laws			0.079**
			(0.042)
Lagged personal income	-0.134***	-0.138***	-0.152***
	(0.036)	(0.043)	(0.046)
Method	IV	IV	IV
Observations	2,496	2,496	3,456
R-squared	0.491	—	0.591

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4 Extension : Further robustness checks

Further robustness check can be performed by assigning weights to the panel data observations according to the population of state 's' at time 't'. According to [4], regression estimates from our state-year panel should not be highly sensitive to weighting. It is also mentioned in [4] that "population weighting may also increase the precision of regression estimates". The results in Columns (1), (2), and (3) of Table 5 are consistent with the ones we obtained earlier except for the policy - "Capital outlays as a % of state expenditure" (*share_cap_exp*). The estimate for *share_cap_exp* is not only smaller in magnitude compared to estimates obtained earlier but is also not statistically significant. One of the reasons for the smaller magnitude could be that more populous states have an effect on *share_cap_exp* which is opposite from the effect observed nationally. To check this, basic DD regression is run on samples from the four most populous US states - California, Texas, New York, and Florida. DD estimate is -6.89 which is clearly opposite from the DD estimate (4.975) if the same regression is run on samples from all the states. Since weighted regression attaches more weight to observations of more populous states, it is expected that our estimate for the political competition is attenuated. Hence, it can be said that basic DD regression is robust against population weighting for policy variables - "Taxes as a % of state income" and "Right-to-Work laws" but not "Capital outlays as a % of state expenditure".

Table 5: Policy and Political competition : Further robustness check

Variables	(1) Taxes as a % of state income	(2) Capital outlays as a % of state expenditure	(3) Right-to-Work laws
Political competition	-3.444***	1.461	1.056***
	(0.536)	(1.883)	(0.221)
Method	Weighted	Weighted	Weighted
Observations	2,496	2,496	3,504
R-squared	0.850	0.859	0.773

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5 Conclusion

The main proposition of the authors' model that political competition drives the government to implement pro-growth policies is successfully tested using different specifications of DD regression (Tables 1 and 2). A positive association between political competition and economic growth is also established using a set of reduced-form regressions (Table 3). Although the suggested IV model produces results (Table 4) that make good economic sense, we should refrain from relying on them since they don't fulfill basic IV assumptions. To support the main narrative and as an extension to the original work of the authors, population-weighted regression is run on the state-year panel data to robustify our results. Similar results (Table 5) are found except for one of the policies.

References

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