Data Essay

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Hypotheses

This Essay intended to test the two following hypotheses:

Hypothesis 1: When legislative capacity is low, the president issues more executive orders under divided government than under unified government.

Hypothesis 2: When legislative capacity is high, the president issues as many executive orders under divided government as under unified government.

1) Operationalizing theoretical constructs

Dependent Variable: Count of executive orders

The count of executive orders issues by the president would be the dependent variable since we are interested in how the count of executive orders changes under different circumstances.

Key independent Variables: Divided Government and Committee staff size

To operationalize our theoretic construct of "divided government", a dummy variable of whether the government was divided is chosen. Since it is a dummy, the distribution of this variable is either 1 or 0, which 1 indicating the government is divided and 0 indicating a unified government. This dummy variable is chosen because it can directly reflect whether the government is divided or not.

Secondly, the committee staff size is chosen to operationalize the theoretic construct of "legislative capacity".

This is because the larger size of the committee staff was, the more likely they can constrain the President as mentioned in the "Explaining the Use of Executive Order section". One thing to note is that there is no data about the committee staff size of the Obama administration since 2009. Hence the observations starting from 2010 to 2013 were removed from the models to ensure smooth coding.

Controlled variables

Inflation

When inflation occurs, this often indicates the economy is doing poorly by common sense. Presidents have the incentive to bypass the Congress and implement responsive policies in time to save the economy via executive orders. Hence, inflation is also controlled in our models.

Presidential Expenditures

Presidents faced costs when issuing executive orders as shown by the Essay question paper. This suggested that the higher the presidential expenditures spent, the more likely the president uses executive orders. Hence, a variable representing presidential expenditures is also controlled.

Federal Spending as a percentage of GDP

Federal spending in US is mostly spent on social welfare and military. How much should be spent on them depends on different political and economic philosophies. If presidents wanted to push forward a radical reform in social welfare that either increases or decreases spending in social welfare, he has the incentive to use executive orders to ensure the reforms can be implemented without opposition from the Congress. Hence, federal spending is also controlled in the models.

Introduction of Legislative Reorganization Act (LRA)

The introduction of the LRA in 1946 led to a huge increase in the number of committee staff, which had a direct effect to one of our key independent variables, the committee staff size. If committee staff size truly has an effect towards the count of executive orders, it is likely that Presidents prior to 1946 could issue more executive orders than those after 1946 as presidents prior to 1946 would face a Congress with less legislative capacity. Hence, it is important to control whether the LRA is implemented in our models.

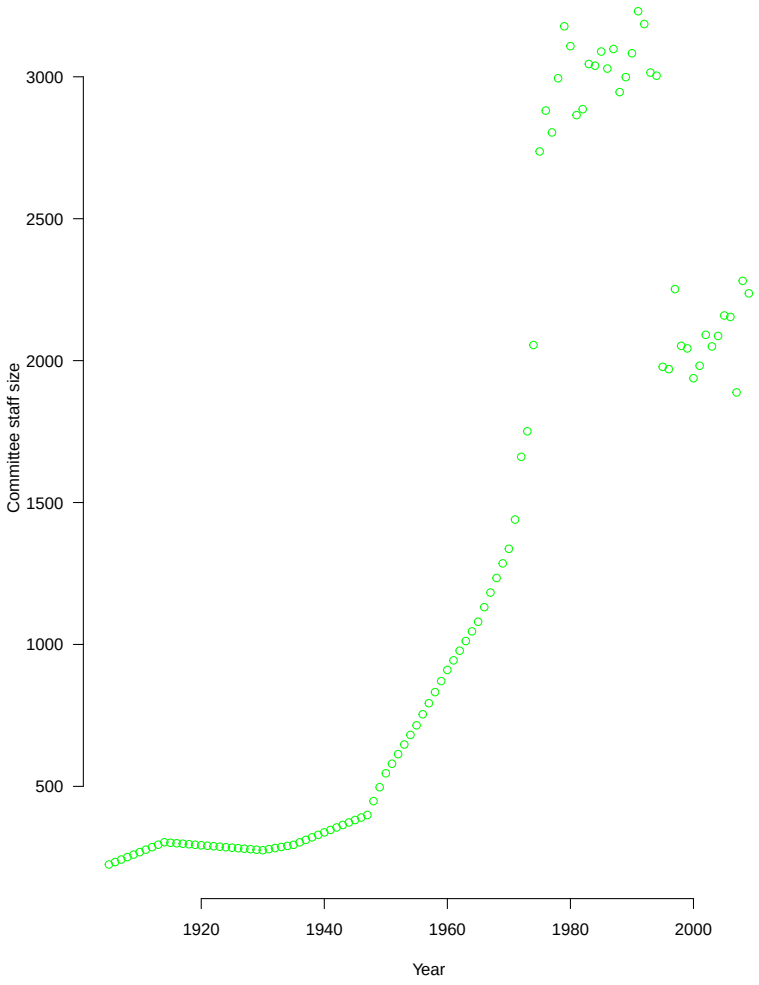
Changes of committee staff size from 1905− 2009
Committee staff size
3000
2500
2000
1500
1000
500
1920
1940
1960
1980
2000
Year

Figure 1:

2) Model Selection and Model Fit

Theoretically, the count of executive orders started from zero to possibly infinite, but it would never have a negative value. Hence, this determines we ought to apply count model in our statistical models. To further test whether we should use a Possion model or a negative binomial model for the analysis, two regression models were built, which contains only the key independent variables, with the only difference which one is Poisson distributed and one is negative binomial distributed. Log likelihood ratio test was performed and results show that negative binomial model is statistically significantly a better model than the Possion model. Hence, negative binomial models were adopted in this study in our regression analysis.

For the independent variables, the distribution of committee staff size is also examined and illustrated in the figure 1. Figure 1 shows that variable "committee staff size" is in fact log distributed. In response to skewness, this variable is logged. Log likelihood test was also performed to see whether which empirical variables best operationalize the concept of legislative capacity. Result showed that model using the logged variable "committee staff size" is statistically significantly indifferent from model using logged variable of "legislative expenditures". It therefore does not matter whether we picked which of them to use in our model. In this study, logged size of committee staff is adopted as our key independent variable.

For our controlled variables, log likelihood tests were also performed to see whether models with them are statistically significantly better than models without them. Other potential control variables for example, war, are not included because after performing log likelihood ratio tests, they are statistically significantly the same as not including them in the models. This explains why we only include the above control variables. Omitted variable biases were therefore avoided as these political and economic variables were all controlled now. This can help increase the robustness of our result if the effect and significance of our key independent variables did not change with the additions of these control variables.

In here, four regression models were built to test the effects of divided government and the size of the committee staff towards the number of executive orders used by presidents. The first model only included the key independent variables, while more political and economic control variables added to the second and gradually the fourth model. Below shows the negative binomial regression coefficients with standard errors in parentheses.

Table 1: Regression Results

	Dependent variable:			
	Counts of executiveorders			
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Divided	-0.157^{***}	-0.156^{***}	-0.137^{***}	-0.076^{***}
	(0.021)	(0.021)	(0.021)	(0.021)
logCommittee staff size	-0.815^{***}	-0.834^{***}	-0.725^{***}	-0.179^{***}
	(0.012)	(0.012)	(0.014)	(0.025)
Inflation		1.523^{***}	2.069^{***}	1.942^{***}
		(0.126)	(0.131)	(0.131)
Spending$_{p}ercentage_{G}DP$			-1.529^{***}	-1.487^{***}
			(0.109)	(0.109)
Presidential expenditures			-0.0001^{***}	-0.0001^{***}
			(0.00001)	(0.00001)
Prior to 1946				1.101^{***}
				(0.043)
Constant	10.280^{***}	10.354^{***}	9.856^{***}	5.693^{***}
	(0.070)	(0.070)	(0.077)	(0.180)
Observations	105	105	105	105
Log Likelihood	-545.717	-541.820	-530.674	-499.511
Akaike Inf. Crit.	1,097.433	1,091.639	1,073.348	1,013.022
Note:				*p<0.1; **p<0.05; ***p<0.01

Across all the models, we can see that whether the government is divided and the logged size of committee staff have statistically significantly negative effects towards the number of executive orders issues by the presidents. The results are very robust as the effect of both independent variables kept statistically significant and the direction of their effects remain the same respectively even with the introduction of additional control variables in the models.

Quantities of Interest

However, the coefficient table is not sufficient enough to draw any conclusion about the hypotheses since the hypotheses were interested in specific scenarios of the key independent variables that cannot be directly observed from the table. To test the hypotheses, we can calculate the first difference between the two specific scenarios for each hypothesis using the coefficients and the uncertainty around them via simulation. Specific scenarios were created

to test the hypotheses.

Scenarios for testing hypothesis 1

To test the first hypothesis, two scenarios were created with the following values. First, mean values of the all the control variables except the LRA in the both scenarios since they are continuous variables in nature. The median of LRA is chosen since it is a dummy variable.

As for the key independent variables, the first quantile of the logged committee size is selected to operationalize "low legislative capacity" in both scenarios. The only difference between the two scenarios is that whether the government is divided. The first scenario has coded 1 for a divided government and the second scenario is coded 0 for unified.

Scenarios for testing hypothesis 2

Two scenarios were also created to test the second hypothesis. Values of the control variables were the same as the values used for hypothesis 1.

For the size of the committee staff, the 3rd quantile was selected to operationalize the theoretic construct of "high legislative capacity". The only difference between the two scenarios is that one scenario is with divided governments, another scenario is with unified governments.

Below shows two first difference graphs with baselines showing the count of executive orders issued under a unified government, as well as two tables which show the mean of the first difference together with the 95 percent confidence interval surrounding it.

Table 2: First Difference between divided government and unified government under low legislative capacity

	values
confidence % 95 low	-10.094
First Difference (mean)	-6.348
Confidence %95 high	-2.485

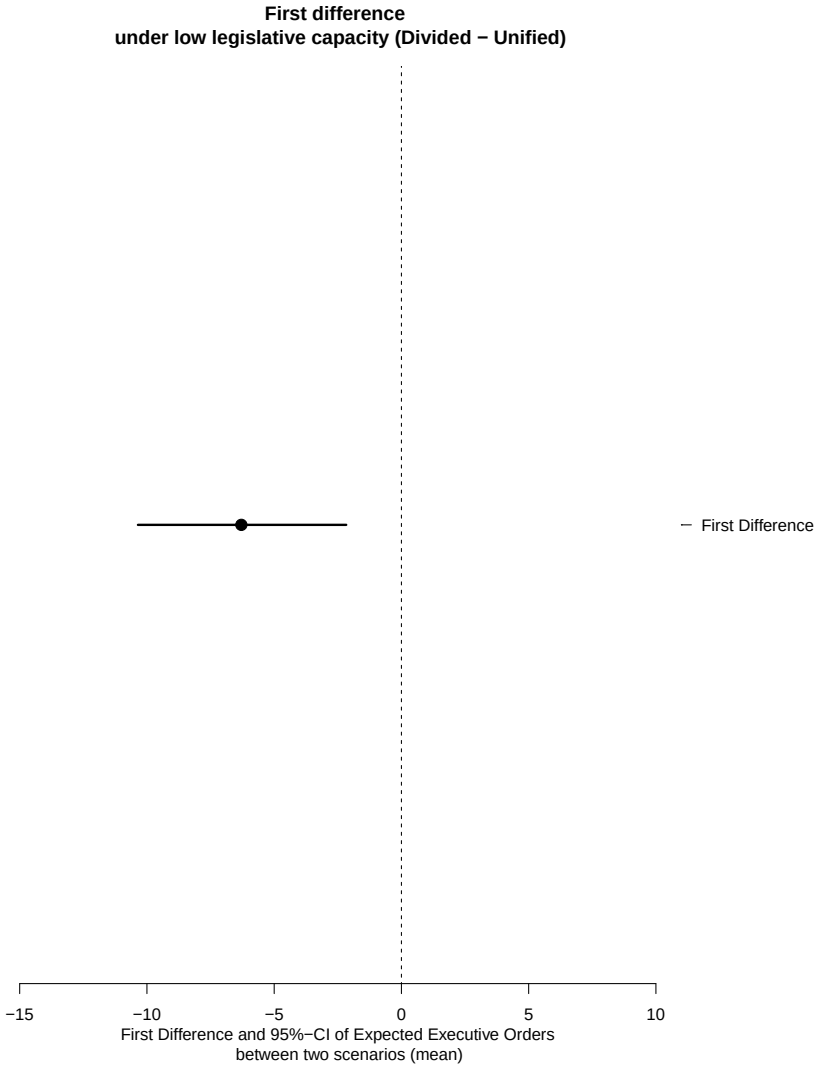

Figure 2: First Different Plot 1

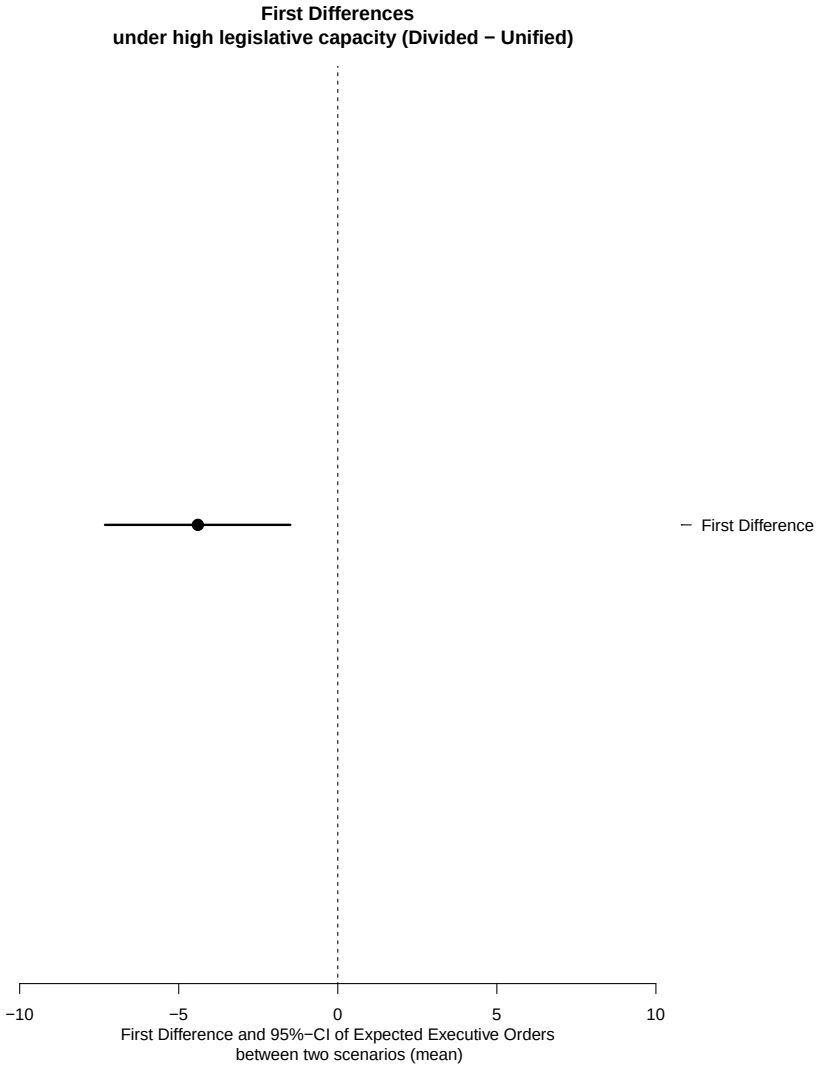

Figure 3: First Difference 2

Table 3: First Difference between divided government and unified government under high legislative capacity

	values
confidence % 95 low	-7.002
First Difference (mean)	-4.439
confidence %95 high	-1.666

From figure 2, there are a statistically significant different number of executive orders issued when the government is divided and unified when the legislative capacity is low. From table 2, it is expected that around 2 to 11 more executive orders being issued when the government is unified, compared to a divided government given the legislative capacity is low. If hypothesis 1 holds true, the first difference graph ought to have shown a positive first difference while 0 does not lie within the confidence intervals of the mean. This also shows that we can reject the first hypothesis when under low legislative capacity, the presidents actually issues more presidential executive orders under unified government than under divided government.

From figure 3, it shows there are statically significant different numbers of executive orders issued between a divided government and a unified government when the legislative capacity is high. From table 3, it is expected that 1 to 7 more executive orders being issued by the president when the government is unified, compared to a divided one given the legislative capacity is high. If Hypothesis 2 has to hold true, it is expected that 0 will lie within mean first difference confidence interval if the number of executive orders being issued is truly as many as under a divided government and under unified government. This further suggested that we should reject Hypothesis 2 too.

6) Limitations of this study

Conditional effect between the key independent variables

This study did not examine whether there was any interaction effect between our key independent variables since we are not interested in that in our hypotheses. However, by common sense, it is possibly that the two independent variables correlate with one another. In common sense, that under a divided government, the Congress majority party has a higher chance of opposing the executive orders of the President than under a unified government. The Congress might then want to hire more committee staff under a divided government to make sure they could constrain the president. Further studies could look into this matter to see whether adding a conditional effect variable can change the significance and direction of the coefficients.

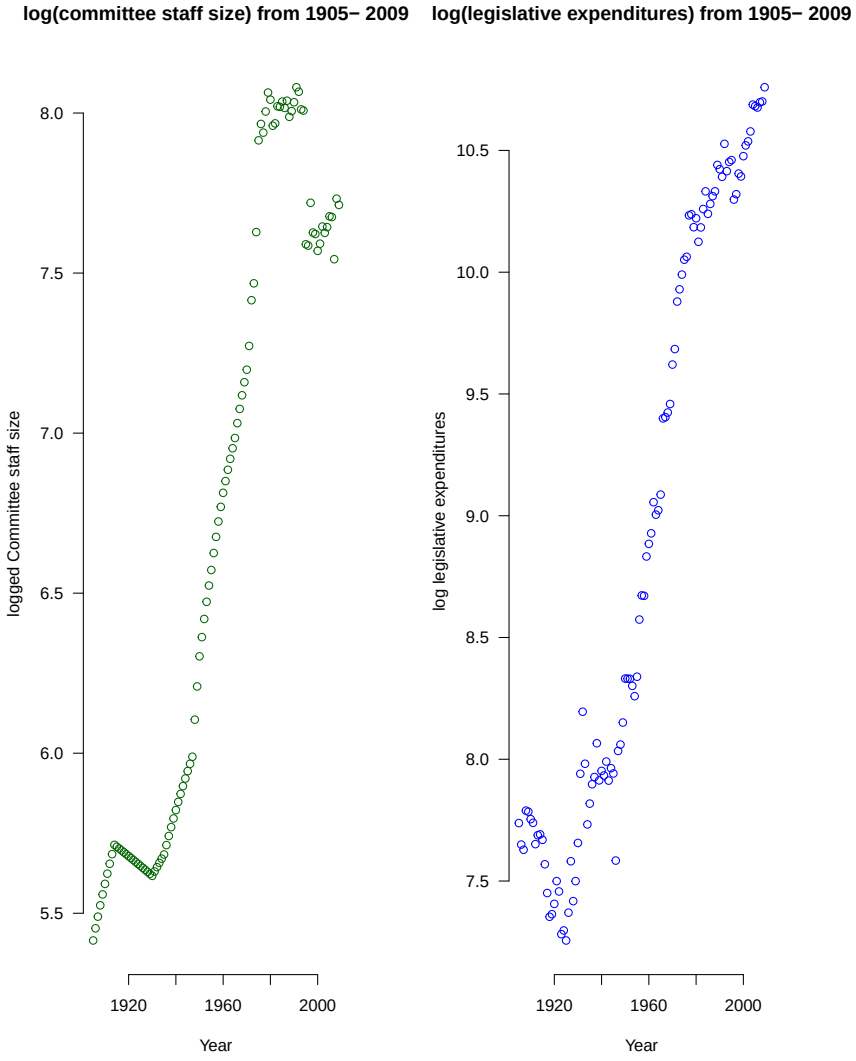
log(committee staff size) from 1905− 2009
log(legislative expenditures) from 1905− 2009
logged Committee staff size
log legislative expenditures
Year
Year
8.0
7.5
7.0
6.5
6.0
5.5
10.5
10.0
9.5
9.0
8.5
8.0
7.5
1920
1960
2000
1920
1960
2000

Figure 4:

Robustness test

As mentioned in the early part, both logged legislative expenditures and logged committee staff size can be used to operationalize "legislative capacity". Their distributions are also shown in figure 4. This suggest that in fact using the logged legislative expenditure to operationalize the theoretic construct of legislative capacity should not be a problem. However, due to limited space, models using such variable were not built. Further studies can also replace models in this study with logged legislative expenditures while keeping other variables the same. Had the result be the same as this study, this can further improve the robustness of this study.

The significant effect of LRA

We control LRA with the median when creating our scenarios to test the hypotheses via simulation. Unlike other control variables, whether the LRA is introduced should have a direct effect towards one of the key independent variables, the size of the committee staff. There is a high chance that legislative capacity and whether the LRA is introduced has an interaction effect. Figure 5 also showed that executive orders issued after 1946 significantly dropped compared to before 1946. This study did not do so as whether legislative capacity is conditional on LRA is out of our interest. Yet, further studies can look into the potential interacting effect between them.

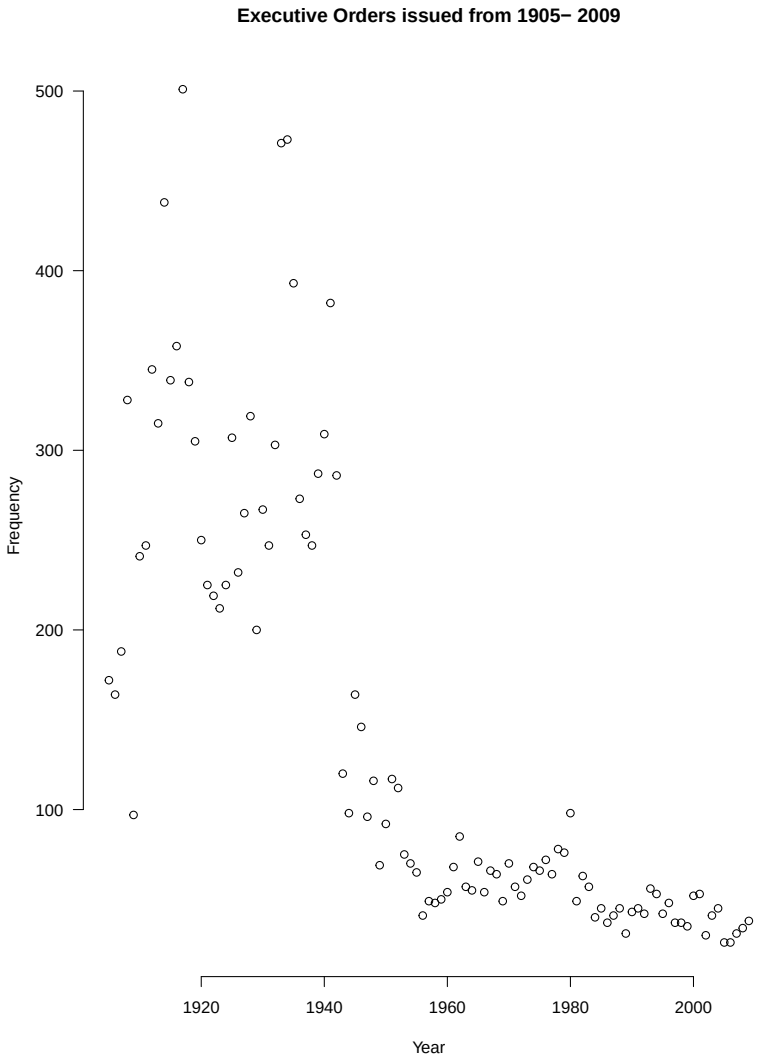
Executive Orders issued from 1905− 2009
Frequency
500
400
300
200
100
1920
1940
1960
1980
2000
Year

Figure 5:

7) Conclusion

This essay has studied how the count of executive orders issued change with different legislative capacity and the form of the government. Results show that we should reject both hypotheses and come to the conclusion that actually presidents issued more executive orders with a unified government than under a divided government, regardless the congress having low or high legislative capacity in our models. Limitations of this study are also discussed, which further studies can shed light on the interaction effects among the variables and increase the robustness of this study.