Blaine Taylor **Honors Thesis**

Is There an Association Between Partisan Control of State Legislatures and State General Obligation Bond Ratings?

Dedication: To Mom, Dad, & Ben, my committee members Professor Phil Mundo and Gerry Lian, and my amazing advisor Professor Jennifer Kohn

Abstract: This honors thesis seeks to find if there is an association between partisan control of state legislatures and state general obligation bond ratings. I compile the data for this thesis from a wide variety of sources and put it together into one Excel spreadsheet, since this data has never been put together before. I determined what data to collect and which variables to use in my regressions based on the findings of previous literature. I use ordinary least square, lagged dependent variable, fixed effects, fixed effects with lagged dependent variable, and Blundel-Bond regressions to determine an association. I use five regressions because OLS includes incorrect assumptions, which are corrected for in the following regressions. I find that an all Republican legislature is marginally suggestive of a positive influence on the general obligation bond rating for a state. Conversely, an all Democratic legislature is marginally suggestive of a negative influence. My results are only suggestive of an influence because the coefficient estimates become insignificant in all regressions following the biased OLS regression.

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Introduction

State general obligation bond ratings are a proxy for the economic well being of a state. Weiner (2013) explains that the affordability of a state's debt can affect its fiscal sustainability as well as its economic competitiveness**.** The three major rating agencies take into account many factors, both economic and political, when they assign a rating to a state. I look at the association between partisan control of state legislatures and state general obligation (GO) bond ratings. I seek to find if an all Democrat, all Republican, or mixed party legislatures is associated with higher state GO bond rating. Depending on the results, voters can recognize which party tends to help the GO bond rating for their state. Therefore, they can choose to elect a certain party into control if the voters only focus is to raise the rating of their state's bond rating.

I hypothesize that a unified government, either all Democrat or all Republican, will be better for the state GO bond rating than a mix of parties. Previous literature in Kreuger and Walker (2008) suggests that divided government increases the risk of bonds. By contrast, with unified party control, the opposing party will not be able to inhibit the party in control and the state will experience less political gridlock, a common issue in divided states. Policy solutions become delayed in many states because of the lack of an ability to reach a consensus, therefore, the bonds in these states will not be considered riskier and the ratings will be higher.

I cannot hypothesize whether an all Democrat or all Republican state will produce a higher bond rating on average. One of my main objectives of this study is to find if

either party actually helps the economic status of a state more, using GO bond rating as a proxy for economic well being. I developed my idea for this study because of my interest in why my home state of Massachusetts, typically Democrat, had a lower GO bond rating than Alabama, typically Republican.

I use the data from the ratings of Standard & Poor's (S&P), Moody's, and Fitch for all 50 states for the years 2000-2015. I identify the political party in control of the lower house, the upper house, and the governor of each state in order to examine the political connection to GO bonds. The empirical approach will be a regression involving variables that influence the rating for each GO bond. I use ordinary least squares (OLS), OLS with a lag, fixed effects, fixed effects with a lag, and Blundel-Bond regressions in this paper.

This study is important because it examines sixteen years and looks at all 50 states, if they were given a GO rating, to see how political parties impact the economic stability of the state**.** Previous papers, such as Osteryoung and Blevins (1978), analyze which states tend to be granted higher ratings based on characteristics like large population, large farming income, and little GO debt outstanding. This study differentiates itself because it examines the connection between political parties and the GO bond, which has not been done before.

After running the regressions, I find that a trend appears for the sign of the coefficients for the key independent variables, *AllRepublican* and *AllDemocrat*. These estimates do not maintain their significance after the ordinary least squares regression, so the changing significances influence the conclusions I make in the final section. Another

interesting result presents itself for the variable *FH*, who is in control of the U.S. House of Representatives. *FH* maintains a positive statistically significant coefficient in all regressions except the last. It gets dropped due to collinearity.

The following literature review references previous works related to the relationship between state GO bond ratings and partisan control of state legislatures. Next, I present the data for the paper. The following section details the model and methodology. This section will describe which variables were used and why they are necessary. The next section is the summary statistics for the variables. The section after the data will present the results from 5 different regressions plus five different sensitivity analyses. The last section will conclude the paper and include a discussion.

Literature Review

In order to begin this analysis of state GO bonds and partisan control of state legislatures, I review a multitude of articles that are relevant to my paper. In this section, I describe the five most important papers that I use in my analysis. I will identify each paper's main conclusion and how the authors' results influence my own data, methods, and understanding of the subject. Finally, I acknowledge the variables that each paper uses that I will also include in my regressions.

Many previous studies analyze the connection between partisan control of state legislatures and state general obligation bond ratings. An early work by Alt and Lowry examines how partisan control effects state spending and tax levels. Alt and Lowry (1994) find that divided government is less able to react to revenue shocks that lead to deficits. I believe that a similar effect will happen when the state GO bond rating experiences a shock. If a state's GO bond rating decreases, the governor, state house, and state senate must work together to address and fix the problem. A state where those three pieces do not work together collectively cannot respond in the same amount of time. Alt and Lowry (1994) use state personal income and state unemployment rate in their paper as variables so I have adopted them into my equation as well.

Alt and Lowry (1994) suggest that divided state government will most likely not be able to react and fix a negative shock to the economic well being of the state in time. They identify the fact that systemic partisan differences do exist between Democrats and Republicans and that both parties use different factors, like Democrats spending to

increase shares of state-level personal income, to drive state budgets. Krueger and Walker (2008) agree with this hypothesis and find considerable evidence that divided government and turnover, a change in party control, increase the risk of bonds. They state that evidence is stronger for divided government than turnover. The increased risk leads to uncertainty over the future of taxing and spending, which decreases the rating for state government bonds. Divided government from Krueger and Walker (2008) explains the higher risk and lower ratings while the variables previously mentioned from Osteryoung and Blevins (1978) explain the higher ratings and lower risk. A divided government does not have the capability to respond to shocks in the same amount of time as a unified state government. Dealing with the opposing party requires more teamwork and provides hurdles to putting in place policies to address economic issues. The more the parties debate and do not address the problems, the more time will pass and push recovery down the road.

Schelker (2010) takes a different approach to examine state GO bonds and looks at the link between auditor term limits and GO bonds. Schelker finds that auditors with a binding term limit are associated with higher GO bond ratings. Schelker (2010) explains that the magnitude of the effect is on average roughly 0.8 to 1 notches higher, based on his translation of letter ratings to numerical ratings, for states in which the auditor faces a term limit. For example, this results in an increase from AA to AA+ for an S&P rating.

Belasen, Hafer, and Jategaonkar (2014) link greater economic freedom from the federal government to higher bond ratings and puts forth a method of combining ratings. Belasen, Hafer, and Jategaonkar (2014) also find that state policymakers who indicate a

willingness to reduce the government's share of economic activity, reduce the tax burden, and allow for freer labor markets are more likely to see their state's bond rating rise and financing burdens fall. Without explicitly mentioning the Republican Party, I present three characteristics that align with that party's ideals and beliefs. Therefore, it would make sense if state's controlled by all Republicans had a higher bond rating than a mixed state. Table 1 presents which states, years, and rating agencies each of the studies uses.

Data

I collected the data for this study from a variety of sources. For each variable, I explain the coding and the source of the data. The coding and source of the variables can be found in Table 2.

The dependent variable, *Rating*, combines the three ratings from the major agencies (S&P, Moody's, and Fitch) into one variable using a method proposed by Belasen, Hafer, and Jategaonkar (2015). Table 3 visually displays the coding for the different ratings. The S&P rating is coded with 25 representing a rating of AAA down to 15 representing a rating of BB+. All ratings are as of the fourth quarter of the year (Ratings). The Moody's rating is coded with 35 representing a rating of Aaa down to 25 representing a rating of Ba1 and all ratings are as of the fourth quarter (Rating). The Fitch rating is coded with 19 representing a rating of AAA down to 9 representing a rating of BB+ and all ratings are as of the fourth quarter (U.S.). All three ratings are taken from the ratings agencies themselves. Each agency does not rate each state GO bond every year, so those points are not included in the calculation. S&P does not rate a state's GO bond in a year only 12 times, while Moody's has 67 such occurrences. Fitch does not rate a state in a given year by far the most, 201 times.

$$Rating = \frac{\frac{Rating_M}{35} + \frac{Rating_{SP}}{25} + \frac{Rating_F}{19}}{3}$$

First, each rating is divided by the maximum number of possible ratings for the rating firm. The S&P rating is divided by 25, Moody's is divided by 35, and Fitch's is

divided by 19. Second, the values are added together. If a state is not rated by a specific agency in that given year, it is not added with the others. Finally, the number of rating agencies that have rated that state in the given year, most usually 3, divides the sum.

The most important independent variable is the partisan control of state legislatures. To demonstrate partisan control, I use the party of Governor and which party is in control of the Senate and the House of Representatives of each state. To find out whether the governor is Republican, Democrat, or other, data is pulled from the National Governors Association. For the House and Senate, information is pulled from the Census, the National Conference of State Legislatures, the Book of States, and the Council of State Governments. Governor, Senate, and House of Representatives are collected in order to combine them into three categories: all three controlled by Democrats, all three controlled by Republicans, and any other mixture of political parties controlling the various three houses. *AllRepublican*, *AllDemocrat*, and *Mix* are dummy variables, so for a given state in a given year, one of the three dummy variables will have a value of 1 while the other two will be 0.

I use the other variables based on the data of previous studies and collect the data from a variety of sources. Osteryoung and Blevins (1978) find that high bond ratings are associated with states with small land area, large farming income, little GO debt, and large population. State population is collected from the US Census and is taken as of July 1st of that year. Unemployment is retrieved from the Bureau of Labor Statistics and is as of January of the given year. The political control of the federal legislature is hypothesized to be relevant because it has an impact on the state budgets and political

decisions. Who is in control of the Senate is collected from the US Senate website and is as of February of the given year. Who is in control of the U.S. House of Representatives was collected from History, Art & Archives from the United States House of Representatives. Both the Senate and U.S. House are coded with Republicans equal to 0 and Democrat equal to 1. The political party in control of the President is recorded from the Library of Congress and Republicans are recorded as 0 while Democrats are 1.

The GDP of each state is retrieved from the Bureau of Economic Analysis and is as of the middle of the given year. Since it is a numerical variable, it does not need to be coded but the GDP is given in millions of dollars. Personal Income by State is taken from the Federal Reserve Bank of St. Louis FRED (Federal Reserve Economic Data) and is as of the beginning of the year. Term limits are taken from the National Conference of State Legislatures and is shown numerical by the total year term limit.

Total taxes are from the US Census Bureau and are the combination of all state and local taxes together given in thousands of dollars. To determine if a state has a constitutional law restricting debt, a dummy variable was created with 0 representing a state that cannot have debt and 1 is a state that can have debt. Debt outstanding from each state is collected from the US Census and is shown in millions of dollars. Agriculture contribution to GDP is taken from the Bureau of Economic Analysis and is recorded in millions of dollars. Table 2 presents the different variables, their sources, and their coding. Table 4 explains the abbreviation for each variable and whether that variable is scaled or not.

Methodology

In order to analyze the relationship between partisan control and state GO bond ratings, I start with a base OLS model and then use different models to correct for likely violations of OLS assumptions. The core econometric issues are strong persistence in both the dependent and key independent variables, the presence of unobservables within each state, and the fact that there is not a large amount of variation in partisan control or bond ratings for some states. I address the issue of the persistence of ratings by including a model which lags my dependent variable, *Rating*. I address the problem of the constant unobservables by including a fixed effects model. While both of these models solve only one of the core issues in my analysis, the fixed effects with a lag model addresses both of these issues at the same time. Finally, the Blundel-Bond model addresses the persistence in partisan control by using two equations, in levels and differences, unlike the fixed effects with a lag model.

The OLS model for this paper, where *i* indexes State and *t* indexes year, is:

$$Rating_{it} = \beta_0 + \beta_1 AllDemocrat_{it} + \beta_2 AllRepublican_{it} + \beta_3 \mathbf{X}_{it} + \upsilon_{it}$$

AllDemocrat is when Democrats control the governor, house, and senate. *AllRepublican* is when Republicans control all three, just like for *AllDemocrat*. The third dummy variable is *Mix* and is left out of the model. Since *Mix* is left out, the coefficients for *AllDemocrat* and *AllRepublican* are interpreted relative to *Mix*, so a positive

coefficient shows a positive influence and a negative coefficient shows a negative influence as compared to *Mix*. ***X*** represents all of the control variables, including year fixed effects for this model and each model after, shown in Table 4.

Pooled OLS has certain assumptions. First it makes the assumption that last year does not impact the current year. In reality, the assumption is likely not true and the lag model addresses this issue. After running a correlation between the current year and the past year, I find that thirty states have a correlation above 0.75. This high of a correlation shows that the previous year has a large impact on the current year. Second, OLS makes the assumption that nothing within the states is unobservable and this assumption leads to endogeneity, when omitted variables may influence the dependent and independent variables. A clear unobservable in the state government is the quality of the legislators. Quality cannot be put into a variable, yet the skill the legislators have will have an impact on the economic condition of the state and the state GO bond. The fixed effects model helps with this problem because it differences out time invariant omitted variables.

The OLS model with a lag (LDV) for this paper is:

$$Rating_{it} = \beta_0 + \beta_1 Rating_{it-1} + \beta_2 AllDemocrat_{it} + \beta_3 AllRepublican_{it} + \beta_4 \boldsymbol{X}_{it} + \upsilon_{it}$$

In this model, I include the lagged dependent variable as another independent variable. The lagged dependent variable corrects for the assumption that OLS makes that today is independent from yesterday. If the bond rating agencies do not start with a blank piece of paper every year when they rate the bonds, then the OLS assumption of

independence would be violated. They consider the previous year's rating when making their decision for the new year because of political pressure not to have ratings fluctuate dramatically (Walker). States want their rating to only change slightly so that there will not be drastic changes to the price and riskiness of their bonds (Walker).

The fixed effects model (FE) for this paper is:

$$Rating_{it} = \beta_0 + \beta_1 AllDemocrat_{it} + \beta_2 AllRepublican_{it} + \beta_3 \boldsymbol{X}_{it} + \mu_i + \varepsilon_{it}$$

Where: $\mu_i + \varepsilon_{it} = \upsilon_{it}$

Fixed effects differences the current year from the previous year, and by doing so removes anything that has not changed. In this model, the error term is split into two parts. There is the time invariant fixed effects μ, which only has an "i" subscript and no time subscript because it is differenced away. Finally, there is the remaining "ε" iid error, independent and identically distributed, which now complies with OLS. The unobservable constants will therefore not be included in the model and cannot influence the coefficients of the key dependent variables. The quality of state legislators is one of the most important unobservable and time invariant factors for which that fixed effects controls. However, quality is impossible to quantify. Assuming quality is time-invariant, fixed effects removes this constant. Since fixed effects differences out the situations when the partisan control does not change, in reality, I am looking at a much smaller number of cases where the control changes. Although fixed effects helps with the

unobservables, it does not take into account the lag as well so I include the next model to address both.

The fixed effects model with a lag (LDV with FE) for this paper is:

$$Rating_{it} = \beta_0 + \beta_1 Rating_{it-1} + \beta_2 AllDemocrat_{it} + \beta_3 AllRepublican_{it} + \beta_4 \boldsymbol{X}_{it} + \mu_i + \varepsilon_{it}$$

This model incorporates both the fixed effects and the lag to correct for the problems of time invariant unobservable heterogeneity and rating agencies using last year's rating to determine the current rating. The problem with this model is that the differenced residual is likely to be correlated with the lagged dependent variable (Angrist and Pischke 245). Also, Nickell (1981) explains that in fixed effects with a lag, there will be dynamic panel data bias.

The Blundel-Bond model (BB):

1) $$Rating = \beta_0 + \beta_1 Rating_{it-1} + \beta_2 AllDemocrat_{it} + \beta_3 AllRepublican_{it} + \beta_4 \boldsymbol{X}_{it} + \mu_i + \varepsilon_{it}$$

2) $$\Delta Rating = \beta_1 \Delta Rating_{it-k} + \beta_2 \Delta AllDemocrat_{it} + \beta_3 \Delta AllRepublican_{it} + \beta_4 \boldsymbol{\Delta X}_{it} + \Delta \varepsilon_{it}$$

I use the Blundel-Bond model because of dynamic panel data bias, while addressing strong persistence in the independent variables is a bonus. BB fixes the problem that the residual is correlated with the lagged Rating variable that I run into in the fixed effects with a lag model (Angrist and Pischke 245). This model uses instrumental variables to yield more unbiased results. Instrumental variables are separate

variables that identify and correct for casual relationships between variables and endogenous variables. The Blundel-Bond model uses prior lags of endogenous variables as instruments. Although the model uses instrumental variables, it may become very unstable with too many instruments (Roodman). The lack of variation hurts the ability of OLS and fixed effects to identify unbiased coefficients, while Blundel-Bond can withstand the fact that partisan control does not change frequently.

In order to analyze the relationship between partisan control of state legislatures and state GO bond ratings I have to look at a variety of regressions. The simple OLS regression includes assumptions that become violated in the real world. The following regressions of LDV, FE, LDV with FE, and BB each address separate issues that arise in the OLS regression. LDV adjusts for the assumption that each year's rating is independent of the previous year. FE differences out time-invariant factors, like quality of legislators, and unobservables. LDV with FE combines the strategies of LDV and FE into one regression but introduces dynamic panel data bias. BB fixes this bias with instrumental variables and equations in both differences and levels. These five regressions help identify and correct for econometric issues but do not present a clear understanding of the data. The summary statistics show the contents of the data. To better understand the influence of partisan control on bonds, I must first determine how often they change control or ratings. Transition matrices show the changes in the key variables from year to year.

Summary Statistics

Table 5 and 6 present the summary statistics. Table 5 presents the summary statistics for the dependent variable, the variables that are used to create the independent variable, and the variables that are used to determine if a state should be AD, AR or Mix. SP25, Moodys35, and Fitch19 are the variables used to create the dependent variable, following the methodology of Belasen, Hafer, and Jategaonkar (2015). I divide the state bond rating by the total number of possible ratings for each agency. SP25, Moodys35, and Fitch19 do not have 800 total observations because every state may not be rated by every agency every year. As can be seen in Table 5, S&P rates the most while Fitch rate the least. On average, Moody's rates the state GO bonds slightly higher than S&P because Moodys35 has a mean of 0.9534 and S&P has a mean of 0.9383. Fitch on average rates the bonds the lowest with a mean of 0.9245. One of the most important things that the summary statistics make apparent is that the mean rating, 0.9394, is very close to 1, which would only happen if all three agencies gave the GO bond the highest possible rating. The ratings close to 1 show that the rating agencies tend to rate the GO bonds very high, which means that the bonds have little risk. While collecting the data, I observed high ratings, as can be seen by the means all being above 0.9, and the implication of low risk for state GO bonds is well known in the bond market (Kreuger and Walker 2008). After U.S. Government bonds, state GO bonds are considered one of the least risky bonds in the market.

Table 6 shows the mean, standard deviation, minimum, and maximum for all of the independent variables. AD has a mean of 0.2188, which means that states are completely controlled by Democrats 21.88% of the time. On the other hand, AR has a mean of 0.2913, so Republicans control the state 29.13% of the time. States are mixed 48.99% of the time since it is the difference of 100% and the combination of AR and AD. Republicans control the states more often than Democrats, but it is much more likely that a state is mixed. The mean unemployment level is 5.71% and the mean percent of GDP given by agriculture is 1.67%. The mean state population is 6.03 million while the mean state debt outstanding is $23.63 billion and the mean state GDP is $277.58 billion.

The mean of 0.5 for President shows us that half of the time, for the years I am analyzing, the President is a Republican and half of the time he is a Democrat. Democrats control the U.S. House of Representatives 25% of the years I analyze while the Democrats control the federal Senate 56.25% of the time. If the Democrats stay consistent to their party ideology, this will effect the federal spending originated in the U.S. House of Representatives and in turn, the amount that states have to spend. The means for the U.S. House and U.S. Senate show me that Democrats control these two houses slightly more than 50% of the time while Republicans control the Governor more often.

In Tables 7, 8, and 9, I present the transition matrices for the key variables *AllRepublican*, *AllDemocrat*, and *Mix*. In Table 7, states where Democrats control the Senate, House, and Governor stay all Democrat 81.55% of the time and switch to either all Republican or mixed 18.45% of the time. On the other hand, in Table 8, states where

Republicans control the Senate, House, and Governor stay all Republican 90.48% of the time and switch to either all Democrat or mixed only 9.52%. Mixed states remain mixed even less, 83.87% of the time, and change to either all Democrat or Republican 16.13%. The small percentage of times that control changes shows that there is a high degree of consistency of partisan control within the states, which does not help my regression analysis. When states do not change partisan control, then they do not contribute to the effect. The more that states do not change partisan control, the harder it is for me to say that changing partisan control effects state GO bond rating. I am trying to see whether a change to all Republican or Democrat helps or hurts a state's GO bond, and if the states only change from mixed to all one party 16.13% of the time, then those are the only cases I can examine in the fixed effects model.

Table 10 presents the results from a correlation between *Rating* and *Rating* lagged one year for each state and the total, which gives the correlation between T and T-1. The correlation between the current and past year shows that the previous year's rating has a large influence on the current rating and that, as much as possible, the rating agencies avoid drastic changes, like AAA to A. These correlation results justify the usage of the lag model. There are three states in the correlation results that have negative numbers: Arizona, Connecticut, and Kentucky. These three states are negative because of a small number of extreme changes. For example, in Arizona, the coefficient for *Rating* drops from a 0.9143 in 2000 to a 0.6318 in 2001. The large drop from one year to the next creates an extreme change in the correlation of *Rating* and *L.Rating* and results in a negative overall correlation for the state. There are six states that have an undefined

correlation because *Rating* does not change in the whole time period I analyze. Delaware, Georgia, Maryland, Missouri, Utah, and Virginia all maintain the highest possible *Rating*, 1, during the whole time period and therefore have an undefined correlation between this year's rating and last year's. The six states that are undefined cause a limitation on my research and analysis because I try to identify the effect of changing partisan control on bond rating, but if the bond rating never changes, I cannot determine any influence from partisan control.

Results

In this study, I search for an association between partisan control of state legislatures and state GO bond ratings. To achieve this pursuit, I conduct five regressions and first present their results. Next, I discuss my interpretation of the results. Finally, I present five different sensitivity analyses to see the difference in the results as compared to my initial regressions. I change the *Rating* variable and time components of *AllRepublican* and *AllDemocrat* in the sensitivity analyses.

The first regression uses an OLS model. The first assumption to run OLS is that the rating agencies think of each year as independent with no influence from the previous year. In reality, they use the information they collected and the rating from the previous year to decide on a new rating or to maintain the same rating. The second OLS assumption discussed in the Methodology section is not true because there are many unobservable factors that influence a state's GO bond rating, like the quality of state legislators and the state's relationship with the rating agency. Unobserved factors that are correlated with both partisan control and state bond ratings will cause biased OLS estimates. The following regressions after OLS correct for the different assumptions.

The first column of Table 11 shows the results of the OLS regression with the coefficient and the standard error below. This regression had 800 observations with each state in each year being its own unique data point. The constant and the variables *AllRepublican, AllDemocrat*, *UR*, *FH*, *SDO*, *POP*, *GDP, TLH, PGDPAG*, and *TGDP* are all found to be at least marginally statistically significant with a p-value less than 0.10.

An interesting finding is that *AllDemocrat* has a -0.008 coefficient while *AllRepublican* has a positive coefficient of 0.012. Since these are both dummy variables, the coefficient is in comparison to the variable *Mix*, which was left out of the equation. A positive coefficient demonstrates that compared to *Mix*, a state legislature controlled entirely by Republicans increases the dependent variable, *Rating*, by 0.012, all else held equal. On the other side, a state legislature controlled entirely by Democrats lowers the dependent variable by 0.008, as compared to a legislature controlled by a mix of the parties, all else held equal. Even though the OLS regression seems to present significant results, the results are only marginally significant and I suspect there is bias, correlated omitted variables and unobservable homogeneity, so I cannot conclude a strong result.

By using the *L.Rating*, I can fix the assumption that last year has no impact on this year, but it does not help with the unchanging unobservable aspects from year to year. Regression two in Table 11 shows the results of the LDV regression. I use this lagged rating because rating agencies do not rate these GO bonds starting from a blank piece of paper every year. The lagged rating corrects for the assumption in OLS that the rating agencies consider each year independent. Including a lag allows me to start with a value in *L.Rating* that explains the influence of the previous year on the current year's bond rating. The other coefficients change if they are influenced by the absence of a lag in the OLS model. This regression had 750 observations, since the first year is left out because there is nothing to lag with the first year. The constant and the variables *L.Rating, AllRepublican, UR, PIS, and FH* were all found to be at least marginally statistically significant with a p-value less than 0.10. The most important piece of the second

regression is that *AllDemocrat* and *AllRepublican* maintain their respective signs, even though *AllDemocrat* becomes statistically insignificant. *AllRepublican* stays significant in this regression but is still only marginally significant, a p-value below 0.1 instead of 0.01 in OLS. Even with a lag, as compared to *Mix*, *AllRepublican* is marginally significant with a much larger coefficient than *AllDemocrat*, 0.005 and -0.0007 respectively. The change in the coefficient estimates in the lagged model indicates a degree of bias in the dependent variable.

The FE model in column 3 of Table 11 controls for the time invariant unobservable factors that rating agencies consider about state GO bond ratings. If the unobservables matter, then the estimates will change in this regression, and they do. This regression had 800 observations and removes the lag from the previous equation. The constant and the variables *AllRepublican, UR, PIS, PRES, FH, and TLH* are all found to be at least marginally statistically significant with a p-value less than 0.10. This regression maintains the pattern of a positive coefficient for *AllRepublican* and a negative coefficient for *AllDemocrat*. Even with fixed effects, the signs of the coefficients stay negative for *AllDemocrat* and positive for *AllRepublican*. While the signs stay the same, these results become statistically insignificant. Therefore, the signs only suggest a relationship between partisan control and its influence on bond rating.

Column four shows the results of the FE with LDV model. I use the fixed effects model with a lag to correct for both assumptions made in the OLS model. Therefore, this model takes into account the fact that the previous year's rating influences the current rating and that there are unobservable aspects of a state's GO bond rating, like quality of

legislators, that do not change over time. This regression had 750 observations and had an adjusted R^2 of 0.554. The constant and the variables *L.Rating, UR, PRES, FH, and FS* all have a p-value less than 0.10. The fixed effects model with a lag also results in a positive coefficient for *AllRepublican* and a negative coefficient for *AllDemocrat*, although neither is statistically significant.

The final column of Table 11 presents the results of a Blundel and Bond regression. The BB regression introduces instruments to correct for the dynamic panel data bias of the fixed effects with a lag model. The BB regression estimates two different equations; one in levels and one in differences, while the fixed effects with a lag only looks at the equation in differences. The first thing to notice in this column is that *PRES*, *FH*, and *FS* are dropped due to collinearity. It is concerning that these variables are dropped because of collinearity. I tried many different variations of lags to try to see if these three could be included but they never were produced. The set of lags that I ended up choosing is a lag (2 5) with a collapse, but before selecting the set of lags, I tried combinations of (3 5), (2 _), and (3 _). The set I chose means that the lag starts at 2 years and ends at 5 years from the present year. This combination results in the best results based on the Sargen and Hansen test results. These two tests are generally considered tests for instrument validity and over-identification in the model. The BB regression becomes very unstable if there are too many instruments (Roodman). *AllDemocrat* and *AllRepublican* maintain their signs of negative and positive respectively but the results are insignificant, as they were in fixed effects with lag.

Interpretation

The coefficients for the variables are difficult to understand in their basic form, what does a coefficient of 0.0115 for *AllRepublican* in the OLS regression really mean? The results can be more easily understood if they are explained as a percentage increase in actual bond rating. Envision four different rulers: one for S&P, one for Moody's, one for Fitch, and one where all three are combined. The rulers for each rating agency, shown in Graph 1, are of equal length but are split up into a different amount of markings based on how many ratings each agency uses to rate GO bonds. Therefore, the Moody's ruler has 35 markings, the S&P ruler has 25, and the Fitch ruler has 19. The fourth ruler, in Graph 2, has 79 markings because it is the combination of all the markings from the other three rulers.

In order to understand the meaning of a 0.0115 coefficient, I reverse the calculation taken from Belasen, Hafer, and Jategaonkar (2015):

$$Rating = \frac{\frac{Rating_M}{35} + \frac{Rating_{SP}}{25} + \frac{Rating_F}{19}}{3}$$

First, multiply 0.0115 by 3 to get 0.0345. Second, find the percentage that each rating agency occupies of the ruler with 79 markings and multiply that percentage by 0.0345. Graph 2 shows the combination of the three ratings agencies into one ruler and you can see in percentages how much of the ruler each agency makes. Moody's represents 44% of the ruler, 35/79; S&P represents 32%, 25/79, and Fitch represents 24%, 19/79. Moody's new increase now equals 0.015, S&P equals 0.011, and Fitch

equals 0.08. Third, figure out how large the coefficient must be to represent a unit increase in the bond rating. For Moody's, an increase of one rating equals 0.029, Aa1 to Aaa for example. For S&P, an increase of one rating equals 0.04 and for Fitch, an increase of one rating equals 0.053, both from AA+ to AAA. Fourth, divide the new coefficient by value that represents one unit increase in the bond rating for each agency. Moody's is 0.015 divided by 0.029, which equals 0.517 and S&P is 0.011 divided by 0.04, which equals 0.275. Fitch is 0.008 divided by 0.053, which equals 0.151. Now it may seem like Moody's has the largest increase but in fact they all represent the same increase because of the three equal length rulers. A 0.517 increase on the Moody's ruler is equal to a 0.151 increase on the Fitch ruler because Moody's has 35 markings while Fitch only has 19. The same is true for the increase of 0.275 for S&P.

In order to better demonstrate how an increase or decrease in the coefficient estimates on *AllDemocrat* and *AllRepublican* actually matters, it is useful to estimate the change in dollars. For example, according to the Mercatus Center at George Mason University, the national average for state GO debt is $6.08 billion in 2015, the last year of this study (Norcross). If a state pays 3.29% on that debt, it will pay $200.032 million. Now consider if those bonds get a rating increase from Moody's because of an all-Republican state legislature. The all Republican legislature results in a coefficient of 0.0115, and after breaking that coefficient down into its influence to each rating agency, there is a 0.517 step increase from one rating to the next for Moody's, say from Aa1 halfway to Aaa. This change would mean that the state no longer pays 3.29% but instead pays only 3.18% on their debt, $193.344 million. With the lower percentage, the state

saves $6.688 million associated with the decreased percentage from the rating increase caused by an all-Republican state legislature.

The most consistently significant results that came out of all five regressions are in the Federal House variable. This variable shows who is in control of the U.S. House of Representatives. There is strong significance with a magnitude that stays similar throughout and the results are more stable. Federal spending starts in the U.S. House of Representatives so the results show that when the federal government spends more money under Democratic control, the states do not have to spend as much. Writing about the partisan divide, Keith Poole says, "since the mid-1970s. Democrats and Republicans in Congress have continued to move away from the ideological center and towards their respective liberal and conservative poles" (Poole 34). The U.S. Congress puts in place the policy context in which the states must operate, so a Democratic controlled U.S. House of Representatives maintains consistent ideology along party lines and more money is available for states. Poole continues, saying, "trends in polarization have continued unabated for decades and appear to be related to underlying structural economic and social factors" (Poole 35). As the federal Democrats move further towards the left, they continue to promote even greater liberal economic policies, which originate in the U.S. House. In turn, states have more money available for social services, which will help the economic well being of the state. The coefficient is positive because when the states spend less, their bonds seem less risky, and less spending positively influences bond rating.

Sensitivity Analyses

To determine if there is a relationship between partisan control and state GO bond ratings, I created a variable, *Rating*, by combining the rating from Moody's, S&P, and Fitch. In order to make sure that the suggested positive relationship for *AllRepublican* and negative relationship for *AllDemocrat* holds true for each rating firm, I run a sensitivity analysis of the same five regressions for each individual agency. The last paragraph presents sensitivity analyses where I lag *AllDemocrat* and *AllRepublican* by one year and two years. I want to determine if time has an effect on my regressions.

I show the results of the sensitivity analyses for Moody's, S&P, and Fitch in Tables 12, 13, and 14, respectively. I decided to conduct a sensitivity analysis for each agency to see if the pattern held true, which it does, when the dependent variable is not a combination of ratings. In these tables, I present the same regression but instead of a combination of all three ratings, each table looks at only one of the ratings from the agencies. For Moody's and Fitch, *FH* loses its significance but maintains it for the S&P sensitivity analysis. In all three, *AllDemocrat* and *AllRepublican* do not change enough to change the pattern that has been observed. This sensitivity analysis shows that the results are consistent.

Tables 15 presents the results of a sensitivity analysis where the key variables of *AllDemocrat* and *AllRepublican* are both lagged one year. Tables 16 presents the results of a sensitivity analysis where the same key variables are both lagged two years. One of the most interesting changes when the key variables are lagged one year is that *L.Rating*

becomes significant in the three regressions it is included and *UR* becomes at least marginally significant throughout the five regressions. *FH* maintains it significance and sign, positive, as it did in previous analyses. In this regression as well, I find the pattern of a positive sign for *AllRepublican* and a negative sign for *AllDemocrat*. An interesting result from the two-year lag is that the BB model did not produce results. No matter what combination of instruments I used, the two-year lag continued to produce an error message. There is a clear similarity when comparing the one-year and two-year lag with the regular regressions. The similarity in the one-year and two-year lags means that the influence of the parties on the bond rating takes time. Therefore, a policy put in place by Democrats might not actually create a change in economic well being for a state until the Democrats lose control. These sensitivity analyses confirmed the previous pattern and showed that the influence of time is important.

Conclusion

I start this study with a search for the truth towards bond rating and partisan control of state legislatures. Results suggest that a state legislature controlled entirely by Republicans is marginally associated with an increase in the state's general obligation bond rating, all things held equal. On the other hand, a state legislature controlled entirely by Democrats might yield a decrease, of a smaller magnitude than *AllRepublican*, to a state's general obligation bond rating, all things held equal. However, results are only suggestive and not conclusive because the results are only statistically significant in the biased OLS results.

The results from the OLS, LDV, FE, LDV with FE, and BB regressions maintain the theme of a negative coefficient for Democrats and a positive coefficient for Republicans. Although that pattern holds throughout the five regressions, these results become insignificant because of dynamics and unobservable heterogeneity.

These results provide an interesting situation for the Democrat and Republican parties. In the time I analyze, from 2000-2015, no state had a GO bond rating below investment grade, a rating below BBB for Moody's and Fitch and Baa2 for S&P, although Illinois did have the lowest at BBB. On one hand, the Republicans can identify with these results to say that, in fact, they have been able to stick to conservative fiscal policy at the state level in order to maintain or increase state general obligation bond levels. On the other side, Democrats can recognize the results and also show that when they control the legislature of a state, the decrease in state GO bond rating as compared to

a mixed legislature is not large in magnitude. Since the decrease that happens from an *AllDemocrat* legislature is only about half the increase of an *AllRepublican* legislature, Democrats can say that they withstand this small decrease in order to follow other social policies and face different issues.

Results suggest other avenues for future research. First, I simply look at the impact to state GO bond ratings from an all Republican or Democrat legislature but does not examine the social impacts that these two parties have on a state. A study of what the parties choose to focus on within a state, whether it is economic or social issues, and how that impacts the state GO bond rating is beyond the scope of this paper. Second, the insignificant results that appear after I move away from OLS may come from different factors that could be researched further. There is more to examine in terms of the quality of the legislators themselves, an area outside the reach of this study, which may identify more of a connection between the political and economic conditions of a state. Third, there may be a need to include interaction terms in the regressions, possibly between the federal and state government variables. When in combination, these variables may have a different impact on the bond rating. Fourth, given these results, an element of future research could be to break the *State* into its parts instead of simply who is in control of the whole state. There could be much more research done on this topic in terms of years and states analyzed. Nonetheless, the consistency of sign, if not the significance, suggests that additional research may yield useful political and economic insights.

Bibliography

Alt, James E., and Robert C. Lowry. “Divided Government, Fiscal Institutions, and Budget Deficits: Evidence from the States.”American Political Science Review, vol. 88, no. 04, 1994, pp. 811–828., doi:10.2307/2082709.

Angrist, Joshua D, and Jörn-Steffen Pischke. Mostly Harmless Econometrics: an Empiricists Companion. Princeton University Press, 2009.

Baker, Bruce, et al. “Intertemporal State Budgeting.” 2002, doi:10.3386/w9067.

Belasen, Ariel R., et al. “Economic Freedom And State Bond Ratings.” Contemporary Economic Policy, vol. 33, no. 4, Dec. 2014, pp. 668–677., doi:10.1111/coep.12098.

Calcagno, Peter T., and Justin D. Benefield. “Economic Freedom, the Cost of Public Borrowing, and State Bond Ratings.” Journal of Financial Economic Policy, vol. 5, no. 1, May 2013, pp. 72–85., doi:10.1108/17576381311317790.

Collins, Brian K. “Credit and Credibility.” The American Review of Public Administration, vol. 44, no. 1, 2012, pp. 112–123., doi:10.1177/0275074012460424.

Grizzle, Cleopatra. “The Impact of Budget Stabilization Funds on State General Obligation Bond Ratings.” Public Budgeting & Finance, vol. 30, no. 2, Apr. 2010, pp. 95–111., doi:10.1111/j.1540-5850.2010.00958.x.

Krueger, Skip, and Robert W. Walker. “Divided Government, Political Turnover, and State Bond Ratings.” Public Finance Review, vol. 36, no. 3, 2008, pp. 259–286., doi:10.1177/1091142107309229.

Liu, Pu, and Anjan V. Thakor. “Interest Yields, Credit Ratings, and Economic Characteristics of State Bonds: An Empirical Analysis: Note.” Journal of Money, Credit and Banking, vol. 16, no. 3, 1984, p. 344., doi:10.2307/1992222.

Lowry, Robert C. “A Visible Hand? Bond Markets, Political Parties, Balanced Budget Laws, and State Government Debt.” Economics and Politics, vol. 13, no. 1, 2001, pp. 49–72., doi:10.1111/1468-0343.00083.

Moon, C.-G, and J. G. Stotsky. “Testing the Differences between the Determinants of Moody's and Standard & Poor's Ratings an Application of Smooth Simulated Maximum Likelihood Estimation.” Journal of Applied Econometrics, vol. 8, no. 1, 1993, pp. 51–69., doi:10.1002/jae.3950080105.

"NCSL Fiscal Brief: State Balanced Budget Provisions."NCSL FISCAL BRIEF: STATE BALANCED BUDGET PROVISIONS, Oct. 2010.

New, Michael J. "David M. Primo, Rules and Restraint: Government Spending and the Design of In." Review of Rules and Restraint: Government Spending and the Design of Institutions by David M. Primo. Public Choice, vol. 140, no. 1/2, July 2009, pp. 267–270.

Nickell, Stephen. "Biases in Dynamic Models with Fixed Effects." Econometrica, vol. 49, no. 6, 1981, p. 1417., doi:10.2307/1911408.

Norcross, Eileen. "Alabama." Alabama, Mercatus Center, 31 May 2016, www.mercatus.org/statefiscalrankings-2015-edition/alabama.

Osteryoung, Jerome S., and Dallas R. Blevins. "State General Obligation Bond Credit Ratings." Growth and Change, vol. 9, no. 3, 1978, pp. 29–35., doi:10.1111/j.1468-2257.1978.tb01028.x.

Poole, Keith. "Graphic Picture of a Polarized Congress." UGA Research, 2012, pp. 1–35, issuu.com/ugaresearch/docs/ugaresearch_sp12?e=1854225/2617568.

Poterba, James M., and Rueben, Kim S. "State Fiscal Institutions and the U.S. Municipal Bond Market." 1997. Working Paper 6237. National Bureau of Economic Research.

"Rating Changes for the 50 States from 1970." Moody's Investor Service, 21 June 2017.

"Ratings Direct U.S. State Ratings And Outlooks: Current List." S&P Global Ratings, 16 Nov. 2017.

Roodman, David. "A Note on the Theme of Too Many Instruments." SSRN Electronic Journal, May 2008, pp. 1–32., doi:10.2139/ssrn.1101731.

Schelker, Mark. "The Influence of Auditor Term Length and Term Limits OnÂ US State General Obligation Bond Ratings." Public Choice, vol. 150, no. 1-2, 2010, pp. 27–49., doi:10.1007/s11127-010-9688-4.

"U.S. States Snapshot: A Compilation of Fitch's State Credit Assessments and Rating Histories." Fitch Ratings, 2 Mar. 2015.

Walker, Robert W., and Skip Krueger. "Now You See It, Now You Don't: The Mysterious Case of the Vanishing Split Bond Rating in States." Public Budgeting

& Finance, vol. 29, no. 1, 2009, pp. 84–101., doi:10.1111/j.1540-5850.2009.00925.x.

Weiner, Jennifer. "Assessing the Affordability of State Debt ." Federal Bank of Boston, 2013, www.bostonfed.org/publications/new-england-public-policy-center-research-report/2013/assessing-the-affordability-of-state-debt.aspx.

Tables and Graphs

Table 1

Study	Rating Agencies	States and Years
Alt and Lowry (1994)	- Does not analyze bond ratings	- 48 states (Except Alaska and Hawaii)
		- 1968 to 1987
Krueger and Walker (2008)	- Fitch, Moody's, and S&P	- 44 states (Does not mention which states it excludes)
		- 1995 to 2000
Osteryoung and Blevins (1978)	- Moody's	- States with a Aaa or Aa rating (82% of all states)
		- 1950 to 1972
Shcelker (2010)	- Fitch, Moody's, and S&P	- 1990 to 1999
		- 42 States (Except Alaska, Hawaii, Arizona, Colorado, Iowa, Idaho, Nebraska, and South Dakota)
Belasen, Hafer, and Jategaonkar (2014)	- Fitch, Moody's, and S&P	- All 50 states
		- 1995 to 2008

Table 2

Variable	Source	Coding
Governor	National Governors Association	0= Republican
		1= Democrat
		2= Independent
House of Representatives	Census, NCSL, Book of States, and the Council of State Governments	0= Republican
		1= Democrat
		2= Independent
Senate	Census, NCSL, Book of States, and the Council of State Governments	0= Republican
		1= Democrat
		2= Independent
Unemployment Rate	US Census	Numerical Value
Personal Income by State	Federal Reserve Bank of St. Louis FRED	Numerical Value
President	Library of Congress	0= Republican
		1= Democrat
Who is in Control of the Federal House	History, Art & Archives of the United States House of Representatives	0= Republican
		1= Democrat
Who is in Control of the Federal Senate	US Senate	0= Republican
		1= Democrat
State Debt Outstanding	US Census	Numerical Value
Population	US Census	Numerical Value
GDP	Bureau of Economic Analysis	Numerical Value
Term Limit in for the House of Representatives	National Conference of State Legislatures	Numerical Value
Term Limit in the Senate	National Conference of State Legislatures	Numerical Value
Taxes Divided by GDP	US Census Bureau	Numerical Value
Percent of Total GDP in Agriculture	Bureau of Economic Analysis	Numerical Value

Table 3

S&P Rating	Code	Moody's Rating	Code	Fitch Rating	Code
AAA	25	Aaa	35	AAA	19
AA+	24	Aa1	34	AA+	18
AA	23	Aa2	33	AA	17
AA-	22	Aa3	32	AA-	16
A+	21	A1	31	A+	15
A	20	A2	30	A	14
A-	19	A3	29	A-	13
BBB+	18	Baa1	28	BBB+	12
BBB	17	Baa2	27	BBB	11
BBB-	16	Baa3	26	BBB-	10
BB+	15	Ba1	25	BB+	9
<BB+	14	<Ba1	24	<BB+	8

Table 4

Variable	Abbreviation	Scale
Unemployment Rate	UR	None
Personal Income by State	PIS	Divided by 10,000
President	PRES	None
Who is in Control of the Federal House	FH	None
Who is in Control of the Federal Senate	FS	None
State Debt Outstanding	SDO	Divided by 1,000
Population	POP	Divided by 1,000,000
GDP	GDP	Divided by 1,000
Term Limit in for the House of Representatives	TLH	None
Term Limit in the Senate	TLS	None
Taxes Divided by GDP	TGDP	None
Percent of Total GDP in Agriculture	PGDPAG	None

Table 5

Variable	Mean	Std. Dev.	Min	Max	Observations
Governor	0.4725	0.524	0	2	800
House	0.5675	0.6212	0	3	800
Senate	0.5488	0.6751	0	4	800
Rating	0.9394	0.049	0.6318	1	800
SP25	0.9383	0.0484	0.68	1	788
Moodys35	0.9534	0.0376	0.8	1	733
Fitch19	0.9245	0.0712	0.5789	1	599

Table 6

Variable	Mean	Std. Dev.	Min	Max	Observations
AD	0.21875	0.4137	0	1	800
AR	0.29125	0.4546	0	1	800
UR	5.7068	2.1244	1.8	14.3	800
PIS10000	3.7789	0.811	2.1535	6.8822	800
President	0.5	0.5003	0	1	800
FH	0.25	0.4333	0	1	800
FS	0.5625	0.4964	0	1	800
popmil	6.0292	6.6506	0.4938	38.9939	800
SDObil	23.6307	34.2522	0.744	341.094	800
GDPbil	277.5793	343.834	17.349	2491.619	800
TLH	2.3513	4.2615	0	16	800
TLS	2.4713	4.3339	0	16	800
TGDP	0.0544	0.0133	0.0162	0.1575	800
PGDPAG	1.6702	1.9237	0.1065	13.0476	800

Table 7

	AD T-1	T	
AD	**0**	**1**	**Total**
0	551	31	582
Percent	94.67	5.33	100
1	31	137	168
Percent	18.45	81.55	100
Total	582	168	750
Percent	77.6	22.4	100

Table 8

	AR T-1	T	
AR	**0**	**1**	**Total**
0	509	31	540
Percent	94.26	5.74	100
1	20	190	210
Percent	9,52	90.48	100
Total	529	221	750
Percent	70.53	29.47	100

Table 9

	Mix T-1	T	
Mix	**0**	**1**	**Total**
0	329	49	378
Percent	87.04	12.96	100
1	60	312	372
Percent	16.13	83.87	100
Total	389	361	750
Percent	51.87	48.13	100

Table 10

State	Corr between Rating and Last Year's Rating
Total	0.9165
Alabama	0.6482
Alaska	0.8859
Arizona	-0.0193
Arkansas	0.6605
California	0.4042
Colorado	0.7542
Connecticut	-0.1046
Delaware	-
Florida	0.8997
Georgia	-
Hawaii	0.8988
Idaho	0.9101
Illinois	0.937
Indiana	0.6963
Iowa	0.8873
Kansas	0.8204
Kentucky	-0.204
Louisiana	0.9186
Maine	0.7397
Maryland	-
Massachusetts	0.9324
Michigan	0.9388
Minnesota	0.927
Mississippi	0.9251

Missouri	-
Montana	0.753
Nebraska	0.8528
Nevada	0.5485
New Hampshire	0.7641
New Jersey	0.825
New Mexico	0.8528
New York	0.8903
North Carolina	0.6591
North Dakota	0.9655
Ohio	0.2296
Oklahoma	0.952
Oregon	0.8552
Pennsylvania	0.724
Rhode Island	0.7402
South Carolina	0.8528
South Dakota	0.8209
Tennessee	0.8094
Texas	0.9629
Utah	-
Vermont	0.9148
Virginia	-
Washington	0.7958
West Virginia	0.9449
Wisconsin	0.6398
Wyoming	0.869

Table 11

	OLS	W/Lag	FE	FE W/Lag	BB
VARIABLES	**Rating**	**Rating**	**Rating**	**Rating**	**Rating**
L.Rating		0.899***		0.632***	0.933***
		-0.0543		-0.146	-0.121
AllDemocrat	-0.00771*	-0.000695	-0.00284	-0.000719	-0.00718
	-0.00431	-0.00163	-0.00357	-0.00196	-0.00462
AllRepublican	0.0115***	0.00471*	0.00653*	0.00434	0.000759
	-0.00373	-0.00248	-0.00383	-0.00349	-0.00333
UR	-0.00981***	-0.00183***	-0.00591***	-0.00263***	-0.00106
	-0.00116	-0.000555	-0.00172	-0.000884	-0.00133
PIS10000	-0.0018	-0.00242*	0.0347***	0.0130*	-0.00263
	-0.00287	-0.00128	-0.0108	-0.00747	-0.00229
President	0.00553	0.00134	0.0318***	0.0203***	
	-0.00913	-0.00337	-0.00726	-0.00511	
FH	0.0267***	0.0152***	0.0284***	0.0212***	
	-0.00849	-0.00243	-0.00773	-0.00431	
FS	0.00544	0.0000613	-0.0307	0.00300*	
	-0.00912	-0.00234	-0.0191	-0.00154	
popmil	0.00493***	-0.00131	0.0227	0.00744	-0.00181*
	-0.00152	-0.000946	-0.0138	-0.00766	-0.00101
SDObil	-0.000366***	-0.00000441	0.000059	0.0000675	0.0000902
	-0.0000916	-0.0000361	-0.0000808	-0.0000612	-0.0000678
GDPbil	-9.68e-05***	0.0000218	-0.000141	-0.0000182	2.54e-05*
	-0.000028	-0.0000171	-0.00009	-0.0000529	-0.0000142
TLH	-0.00282**	-0.000322	0.00379**	0.00153	0.000257
	-0.00113	-0.000525	-0.0018	-0.00104	-0.00059
TLS	0.000369	0.000115	-0.00194	-0.000825	-0.000384
	-0.0011	-0.000501	-0.00154	-0.000873	-0.000499
TGDP	-0.436***	-0.03	-0.201	-0.0574	-0.0207
	-0.109	-0.0534	-0.165	-0.067	-0.0681
PGDPAG	-0.00357***	-0.000555	-0.000852	-0.000143	-0.0000556
	-0.000789	-0.00049	-0.0017	-0.000942	-0.000724
Constant	1.012***	0.118**	0.737***	0.241**	0.0824
	-0.0166	-0.0546	-0.0736	-0.105	-0.128
Observations	800	750	800	750	750
R-squared	0.303	0.857	0.265	0.554	
Number of State			50	50	50
Robust standard errors in parentheses					
***** p<0.01, ** p<0.05, * p<0.1**					

Table 12

	OLS	W/Lag	FE	FE W/Lag	BB
VARIABLES	**Moodys35**	**Moodys35**	**Moodys35**	**Moodys35**	**Moodys35**
L.Moodys35		0.868***		0.566***	0.545***
		-0.0394		-0.0625	-0.14
AllDemocrat	0.000843	-0.000104	-0.00256	0.00163	-0.00484
	-0.00545	-0.00236	-0.00389	-0.00259	-0.0041
AllRepublican	-0.0105	-0.00325	-0.00512	-0.00656	0.0111
	-0.0077	-0.00399	-0.0108	-0.0065	-0.00903
UR	-0.00233	-0.00205***	-0.00525**	-0.00401***	-0.00202
	-0.00175	-0.000709	-0.00221	-0.00144	-0.00184
PIS10000	-0.0224***	-0.00827***	0.000356	-0.00442	-0.0122**
	-0.00495	-0.00227	-0.0162	-0.00744	-0.00586
President	-0.0181	0.0138**	0.0233*	0.0173**	
	-0.0177	-0.00563	-0.0131	-0.00776	
FH	0.0495***	-0.00169	-0.00528	-0.000425	
	-0.0154	-0.00275	-0.011	-0.00449	
FS	-0.00123	0.00109	0.0504	0.00275	
	-0.016	-0.00244	-0.0305	-0.00176	
popmil	0.00855***	-0.0000707	0.00786	0.0064	0.00131
	-0.00176	-0.00092	-0.0152	-0.00846	-0.0016
SDObil	-0.000314***	0.00000432	-0.00000949	0.0000385	-4.44E-06
	-0.0000981	-0.0000338	-0.0000614	-0.0000478	-0.0000663
GDPbil	-0.000126***	0.0000051	-0.0000574	-0.0000132	-0.000018
	-0.0000318	-0.000015	-0.0000995	-0.0000497	-0.0000234
TLH	0.0179***	0.00311***	0.00599***	0.00258*	0.00659**
	-0.00183	-0.000999	-0.00218	-0.00142	-0.00316
TLS	-0.0216***	-0.00381***	-0.00624***	-0.00232	-0.00839***
	-0.00182	-0.00119	-0.0021	-0.0014	-0.00323
TGDP	0.568***	0.0762	0.0987	-0.048	0.379
	-0.19	-0.081	-0.341	-0.0791	-0.236
PGDPAG	-0.0135***	-0.00171**	0.0041	-0.000578	-0.00646**
	-0.00209	-0.00077	-0.0046	-0.00242	-0.00291
Constant	0.988***	0.161***	0.867***	0.404***	0.484***
	-0.0258	-0.0446	-0.0898	-0.0687	-0.133
Observations	800	750	800	750	750
R-squared	0.306	0.863	0.141	0.495	
Number of State			50	50	50
Robust standard errors in parentheses					
***** p<0.01, ** p<0.05, * p<0.1**					

Table 13

	OLS	W/Lag	FE	FE W/Lag	BB
VARIABLES	**SP25**	**SP25**	**SP25**	**SP25**	**SP25**
L.SP25		0.757***		0.621***	0.823***
		-0.0768		-0.0767	-0.108
AllDemocrat	-0.00268	-0.0018	-0.000528	-0.0017	-0.0106**
	-0.00486	-0.00212	-0.00536	-0.00244	-0.00514
AllRepublican	0.00773	0.00857**	0.0111*	0.00886*	0.0112
	-0.00619	-0.00414	-0.00663	-0.00456	-0.00971
UR	-0.0133***	-0.00272***	-0.00782**	-0.00248*	-0.000977
	-0.00223	-0.00105	-0.00306	-0.00124	-0.0016
PIS10000	0.00212	-0.000362	0.0356	0.0199**	-0.000229
	-0.0036	-0.00216	-0.0262	-0.00788	-0.00313
President	-0.0319	-0.00154	0.0463***	0.0120*	
	-0.0205	-0.0086	-0.0152	-0.00657	
FH	0.0396***	0.0109***	0.0427***	0.0222***	
	-0.0137	-0.0032	-0.0143	-0.00518	
FS	-0.00281	-0.0000406	0.00998	0.00336	
	-0.016	-0.00362	-0.0511	-0.0032	
popmil	0.00983***	-0.000778	0.0399**	0.00919	-0.00239
	-0.00223	-0.00124	-0.0152	-0.0066	-0.00194
SDObil	-0.000303***	-0.0000698	0.000117	0.0000622	0.0000635
	-0.000106	-0.0000536	-0.000125	-0.0000785	-0.000088
GDPbil	-0.000179***	0.0000117	-0.000260**	-0.0000286	0.0000317
	-0.0000396	-0.0000228	-0.000104	-0.0000524	-0.000033
TLH	-0.00290*	-0.000656	0.00541*	0.000703	-0.000684
	-0.00163	-0.000702	-0.0028	-0.0013	-0.00122
TLS	0.0000612	0.000243	-0.00459	-0.000142	0.00047
	-0.00161	-0.000692	-0.00278	-0.00115	-0.0011
TGDP	-0.228	-0.131	1.087**	0.165	-0.0599
	-0.167	-0.0801	-0.492	-0.157	-0.0878
PGDPAG	-0.00439***	-0.000855	0.00311	-0.00254	-0.000926
	-0.00131	-0.000637	-0.00463	-0.00251	-0.00108
Constant	0.991***	0.258***	0.536***	0.208***	0.184*
	-0.0225	-0.0769	-0.126	-0.0684	-0.102
Observations	800	750	800	750	750
R-squared	0.198	0.786	0.179	0.621	
Number of State			50	50	50
Robust standard errors in parentheses					
***** p<0.01, ** p<0.05, * p<0.1**					

Table 14

	OLS	W/Lag	FE	FE W/Lag	BB
VARIABLES	**Fitch19**	**Fitch19**	**Fitch19**	**Fitch19**	**Fitch19**
L.Fitch19		0.868***		0.446***	0.480***
		-0.0277		-0.0624	-0.143
AllDemocrat	0.0271	0.00239	0.00571	0.00427	-0.000979
	-0.0171	-0.00744	-0.0134	-0.0103	-0.0141
AllRepublican	-0.00963	0.00162	-0.0103	-0.00428	0.0169
	-0.0211	-0.0111	-0.0211	-0.0111	-0.0295
UR	-0.00191	-0.000526	-0.00886	-0.00425	0.00104
	-0.00515	-0.00287	-0.00634	-0.00465	-0.00533
PIS10000	0.0175	-0.00115	-0.0112	-0.00362	0.0119
	-0.0141	-0.00759	-0.0306	-0.0242	-0.0196
President	0.00269	0.044	0.0623*	0.0470**	
	-0.0411	-0.0277	-0.0318	-0.0229	
FH	0.0504	0.00282	-0.0264	-0.00645	
	-0.0408	-0.0172	-0.0331	-0.0249	
FS	-0.000913	0.0177	0.113	0.00541	
	-0.0375	-0.0138	-0.0743	-0.00835	
popmil	0.0266***	0.00151	0.021	0.00964	0.0101*
	-0.00431	-0.00288	-0.0241	-0.0143	-0.00546
SDObil	-0.000562**	0.0000752	0.000366	0.000299	0.0000224
	-0.000254	-0.00018	-0.00042	-0.000304	-0.000246
GDPbil	-0.000419***	-0.0000294	-0.000209	-0.0000678	-0.000169**
	-0.0000796	-0.0000541	-0.000152	-0.0000905	-0.0000862
TLH	0.0112**	0.0039	0.0182***	0.0115***	0.00551
	-0.0046	-0.00247	-0.00465	-0.00267	-0.00586
TLS	-0.0192***	-0.00562**	-0.0121***	-0.00747***	-0.00997*
	-0.00455	-0.00245	-0.00438	-0.00251	-0.00563
TGDP	-0.46	-0.0394	-0.798	0.0743	0.236
	-0.538	-0.436	-0.593	-0.572	-0.895
PGDPAG	-0.0419***	-0.00247	0.0244*	0.0168**	-0.0180*
	-0.00528	-0.00331	-0.013	-0.00649	-0.00981
Constant	0.792***	0.0863	0.702***	0.384**	0.362**
	-0.0757	-0.0602	-0.167	-0.168	-0.15
Observations	800	750	800	750	750
R-squared	0.25	0.812	0.139	0.32	
Number of State			50	50	50
Robust standard errors in parentheses					
***** p<0.01, ** p<0.05, * p<0.1**					

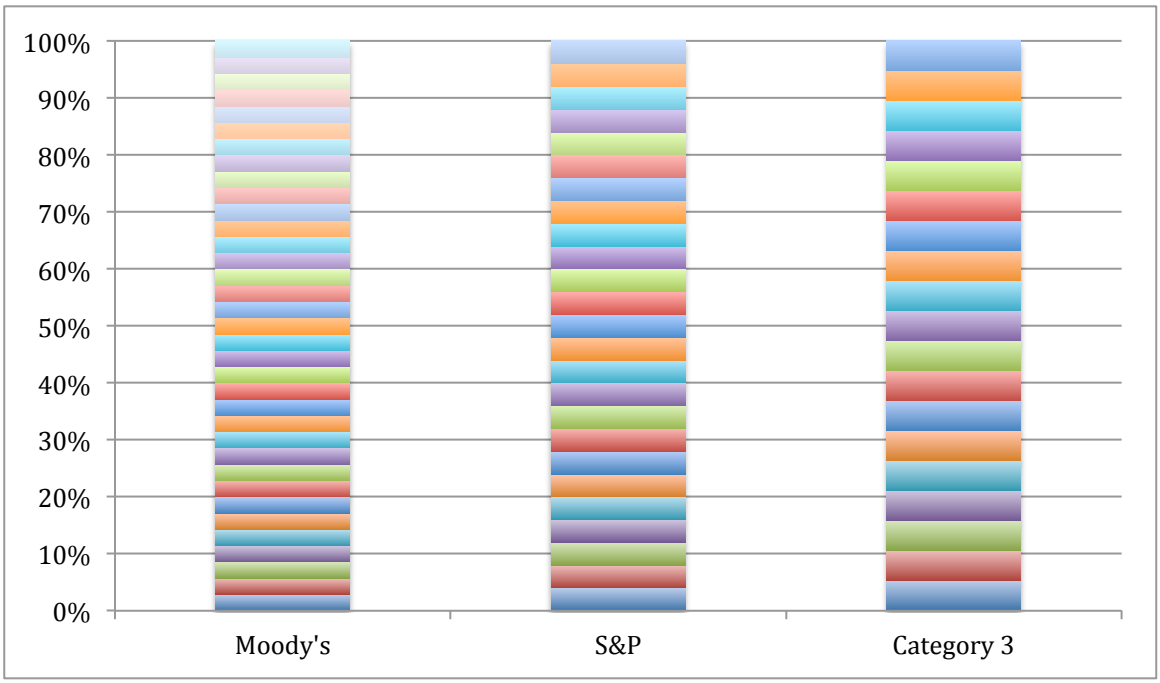
Table 15

	OLS	W/Lag	FE	FE W/Lag	BB
VARIABLES	**Rating**	**Rating**	**Rating**	**Rating**	**Rating**
L.Rating		0.899***		0.629***	0.727***
		-0.0538		-0.148	-0.175
L.AllDemocrat	-0.0102**	-0.00256	-0.006	-0.00318	-0.00732
	-0.00471	-0.00198	-0.00458	-0.00266	-0.0049
L.AllRepublican	0.0117***	0.00207	0.00579	0.00177	-0.00449
	-0.00373	-0.00142	-0.00377	-0.00222	-0.00568
UR	-0.00943***	-0.00192***	-0.00535***	-0.00272***	-0.00265*
	-0.00118	-0.000582	-0.00173	-0.00091	-0.0015
PIS10000	-0.00266	-0.00280**	0.0354***	0.0125*	-0.00357
	-0.00287	-0.0013	-0.0111	-0.00718	-0.00348
President	0.0353***	0.00315	0.0291***	0.0207***	
	-0.00914	-0.0038	-0.00691	-0.00523	
FH	0.0160*	0.0146***	0.0280***	0.0206***	
	-0.00855	-0.00246	-0.00845	-0.00427	
FS	0.00642	-0.000214	0.00845***	0.00279*	
	-0.00862	-0.00231	-0.00264	-0.00143	
popmil	0.00426***	-0.00118	0.0233	0.00687	-0.0000656
	-0.00162	-0.000972	-0.0143	-0.00772	-0.00131
SDObil	-0.000377***	-0.00000549	0.000048	0.0000657	0.0000319
	-0.0000938	-0.0000373	-0.0000657	-0.0000581	-0.0000539
GDPbil	-8.42e-05***	0.0000199	-0.000127	-0.0000155	-0.00000927
	-0.0000302	-0.0000177	-0.0000943	-0.0000535	-0.0000247
TLH	-0.00318***	-0.000062	0.00352*	0.00171	0.0000982
	-0.0011	-0.000458	-0.00182	-0.00112	-0.000786
TLS	0.000651	-0.000157	-0.00181	-0.000956	-0.00076
	-0.00108	-0.000437	-0.0015	-0.000943	-0.000635
TGDP	-0.441***	-0.0415	-0.223	-0.0655	-0.14
	-0.106	-0.0586	-0.157	-0.0711	-0.139
PGDPAG	-0.00361***	-0.000462	-0.00119	-0.000184	-0.000169
	-0.000813	-0.000434	-0.0017	-0.000931	-0.0007
Constant	1.024***	0.121**	0.688***	0.251**	0.308
	-0.0174	-0.0558	-0.0936	-0.107	-0.197
Observations	750	750	750	750	750
R-squared	0.312	0.856	0.266	0.554	
Number of State			50	50	50
Robust standard errors in parentheses					
***** p<0.01, ** p<0.05, * p<0.1**					

Table 16

	OLS	W/Lag	FE	FE W/Lag
VARIABLES	**Rating**	**Rating**	**Rating**	**Rating**
L.Rating		0.892***		0.640***
		-0.0567		-0.134
L2.AllDemocrat	-0.0100**	-0.00169	-0.00625	-0.00181
	-0.0049	-0.00198	-0.00546	-0.00275
L2.AllRepublican	0.0124***	0.00143	0.00298	-0.000546
	-0.00377	-0.00132	-0.00372	-0.00165
UR	-0.00947***	-0.00207***	-0.00476***	-0.00239***
	-0.00119	-0.000589	-0.00173	-0.000826
PIS10000	-0.00369	-0.00336**	0.0335***	0.0108*
	-0.00306	-0.00141	-0.0112	-0.00629
President	0.0456***	0.0129***	0.0287***	0.0196***
	-0.00969	-0.00436	-0.00797	-0.00564
FH	0.0160*	0.0143***	0.0259***	0.0189***
	-0.00861	-0.00244	-0.00883	-0.00399
FS	0.00599	-0.000226	0.00776***	0.00232*
	-0.00868	-0.00229	-0.00254	-0.00134
popmil	0.00441**	-0.00112	0.0182	0.000812
	-0.0019	-0.00115	-0.0138	-0.00433
SDObil	-0.000363***	-0.0000128	0.0000982	0.0000703
	-0.0000991	-0.0000392	-0.000103	-0.0000812
GDPbil	-8.80e-05***	0.0000188	-0.0000813	0.0000248
	-0.0000337	-0.00002	-0.0000951	-0.0000387
TLH	-0.00379***	-0.000124	0.00204	0.00089
	-0.00095	-0.000463	-0.00123	-0.000615
TLS	0.00129	0.0000131	-0.000245	0.0000315
	-0.000927	-0.000433	-0.000555	-0.000312
TGDP	-0.457***	-0.0702	-0.274*	-0.103
	-0.108	-0.0555	-0.155	-0.0672
PGDPAG	-0.00378***	-0.000544	-0.00139	-0.0000459
	-0.000825	-0.000437	-0.00174	-0.000928
Constant	1.019***	0.122**	0.714***	0.274**
	-0.0173	-0.0582	-0.0917	-0.119
Observations	700	700	700	700
R-squared	0.336	0.892	0.293	0.647
Number of State			50	50
Robust standard errors in parentheses				
***** p<0.01, ** p<0.05, * p<0.1**				

Graph 1



Graph 2