



THE ECONOMIC APPROPRIATENESS OF POLITICAL ORIENTATIONS

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INTRODUCTION



Introduction

Conjecture:- Certain political orientations are better suited to certain forms of growth

Left Wing - Democrat

The progressive-left also champions the cause of social equality, in terms of the advocacy of women's empowerment, LGBTQ rights, and so on. Economically, this paper hypothesizes that the left-wing government will reduce income inequality

Liberal. Labour. Democrat.



Right Wing - Republican

This type of government tends to focus on efficiency, and prioritizes this efficiency over equality, therefore, right-wing leaders endeavor to improve growth, reduce unemployment, and attempt to improve productivity

Conservative. Nationalist. Republican.

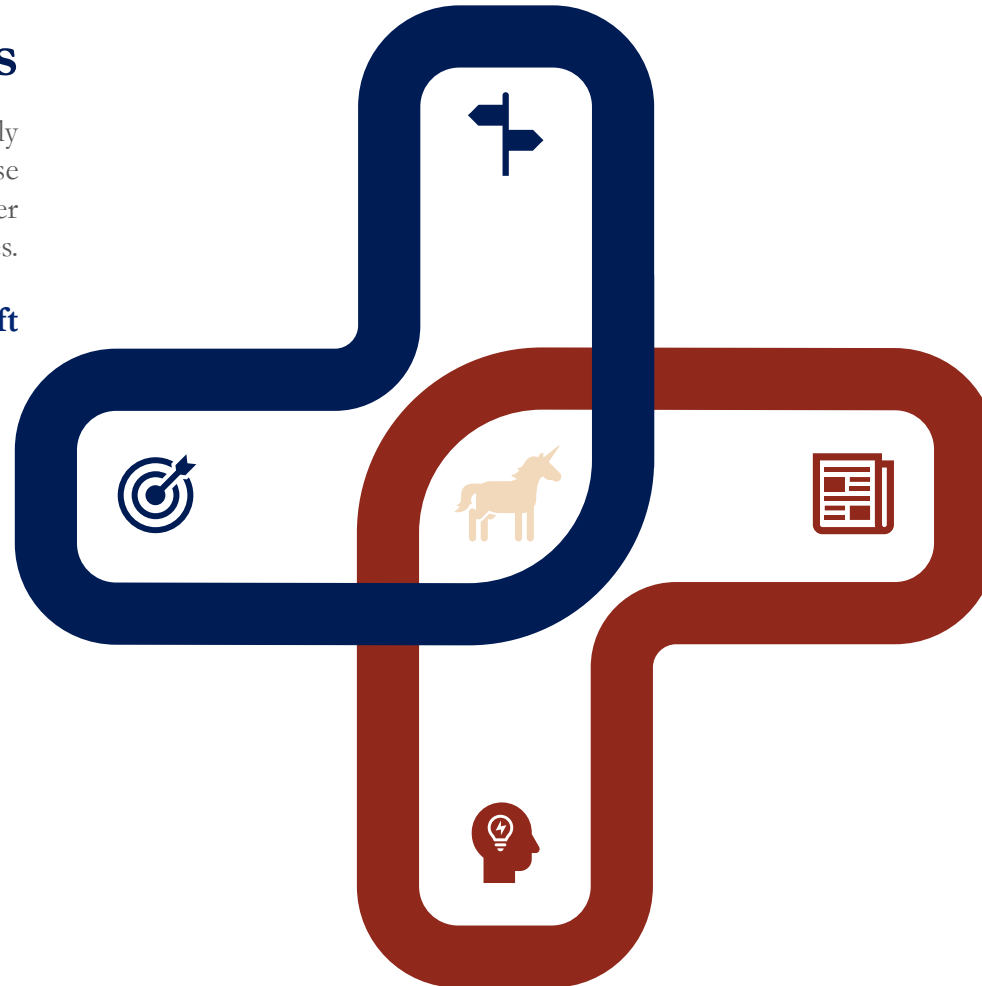
It will focus on shedding light on the hypothesis that right wing governments are more suited towards focusing on efficiency (measured by real GDP growth, and unemployment reductions) whereas left-wing governments are more suited towards reducing inequality (measured by changes in the personal incomes).

Assumptions And Considerations

2 Orientations

There are only two wings that follow two entirely different ideologies and policies, and that these policies and ideologies have been consistent over the 15 years this data measures.

Either Right or Left



Information Rationality

The people are well-informed about the GDP, unemployment and inequality growth rates and they actively use only this information to make voting decisions.

Perfect Information

Literature Review

- Many authors have worked on understanding the impact of democracy and democratization on growth, and have found significant results. Acemoglu and Robinson's seminal work in this field, *Democracy Does Cause Growth*, stands at the zenith of this trend.
- However, there has been little work that looks within a democratic nation and into the political orientations and processes that determine growth. Even when such work is done, it is most likely in a regional, often very esoteric context, for instance in the case of Ahrend, 2007 (*Speed of Reform, Initial Conditions or Political Orientation?*) who looks at political orientation on speed of reform in a Russian Context, or Cheliotis and Xenakis (2020) (*What's Left? Political orientation, economic conditions and incarceration in Greece under Syriza-led government*), who look at the Greek economy.
- Following this trend, we also use a regional approach, but in a modest attempt to defy convention, we intend to make this approach generic(non-esoteric).
- It therefore makes this piece of literature important to consider, as this is the first work in a series of many, hopefully by multiple authors, in a myriad of regions.

Data And Descriptive Statistics

A combination of 4 variables are used in this paper, in a panel data setting. These are given below:

Real GDP Growth



This variable has been procured by data from the Bureau of Economic Analysis (BEA). Since this data was gathered in quarterly intervals, the GDP Growth has been calculated using the annualized first quarter findings.

Governor Of State (GOS)



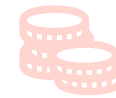
This has been encoded as a dichotomous (dummy) variable which denotes if the governor of the state was a Republican by the value 0, or a Democrat by the value 1, in each state at every year. In other words Republican = 0, and Democrat = 1 per this index. It has been manually collected. Alaska (2014-2017), and Rhode Island (2011-2012) have been coded as Democrats.

Unemployment Growth



Unemployment Rate data has been gathered from the Bureau of Labour Statistics (BLS). It has been gathered in annual intervals. We estimate unemployment growth using the percentage change formula.

Income Inequality Growth



This data has been gathered by using the Monthly Household Income Data from US Census archives, presented by IPUMS USA. To calculate income inequality, we are using the Interquartile range of the income distribution, and then normalizing this by the median

This study will utilize a panel data set comprising a state wise distribution of the 50 American States over a 15-year time-frame. Here, the Entity will be the State, and the Time will be the Year.



MODEL AND METHODOLOGY

Model And Methodology

A short summary of the whole paper is given below:

Fixed Effects Model

We used a within estimation as we conduct the analysis. This is because, the within estimator allows us to demean the values with entity specific averages over time, reducing the chances of Omitted Variable Bias in these regressions. It is important to note, as the within-estimator works on demeaning, it also removes the constant, and hence regressions below do not show 'constant' or 'Intercept' terms in the output

01

Fixed Effects Model



Random Effects Model

02

Random Effects Model

We also use the Random Effects Model, as it is more efficient than the Fixed Effects Model. The one area of concern however is that the unobserved changes in the dependent variable, must not be causing changes in the independent variable. In case that it is correlated, our estimator will lose its property of unbiasedness and asymptotic consistency.

Hausman Test

Hausman Test

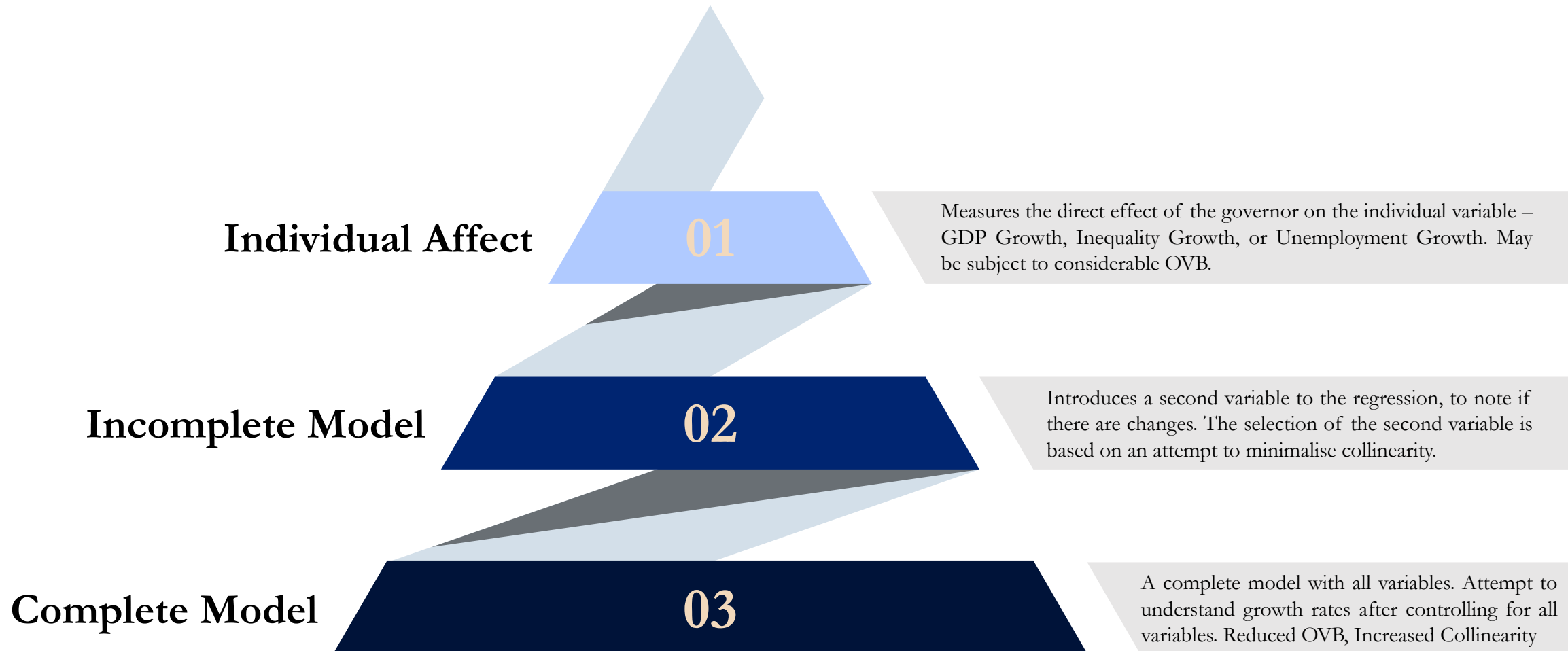
03

The Hausman Test, between Fixed and Random Effects, allow us to compare which model is better to be utilized in testing.



Model And Methodology

This methodology was followed for both fixed and random effects approaches.



Structure

S.No	Dependent Variable	Model 1	Model 2	Model 3
1	GDP Growth	GOS	GOS + Unemployment Growth	GOS + Unemployment Growth + Inequality Growth
2	Unemployment Growth	GOS	GOS + Inequality Growth	GOS + Inequality Growth + GDP Growth
3	Inequality Growth	GOS	GOS + GDP Growth	GOS + GDP Growth + Unemployment Growth

Including both the fixed and random, a total of 18 regressions are run following the above approach.

9 Regressions Each For Fixed and Random Effects Model

Don't worry! I'll only show you 6.

Okay, maybe worry a little.

Real GDP Growth

Random Effects shows statistically significant results. Republicans increase growth by 1.57 points, while Democrats increase growth by 1.17 points

Fixed Effects

```
Oneway (individual) effect Within Model

Call:
plm(formula = GDP_Growth ~ GOS, data = pdf, model = "within")

Balanced Panel: n = 50, T = 15, N = 750

Residuals:
    Min.   1st Qu.   Median   3rd Qu.    Max.
-13.22519 -1.17783  0.12507  1.46120  18.26552

Coefficients:
      Estimate Std. Error t-value Pr(>|t|)
GOS -0.39174    0.27429  -1.4282   0.1537

Total Sum of Squares:    5661.1
Residual Sum of Squares: 5644.6
R-Squared:              0.0029096
Adj. R-Squared: -0.068413
F-statistic: 2.03973 on 1 and 699 DF, p-value: 0.15368
```

Random Effects

```
Oneway (individual) effect Random Effect Model
(Swamy-Arora's transformation)

Call:
plm(formula = GDP_Growth ~ GOS, data = pdf, model = "random")

Balanced Panel: n = 50, T = 15, N = 750

Effects:
              var std.dev share
idiosyncratic 8.0753  2.8417 0.966
individual    0.2863  0.5351 0.034
theta: 0.192

Residuals:
    Min.   1st Qu.   Median   3rd Qu.    Max.
-13.5012  -1.3260   0.2229   1.4687   20.8247

Coefficients:
      Estimate Std. Error z-value Pr(>|z|)
(Intercept)  1.57627    0.16304  9.6682 < 2e-16 ***
GOS          -0.40809    0.22578 -1.8075  0.07069 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    6058.7
Residual Sum of Squares: 6032.3
R-Squared:              0.0043486
Adj. R-Squared: 0.0030175
Chisq: 3.26692 on 1 DF, p-value: 0.07069
```

Unemployment Growth

Both Fixed and Random Effects show statistically significant results. Both Democrats and Republicans increase the Unemployment Growth Rate in both models.

Fixed Effects

Oneway (individual) effect Within Model

Call:

```
plm(formula = Ugrowth ~ GOS + perchg_inc_ineq, data = pdf, model = "within")
```

Balanced Panel: n = 50, T = 15, N = 750

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-49.75960	-18.51702	-11.97660	-0.19887	332.77241

Coefficients:

	Estimate	Std. Error	t-value	Pr(> t)
GOS	8.78356	3.70263	2.3722	0.01795 *
perchg_inc_ineq	0.60597	0.30877	1.9625	0.05010 .

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 1034400

Residual Sum of Squares: 1019200

R-Squared: 0.014644

Adj. R-Squared: -0.057352

F-statistic: 5.18669 on 2 and 698 DF, p-value: 0.005808

Random Effects

Oneway (individual) effect Random Effect Model
(Swamy-Arora's transformation)

Call:

```
plm(formula = Ugrowth ~ GOS + perchg_inc_ineq, data = pdf, model = "random")
```

Balanced Panel: n = 50, T = 15, N = 750

Effects:

	var	std.dev	share
idiosyncratic	1460.22	38.21	1
individual	0.00	0.00	0

theta: 0

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-42.99454	-18.62910	-12.50650	-0.88046	350.63563

Coefficients:

	Estimate	Std. Error	z-value	Pr(> z)
(Intercept)	4.45082	1.83722	2.4226	0.01541 *
GOS	6.30088	2.73675	2.3023	0.02132 *
perchg_inc_ineq	0.59106	0.29585	1.9978	0.04574 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 1045900

Residual Sum of Squares: 1032200

R-Squared: 0.013113

Adj. R-Squared: 0.010471

Chisq: 9.92557 on 2 DF, p-value: 0.0069934

Inequality Growth

Both Fixed and Random Effects Models show statistically significant results. Random Effects model estimates that both governors will decrease Income Inequality rate, and the Fixed Effects Model predicts the inverse.

Fixed Effects

Oneway (individual) effect Within Model

Call:

```
plm(formula = perchg_inc_ineq ~ GOS, data = pdf, model = "within")
```

Balanced Panel: n = 50, T = 15, N = 750

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-47.491012	-2.283691	-0.025445	2.384277	29.051352

Coefficients:

	Estimate	Std. Error	t-value	Pr(> t)
GOS	1.04941	0.45182	2.3226	0.02049 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 15434

Residual Sum of Squares: 15316

R-Squared: 0.0076584

Adj. R-Squared: -0.063324

F-statistic: 5.39457 on 1 and 699 DF, p-value: 0.020486

Random Effects

Oneway (individual) effect Random Effect Model
(Swamy-Arora's transformation)

Call:

```
plm(formula = perchg_inc_ineq ~ GOS, data = pdf, model = "random")
```

Balanced Panel: n = 50, T = 15, N = 750

Effects:

	var	std.dev	share
idiosyncratic	21.912	4.681	1
individual	0.000	0.000	0
theta:	0		

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-50.155825	-2.399279	0.048291	2.550145	29.800878

Coefficients:

	Estimate	Std. Error	z-value	Pr(> z)
(Intercept)	-0.78375	0.22524	-3.4796	0.0005021 ***
GOS	0.59575	0.33752	1.7651	0.0775543 .

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 15852

Residual Sum of Squares: 15787

R-Squared: 0.0041477

Adj. R-Squared: 0.0028164

Chisq: 3.11542 on 1 DF, p-value: 0.077554

Hausman Test

The following tests recommend the use of a Random Effects as we do not reject the null. This is consistent for all 9 pairs of regressions.

Real GDP Growth

Hausman Test

```
data: GDP_Growth ~ GOS
chisq = 0.011014, df = 1, p-value = 0.9164
alternative hypothesis: one model is inconsistent
```

Unemployment Growth

Hausman Test

```
data: Ugrowth ~ GOS + perchg_inc_ineq
chisq = 1.1467, df = 2, p-value = 0.5636
alternative hypothesis: one model is inconsistent
```

Inequality Growth

Hausman Test

```
data: perchg_inc_ineq ~ GOS
chisq = 2.2812, df = 1, p-value = 0.131
alternative hypothesis: one model is inconsistent
```




CONCLUSION



Conclusion



GDP GROWTH RATE

The average Republican governor is expected to increase the real GDP Growth rate more than the average Democrat governor. Estimates from Case 2 (which controls for unemployment growth) inform us that the Republican governor can increase GDP Growth Rate by 1.65 percentage points. This aligns with our hypothesis that right-wing governments prioritize efficiency over equality and therefore increase GDP Growth rate.



INEQUALITY GROWTH

There is a case where Democrat governors can reduce inequality growth more than Republican governors, however, the more likely case is that Republican Governments reduce inequality growth more than Democrat governments. This could perhaps be because democratic influences aimed at development by redistributing incomes is not likely to be successful, when demands for lower classes and poorer sections of society are not likely to be compromised.



UNEMPLOYMENT GROWTH

In this scenario, we look at the unemployment growth rate, and we find that both Democrats and Republicans increase the unemployment growth rate, however, increases by Republican-led governments are smaller than increases by Democrat-led governments. This increase is magnified as we add variables to our model.



HAUSMAN TEST

All 9 Hausman Tests suggest the use of Random Effects over Fixed Effects.

Conclusion

A summary table comprising all results is shown below for ease of reference and understanding:

No. of independent variables	All Results								
	GDP Growth Rate			Unemployment Growth Rate			Inequality Growth		
	FE	RE (Democrat)	RE (Republican)	FE	RE (Democrat)	RE (Republican)	FE	RE (Democrat)	RE (Republican)
1	-0.39174 ()	1.16818 (.)	1.57627 (***)	9.4195 (*)	10.6406 (*)	3.9876 (*)	1.04941 (*)	-0.188(.)	-0.78375(***)
	GOS			GOS			GOS		
2	-0.1969053 ()	1.3958499()	1.6502641(***)	8.78356 (*)	10.7517(*)	4.45082(*)	0.973532 (*)	0.0042 ()	0.523334 (*)
	GOS + UGrowth			GOS + Income Change			GOS + GDP Growth		
3	-0.1398498 ()	1.3842299 ()	1.6012374 (***)	7.61475 (*)	14.58813 (.)	9.53248 (***)	0.9300185 (*)	-0.0839836 ()	0.4958220 ()
	GOS + UGrowth + Inequality Growth			GOS + Inequality Growth + GDP Growth			GOS + GDP Growth + UGrowth		

Fixed Effects

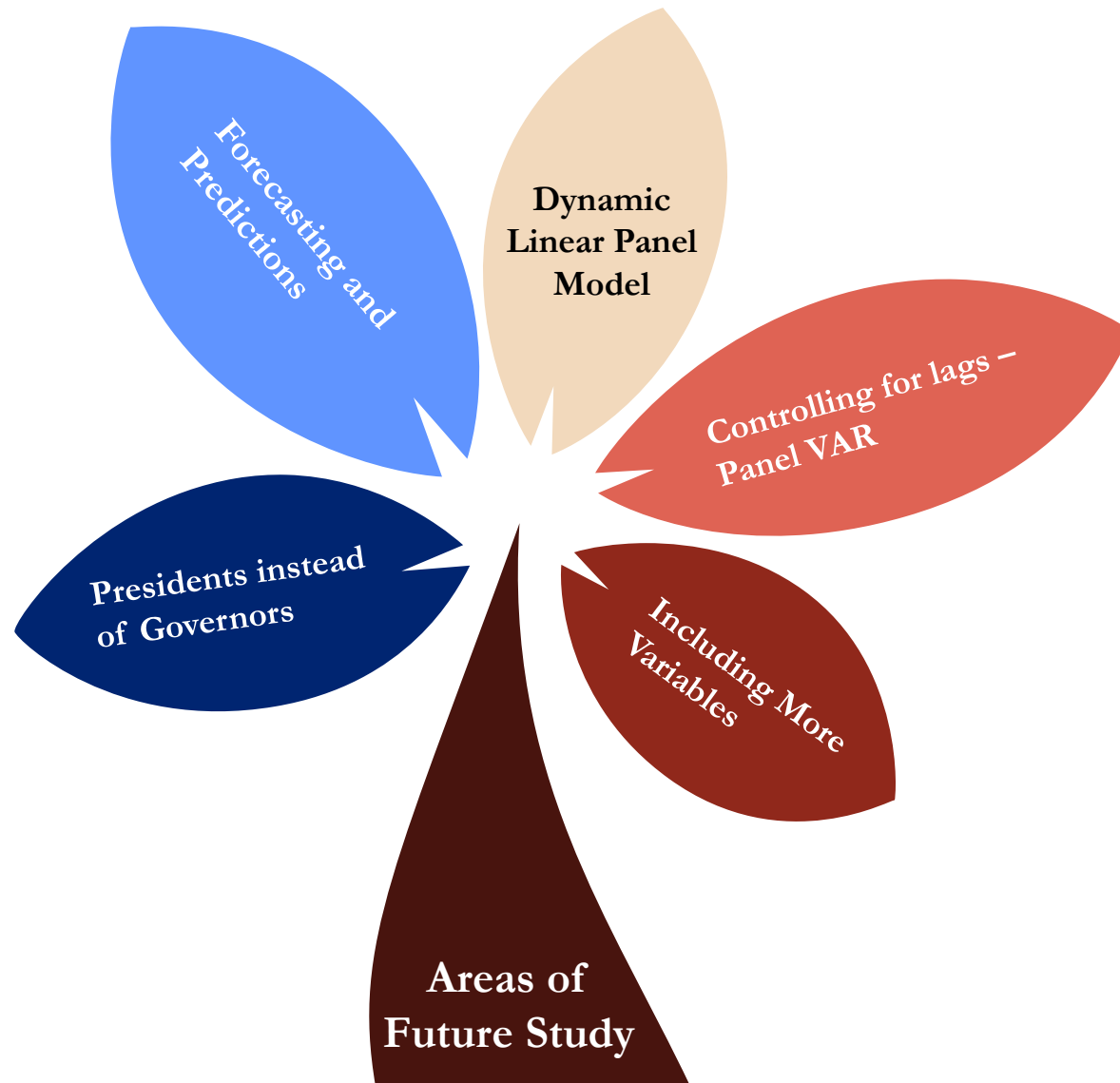
No. of independent variables	Fixed Effects Results		
	GDP Growth Rate	Unemployment Growth Rate	Inequality Growth
	Fixed Effects		
1	-0.39174 ()	9.4195 (*)	1.04941 (*)
	GOS	GOS	GOS
2	-0.1969053 ()	8.78356 (*)	0.973532 (*)
	GOS + UGrowth	GOS + Income Change	GOS + GDP Growth
3	-0.1398498 ()	7.61475 (*)	0.9300185 (*)
	GOS + UGrowth + Inequality Growth	GOS + Inequality Growth + GDP Growth	GOS + GDP Growth + UGrowth

Random Effects

No. of independent variables	Random Effects Results					
	GDP Growth Rate		Unemployment Growth Rate		Inequality Growth	
	RE (Democrat)	RE(Republican)	RE (Democrat)	RE(Republican)	RE (Democrat)	RE(Republican)
1	1.16818 (.)	1.57627 (***)	10.6406 (*)	3.9876 (*)	-0.188(.)	-0.78375(***)
	GOS		GOS		GOS	
2	1.3958499()	1.6502641(***)	10.7517(*)	4.45082(*)	0.0042 ()	0.523334 (*)
	GOS + UGrowth		GOS + Income Change		GOS + GDP Growth	
3	1.3842299 ()	1.6012374 (***)	14.58813 (.)	9.53248 (***)	-0.0839836 ()	0.4958220 ()
	GOS + UGrowth + Inequality Growth		GOS + Inequality Growth + GDP Growth		GOS + GDP Growth + UGrowth	



Areas of Future Study



Presidents instead of Governors

Perhaps we can attempt that this exercise in a time-series setting looking at US Presidential history over time

Forecasting and Predictions

Sufficiently sophisticated Machine Learning Models will allow us to create predictions about the governors who will go next.

Dynamic Linear Panel Model

A first differences Panel model is similar to the approach Acemoglu utilized in their study.

Controlling for lags - Panel VAR

This is controlling for lags and lagged effects, it may lead to more conclusive results.

Including More Variables

We have a very low adj-R2 and we know that adding more statistically significant variables would increase it and help explain the model better.



References

A list of the papers used as reference, information and guides whilst working on this paper

1. Acemoglu, Naidu, Restrepo, Robinson (2019). 'Democracy Does Cause Growth', Journal of Political Economy, 2019, 127:1, 47-100.
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8. Kohli, Atul. Review of Democracy, Economic Growth, and Inequality in India's Development, by Francine Frankel. World Politics 32, no. 4 (1980): 623–36.



Questions

“In the end, do we choose what is right? Or what is left?”





Thank You