A Congressional Politics Theory of the Size of Government

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[This paper is a work in progress, and should probably not be cited. Any notes in [brackets] are to myself, members of my committee, or panel participants and others I have sought comments from. Please email robi@uga.edu to receive the latest copy of this paper. Comments are always appreciated.]

Abstract

This paper seeks to extend the median voter model of the size of government (Meltzer and Richard) by incorporating legislative institutions. I take the Pivotal Politics model of Congressional policy making (Krehbiel 1998) and analyze it's predictions about the size of the tax and transfer system. The models are the party cartel model (Cox & McCubbins 2005) and the informational model (Krehbiel 1998). The predictions of the Pivotal Politics model give some insight as to why Meltzer and Richard’s model of the size of government has failed to stand up to empirical tests. In their model, the policy outcome is the national median voter’s ideal point. However, in reality this median voter only gets to vote for his or her member of Congress, and that member’s location in the ideological distribution of Congress may or may not be the median. Further, the median member of Congress may not be the actor whose ideal point becomes the policy outcome. The predictions of each of the models are then tested using several measures of the “size of government” at the national level.
“In the real world, individuals, as such, do not seem to make fiscal choices. They seem limited to choosing ‘leaders’, who will, in turn, make fiscal decisions” (Buchanan 1987)

1 Introduction

The growth in the size of the U.S. government in the 20th Century has been a subject of great interest for both political scientists and economists. Government expenditure as a percentage of GNP rose from 10% in 1929 to 28.3% in 1999 (Mueller 2003). Specifically social welfare spending\(^1\) has risen from 3.9% of GDP in 1965 to 21% in 2002\(^2\) This puzzle received its first positive theory in 1981 with Meltzer and Richard’s work on the growth of the size of government. Meltzer and Richard measure the size of government as the percentage of earned income redistributed, with the level of redistribution being determined by the location of the voter at the median of the income distribution.

Researchers who have empirically tested the Meltzer and Richard model have found mixed results. In Meltzer and Richard’s own test of their theory (Meltzer & Richard 1983), they find that a one percent change in the ratio of mean to median income changes total redistribution\(^3\) by 1.5 billion. Tullock (1983) claims that Meltzer and Richard “have been trapped by a statistical artifact coming from the least squares method of fitting.” He demonstrates that during the time period in Meltzer and Richard’s study that the ratio of mean to median income remained relatively constant while real per-capita transfers steadily increased. Meltzer and Richard (1983b) respond that Tullock’s comments are both “wrong and irrelevant.”\(^4\) Gouveia & Masia (1998) tested an extended version of the Meltzer and

\(^1\)Many scholars are talking about the growth of social welfare programs when they talk about the growth of the “size of government”

\(^2\)Data from the Social Security Administration’s 1997 and 2002 Annual Statistical Supplement.

\(^3\)Redistribution is Meltzer and Richard’s measure of the size of government.

\(^4\)Meltzer and Richard say that Tullock has erred on three counts: 1) He gives to much emphasis to the correlation coefficient, 2) His understanding of “time trend” and 3) his choice of a measure of the size of government.
Richard model using panel data from the 50 states, they find that there is little evidence to support the predictions of the Meltzer and Richard model.


The Meltzer and Richard model assumes a direct democracy median voter model of policy making. In creating such a parsimonious model, Meltzer and Richard may be erring on two fronts. The first is in their assumption of direct democracy. Voters, of course, do not vote directly on policy in the U.S. Rather, they vote for a representative who then votes on policy. Even if it is assumed that the representative from each congressional district represents the median voter from that district, and the median member of the legislature sets policy, there is no reason to believe that the policy that would be chosen by the median voter in the population will correspond to the policy enacted by the median member of the legislature. It is not always the case that the the median of the median will be the median. In a related work, I find that the degree to which Congressional districts are gerrymandered with respect to income can cause the policy preferred by the median voter and the policy preferred by the median member of Congress to diverge (Ragan 2008). The second area of concern with the Meltzer and Richard model is that most modern models of the U.S. congressional system do not simply assume the median member of Congress sees their ideal point become policy. Once one takes into account the institutional structure of Congress into account the level of redistribution can depend crucially on intra-chamber and intra-branch dynamics. In order to incorporate these institutional features I extend the Meltzer and Richard approach to modeling the “size of government”. In place of the direct democracy median voter as the policy maker, I substitute a representative democracy model of congressional policy making.

The first question that any scholar of Congress will ask is, “which Congressional model?” While there seems to be a general consensus that a simplified median voter model of Congress contains too little institutional detail, there is little consensus as to what takes its place. I
have chosen to examine the policy predictions of the using the Pivotal Politics model of Congressional Policy making Krehbiel (1998). The Pivotal Politics model allows me to incorporate most of the institutional details of the Congressional policy making system (vetos, filibusters, inter and intra branch interactions) without having to make any complicated assumptions about when parties do or do not matter in shaping outcomes.

The paper proceeds as follows: First the Meltzer and Richard “Rational Size” of Government model is described in detail. Then the Pivotal Politics model is discussed in some detail. Predictions about the level of redistribution are then made based on the Pivotal Politics model and a set of empirical test are formulated using several different measures of the size of government using federal level data.

1.1 Rational Size of Government

The Meltzer and Richard “Rational Size” model uses a very stylized model of policy formation in order to generate the level of redistribution in their theory. Their model uses a direct democracy framework where each voter expresses their preferences for redistribution directly by voting rather than through their vote for a representative. Voters have preferences for redistribution that are determined by their location in the income distribution. Voters who find themselves below the mean income prefer higher taxes and transfers to their end of the distribution. Conversely, voters who are above the mean income prefer lower taxes and transfers from their end of the distribution. Income distributions are skewed to the right, and accordingly the median voter’s income is below the mean income. Meltzer and Richard use a straightforward application of Black’s median voter theorem (1948) and claim that we

\footnote{The Meltzer and Richard model is still very much at the heart of many models of income redistribution. For a survey of more current work on redistribution that uses similar policy models see Persson & Tabellini (2000, ch. 6).}
should expect to see relatively high levels of redistribution. This incentive to “soak the rich” is only tempered by the realization of the median voter that upper distribution voters will work less if taxes become too high, thereby reducing transfers. The prediction of the Meltzer and Richard model is that: \textit{the greater the distance between the median and mean income, the greater the amount of redistribution.}

[Need to still have results for the Party Cartel Model in case anyone ask during a Q&A. Maybe this could be an appendix for the dissertation version? ]

1.2 The Pivotal Politics Model

In the full Pivotal Politics model, there are several actors who’s location is critically important to the eventual location of the policy. These actors owe their importance to the interaction of the existing institutional rules embodied in the Constitution as well as the rules of each chamber. The first of these actors is the median member of the chamber \((m)\). In the Senate, the filibuster allows a minority of Senators \((2/5)\) to effectively block any proposal from being voted on. The member who occupies this \(2/5\) position is known as the \textit{filibuster pivot} a member who finds themselves at this pivotal position. The President can veto any proposal that defeats the status quo in both the House and Senate. However, in each chamber, if a super-majority of members \((2/3)\) in both chambers agree, they may override the president’s veto. The predicted policy of the pivotal politics model depends on the relative location of all of these agents. Since a bill must pass both the House and the Senate and be signed by the President in order to become the new policy (with the exception of a veto override), the pivotal politics model collapses the two chambers of the Congress into one unicameral chamber. In Figure (1) three examples of an 11 member legislature are depicted, with the location of the president varying. In (1a) the president is to the left of the median. This means that the veto pivot \((v)\), the member that is the pivotal member needed to ensure a veto override is the member 4th from the left. The filibuster pivot \((f)\),
the member at the 3/5ths point who’s vote could block any attempt to change the status quo, is located 5th from the right. In (1b) the same distribution of legislators is displayed, now with the president to the right of the median. Now, $v$ is the member who is 4th from the right and $f$ is the member who is the 5th from the left. The case where the president is closer to the median, somewhere between $v$ and $f$, is illustrated in Figure (1c). Just as in (1a), $v$ is the member 4th from the left and $(f)$ is located 5th from the right.

[Figure 1 about here.]

### 1.2.1 Policy Outcomes

The predicted policy in a pivotal politics model $(x)$ is a subgame perfect equilibrium that depends on the location of $f,v,p$ and importantly the status quo policy $(q)^6$. For example when the chamber has the ordering seen in Figure (1b), with $f < m < v < p$, the policy outcome will be:

$$x(q) = \begin{cases}  
m, & \text{if } q \leq 2f - m \\
2f - q, & \text{if } 2f - m < q < m \\
q, & \text{if } f \leq q \leq v \\
2v - q, & \text{if } v < q < 2v - m \\
m, & \text{if } 2v - m \geq q
\end{cases}$$

A graphical representation of these equilibrium outcomes can be seen in Figure (2). For all status quos below the critical value of $2f - m$ the chamber median is able to run his or her on ideal point against it and win. Therefore the median member’s ideal point becomes the policy outcome. The next region is the area above the critical value of $2f - m$ and below the filibuster pivot’s ideal point. In this area, the chamber median is no longer able to enact his or her ideal point. The filibuster pivot would filibuster that policy outcome. The chamber

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^6For a thorough explanation of the derivation of the equilibrium see Krehbiel (1996, p.12-22).
median is able to instead offer a proposal that is much closer to his or her ideal and that the filibuster pivot barely prefers to the status quo. The next region is called the gridlock interval. Between the ideal points of the filibuster pivot and the veto pivot, the status quo always prevails. The chamber median is unable to move the policy outcome any closer to his or her ideal. The fourth region is the set of status quos between the ideal point of the veto pivot and another critical value $(2v - p_m)$. In this interval, the chamber median cannot get his or her ideal point but they can get closer than the status quo by offering the member a choice between the status quo and a level of redistribution at $2v-q$. The final region is the region in which the status quo is so extreme that the chamber median can easily get over half the members to vote for the majority median’s ideal point over the status quo.

Each possible ordering of pivotal actors has a similar set of equilibrium conditions. For all possible orderings there is a gridlock interval and it is the set of status quos between the filibuster pivot and the veto pivot. No matter what the ordering all status quos in this interval will prevail no matter what the preferences of the other members of the chamber or the President is. This is also true whether under divided government, where both chambers of Congress and the Presidency are controlled by the same party or under divided government where one of the chambers or the Presidency are of a different party.

1.2.2 Predictions Regarding Redistribution

What are the predictions of the Pivotal Politics model with respect to income redistribution? If there were a reliable way to map status quo levels of redistribution onto the same scale with legislator ideal points the model would provide very specific predictions that could be read off of a graph like that in Figure (2). However, as of now there is no reliable way to map status quos to ideal points. Given that, I will take two different approaches to predicting the policy generated by the pivotal politics model. The first follows what other researchers who have tackled similar spending questions have done. They have assumed
that the Congress must pass a policy each year or the level of spending falls to zero (Alesina & Rosenthal 1995, Romer & Rosenthal 1979, Anderson 2006). Under this assumption the prediction of the pivotal politics model becomes relatively simple. As can be seen in Figure (2), if the status quo/reversion point is zero then the model predicts that the median of the chamber will see their ideal point realized as the policy.

[Figure 2 about here.]

The empirical implication of this is what I will call hypothesis 1:

**H1:** The further to the right that the median of the chamber is in the chamber, the smaller the “size of government.”

The assumption of the zero reversion point may be realistic for certain discretionary programs. However, many redistribution programs are entitlements which continue paying at the status quo level even if a new bill or budget is not passed.

[Need to cite some specific examples here ]

In the absence of a comparable measure for status quos and member ideal points can the Pivotal Politics model tell us anything about the level of income redistribution we would expect to see? The answer is fortunately yes! Recall that the model does predict something about how likely we are to see a new policy pass. New policies can only pass if the status quo is outside the gridlock interval. The empirical implication of this is what I will call hypothesis 2:

**H2:** The larger the size of the gridlock interval the smaller the change in the size of government.

[I should probably add a bit more at the beginning of this describing more about the basic spatial voting model and what ideal points are etc... ]
2 Time Series Analysis

Following Meltzer & Richard’s (1983) own test of their theory, I will test each of the implications the model a using a time series of federal data. The data runs from 19XX to 2006 and contains estimates and proxies for the ideal points of members of Congress, various measures of the “size of government” as well as a set of theoretically motivated control variables for each specification.

2.1 Data Description

The data set is a time series of federal data covering the 87th (1962) to the 105th (1998) Congress.

1. Size of Government: The size of government is measured as government spending as a percentage of GDP. The first specification uses all government outlays as the measure. The second specification looks at 4 major categories of spending: national defense, agriculture, transfers, and Social Security. The second specification allows me to look at income redistribution separate from other government outlays. This data was collected from the Office of Management and Budget’s Historical Tables Fiscal Year 2009. Figure (3) displays overall spending as well as the spending across the four categories. Here we can see the growth of redistribution spending from around 2.5% to over 8% (from about 5% to 12% if we include Social Security.).

2. Ideological Location: I use two different measures of the ideological location of members of Congress. These measures are used in two ways. the first is to locate the median of

7 Transfers includes: social services, healthcare, medicare, unemployment, housing assistance, and income security.
8 www.gpoaccess.gov/usbudget/fy09/hist.html
the chamber in order to test H1. Secondly the measures are used to calculate the size of the gridlock interval in order to test H2.

(a) Median District Income: In keeping with the Meltzer and Richard framework, I adopt the assumption that voter’s preferences for redistribution are determined by their location in the income distribution. The lower a voter’s income the higher the level of redistribution the prefer.

(b) Estimated Ideal Point: Poole & Rosenthal’s (1997) DW-NOMINATE Common Space scores are used to find the ideological position of the pivotal members within each model. In the informational model the pivotal actor is the median member of the chamber. In the party cartel model the pivotal actor is the median member of the majority party. First dimension DW-NOMINATE scores are generally regarded by scholars as a liberal-conservative scale with respect to economic policy (Poole & Rosenthal 2001). These scores run from -1 (extremely liberal) to +1 (extremely conservative).

3. Size of the Gridlock Interval: The size of the gridlock interval is the distance between the veto pivot and the filibuster pivot. For each of the two ideological location measures mentioned above, the size of the gridlock interval is calculated by first finding the location of the median member of the legislature then seeing if the president’s ideal point is to the right or left. If the president is to the left of the median then the veto pivot is calculated as the ideological location of the member 1/3rd of the way from the furthest left member. The filibuster pivot is then calculated as the ideological location of the member who occupies the 3/5ths spot in the legislature. This case is like the example shown in Figure (1a) and Figure (1c). Conversely, when the president is to

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9Poole & Rosenthal (2001) says that “In most periods, the first dimension captures, roughly speaking, the conflict between rich and poor.”
the right of the median of the chamber the veto pivot is the ideological location of the member who occupies the 2/3rds position in the chamber. the filibuster pivot is the member that occupies the 2/5ths position in the chamber. This mirrors the example shown in Figure (1b). When using median family income of a congressional district as the measure we the size and location of the gridlock interval is shown in Figure (4). Likewise in Figure (5) the location and size of the gridlock interval is shown when using Common Space DW-NOMINATE scores.

The time series nature of the data set necessitates a degree of caution be taken when choosing an empirical specification. An LM test for autoregressive conditional heteroskedasticity (ARCH) was conducted for both specifications. The null hypothesis for the test is that there is no autoregressive conditional heteroskedasticity. This null hypothesis was rejected. Also a Durbin-Watson test for serial correlation in the errors was conducted for each of the two specifications and the null hypothesis of no serial correlation could not be rejected at the 99% confidence level. In the face of autoregressive conditional heteroskedasticity and finding no evidence of serial correlation I choose the Newey-West estimator\textsuperscript{10} as my empirical specification. Newey-West estimation requires that the researcher specify the maximum number of lags that need to be corrected for in the face of autoregressive conditional heteroskedasticity. James Stock suggest a rule of thumb that the number of lags be \((\frac{L}{100})^{\frac{1}{4}}\). As such, I have set the maximum lag at 1. The results of the time series estimation of each of the models follows.

\textsuperscript{10}Newey-West is an OLS estimator with a standard error correction. It can be thought of as a time series analog of the Huber-White correction commonly used to correct for heteroskedasticity in cross-section data.
2.2 Empirical Results: Hypothesis 1

2.2.1 Using Median District Income

In order to test H1 using median district income as the proxy for legislator ideology I first look at how the location of the ideal point of the median member of the chamber affects the total level of government outlays. To look this the following specification is run:

\[
\text{Total Outlays}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t
\]

The results for this are seen in Table 1 and show that for every dollar that the median of the chamber moves to the right that total government outlays actually increase by .00065% of GDP this is statistically significant at the 99% level and it represents a dollar amount change of between 700 thousand and 16 million dollars depending on the base year GDP one looks at.

[Figure 1 about here. ]

Next I turn to several categories of spending, the first being National Defense Spending.

\[
\text{National Defense}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t
\]

The results for this regression are displayed in Table 2 and show that for every dollar that the median of the chamber moves to the right that defense spending actually falls by .00045% of GDP this is statistically significant at the 99% level and it represents a dollar amount change of between 600 thousand and 11 million dollars depending on the base year GDP under consideration.
Next I look at how the location of the median of the chamber affects the level of spending on agriculture.

$$\text{Agriculture Spending}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t$$

The results for this regression are displayed in Table 3 and show that the location of the median member of congress is not a statistically significant determinant of the level of agricultural spending.

Now I turn my attention to social welfare spending. Owing to the fact that I am most interested in redistributional spending I have run separate estimations for social security and other types of social welfare spending\textsuperscript{11}. First the estimation for the Social Security program is:

$$\text{Social Security}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t$$

The results for this regression are displayed in Table 4 and show that for every dollar that the median of the chamber moves to the right that Social Security spending increases by .00031% of GDP this is statistically significant at the 99% level and it represents a dollar amount change of between 330 thousand and 7.6 million dollars depending on the base year GDP that is looked at.

\textsuperscript{11}This other category includes: social services, healthcare, medicare, unemployment, housing assistance, and income security. Programs that are more clearly “redistributional” in nature.
Lastly, for the test of H1 using median district income as as proxy for a member’s ideal point I turn to purely redistributational spending. The following estimation is run.

\[
\text{Transfers}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t
\]  \hspace{1cm} (5)

The results for this regression are displayed in Table 5 and show that for every dollar that the median of the chamber moves to the right that redistributational spending increases by .00077% of GDP this is statistically significant at the 99% level and it represents a dollar amount change of between 820 thousand and 19 million dollars depending on the year of GDP examined.

The results in Tables (1) - (5) provide no support whatsoever for H1. In fact in many cases the exact opposite of the prediction in H1 is found and it is statistically significant. In the next section I explore the possibility that it may be the choice of ideal point measurement that is leading to the rejection of H1. To address this I use a more traditional measure of members ideal points, first dimension DW-NOMINATE scores.

2.2.2 Using Common Space DW-NOMINATE Scores

In order to test H1 using Common Space DW-MOMINATE scores as the measure of legislator ideology as before I begin by looking at how the location of the ideal point of the median member of the chamber affects the total level of government outlays, now using DW-NOMINATE scores rather than median district income. To look this the following specification is run:
Total Outlays_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t \quad (6)

Table 6 displays the results, and shows that for every dollar that the median of the chamber moves to the right that total government outlays decreases by 5.3% of GDP this is statistically significant at the 90% level and it represents a dollar amount change of between 5.6 and 160 billion dollars depending on the base year GDP one looks at.

[Figure 6 about here.]

Next I turn to several categories of spending, the first being National Defense Spending.

National Defense_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t \quad (7)

The results for this regression are displayed in Table 7. The location of the median member of congress is not a statistically significant determinant of the level of defense spending.

[Figure 7 about here.]

Next I look at how the location of the median of the chamber affects the level of spending on agriculture.

Agriculture Spending_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t \quad (8)

The results for this regression are displayed in Table 8 and show that, just as was found when income was used as the ideal point measure, the location of the median member of congress is not a statistically significant determinant of the level of agricultural spending.
For the Social Security program the specification is:

\[ \text{Social Security}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t \]  

(9)

The results for this regression are displayed in Table 9 and there is no statistically significant effect of the location of the median member of congress on the level of Social Security Spending.

Lastly, I again turn to redistribution programs. In order to see if the median member of Congresses location is a significant factor in the level of redistribution. The following estimation is run.

\[ \text{Transfers}_t = \beta_0 + \beta_1 \text{Median of Chamber} + \epsilon_t \]  

(10)

The results are displayed in Table 10 and just as with all the other spending categories the results are not statistically significant.

When using DW-Nominate scores as the measure for member ideology there is some support for H1. For all government outlays the further to the right that the median of the chamber sits the less government spending we see.

H1 relies on a strong assumption, that is that the reversion point that prevails if the status quo fails is zero. This assumption is unlikely to hold for most government spending. H2
takes a more realistic approach that spending will revert to the status quo level of spending if a proposal fails to supplant it.

2.3 Empirical Results: Hypothesis 2

2.3.1 Using Median District Income

In order to test H2 using median district income as the proxy for legislator ideology I first look at how the size of the gridlock interval in the chamber affects the total level of government outlays. The following specification is run:

\[
\text{Total Outlays}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t
\] (11)

The results for this are seen in Table 11 and show that for every point that the gridlock interval increases that total government outlays increase by .00035\% of GDP this is statistically significant at the 99\% level and it represents only a dollar amount change of between 373 thousand and 8.6 million dollars. So while it is statistically significant it represents a very small dollar amount.

[Figure 11 about here. ]

Next I turn to several categories of spending; first national defense.

\[
\text{National Defense}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t
\] (12)

The results for this regression are displayed in Table 12 and show that for every point that the gridlock interval increases that defense spending actually falls by .00034\% of GDP
this is statistically significant at the 99% level however it represents a dollar amount change of only 373 thousand and 8.4 million dollars again representing a very small actual dollar amount.

[Figure 12 about here. ]

Next I look at how the size of the gridlock interval affects the level of spending on agriculture.

\[
\text{Agriculture Spending}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{13}
\]

The results for this regression are displayed in Table 13 and show that the size of the gridlock interval is a statistically significant determinant of the level of agricultural spending (at the 95% confidence level). However, the effect in dollars is very small. For example for the 1998 GDP of 2472.2 billion of dollars a 1 dollar move in the size of the gridlock interval will decrease agricultural spending (as a percentage of GDP) by .00002%. In dollars this is between 21 thousand and 494 thousand dollars.

[Figure 13 about here. ]

Turning to social welfare spending I first estimate the following for the Social Security program:

\[
\text{Social Security}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{14}
\]

The results are displayed in Table 14 and show that for every point that the gridlock interval increases that Social Security spending increases by .00019% of GDP this is statis-
tically significant at the 99% level and it represents a dollar amount change of between 202 thousand and 4.6 million dollars.

[Figure 14 about here. ]

Lastly, for a test of H2 using median district income as as proxy for a member’s ideal point and the size of the gridlock interval on purely redistributitional spending. The following estimation is run.

\[ \text{Transfers}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \quad (15) \]

The results for this regression are displayed in Table 15 and show that for every dollar that the gridlock interval increases that redistributational spending increases by .00052% of GDP this is statistically significant at the 99% level and it represents a dollar amount change of between 555 thousand and 12 million dollars.

[Figure 15 about here. ]

The results in Tables (11) - (15) provide only a little support for H2. In some cases the effect of a larger gridlock interval is as the theory would predict. However, in most of the cases the effect is in the opposite direction. In the next section I explore the possibility that it may be the choice of ideal point measurement that is leading to the rejection of H2. To address this I use a more traditional measure of members ideal points, first dimension DW-NOMINATE scores.

2.3.2 Using Common Space DW-NOMINATE Scores

As was done with H1 I will now test H2 using Common Space DW-MOMINATE scores as the measure of legislator ideology as with income above I begin by looking at how the size
of the gridlock interval affects the total level of government outlays. Now, however, instead of using district income I use DW-NOMINATE scores. The following specification is run:

\[
\text{Total Outlays}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{16}
\]

In Table 16 the results are displayed, and we can see that the size of the gridlock interval does not have a statistically significant effect on the level of total government outlays.

[Figure 16 about here. ]

Next, as before, I will turn to several categories of spending to see if certain types of spending are affected by the size of the gridlock interval even if the overall level of outlays is not. The first area is national defense spending.

\[
\text{National Defense}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{17}
\]

The results for this regression are displayed in Table 17 and show that for every dollar that the gridlock interval increases that redistributional spending decreases by 11.42\% of GDP this is statistically significant at the 99\% level and it represents a large dollar amount change of between 12 billion and 282 billion dollars.

[Figure 17 about here. ]

Next I turn to how size of the gridlock interval affects the level of spending on agriculture.

\[
\text{Agriculture Spending}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{18}
\]
The results for this regression are displayed in Table 18 and show that for every dollar that the gridlock interval increases that redistributional spending decreases by .92% of GDP, this is statistically significant at the 99% level and it represents a change of between 982 million and 22.7 billion dollars. This is another relatively large result in terms of dollars.

[Figure 18 about here.]

As with the other permutations I next focus on social welfare programs. For the Social Security program the specification is:

\[
\text{Social Security}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{19}
\]

The results for this regression are displayed in Table 19 and show that for every dollar that the gridlock interval increases that redistributional spending decreases by 4.69% of GDP, this is statistically significant at the 99% level and it represents a change of between 95 billion and 116 billion dollars. This is another large result in terms of dollars.

[Figure 19 about here.]

Lastly, I again turn to redistribution programs. In order to see if the median member of Congresses location is a significant factor in the level of redistribution. The following estimation is run.

\[
\text{Transfers}_t = \beta_0 + \beta_1 \text{Size of Gridlock Interval} + \epsilon_t \tag{20}
\]

The results for this regression are displayed in Table 20 and show that for every dollar that the gridlock interval increases that redistributional spending decreases by 14% of GDP.
this result is statistically significant at the 99% level. It represents a change of between 13 billion and 340 billion dollars.

[Figure 20 about here. ]

When using DW-Nominate scores as the measure for member ideology there is a good bit of support for H2. Once government outlays are disaggregated into several large (often political charged) spending areas we see that the larger the gridlock interval is the less spending we see in that area

3 Conclusion

The failure of the Meltzer and Richard direct democracy model to pass empirical muster has left political economy scholars looking for alternative models of the determinants of the size of government. In this paper I apply the pivotal politics model of Congressional policy making to the subject of the size of government and the predictions from the model were empirically tested under several different measurement choices. The results seem to indicate that the location of the median member in the chamber has no significant effect on the size of government. The size of the gridlock interval does have a significant effect on several major spending areas when ideal points are measures using common space DW-NOMINATE scores.
References


Figure 1: Examples of Pivotal Politics Models
Figure 2: Equilibrium Outcomes Predicted by Pivotal Politics Model
Figure 3: Levels of Government Spending
Figure 4: Location and Size of the Gridlock Interval (Median Family Income)
Table 1: Newey-West Estimation of Outlays on Location of Median Member of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (Income)</td>
<td>0.00065** (0.00014)</td>
</tr>
<tr>
<td>Intercept</td>
<td>13.15388** (1.75901)</td>
</tr>
</tbody>
</table>

N: 37
Log-likelihood: .
$F_{(1,35)}$: 22.07258
Significance levels: † : 10%  * : 5%  ** : 1%

Figure 5: Location and Size of the Gridlock Interval (DW-NOMINATE)
Table 2: Newey-West Estimation of Defense Spending on Location of Median Member of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>(Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (Income)</td>
<td>-0.00045**</td>
<td>(0.00012)</td>
</tr>
<tr>
<td>Intercept</td>
<td>11.89215**</td>
<td>(1.60905)</td>
</tr>
</tbody>
</table>

N = 37  
Log-likelihood =  
F(1,35) = 14.20526  
Significance levels: † : 10%  * : 5%  ** : 1%

Table 3: Newey-West Estimation of Agriculture Spending on Location of Median Member of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>(Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (Income)</td>
<td>-0.00002</td>
<td>(0.00002)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.69514**</td>
<td>(0.20085)</td>
</tr>
</tbody>
</table>

N = 37  
Log-likelihood =  
F(1,35) = 2.0464  
Significance levels: † : 10%  * : 5%  ** : 1%
Table 4: Newey-West Estimation of Social Security Spending on Location of Median Member of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (Income)</td>
<td>0.00031** (0.00005)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.15895 (0.69964)</td>
</tr>
</tbody>
</table>

N: 37
Log-likelihood: .
F (1,35): 43.07041
Significance levels: †: 10% *: 5% **: 1%

Table 5: Newey-West Estimation of Transfer Spending on Location of Median Member of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (Income)</td>
<td>0.00077*** (0.00012)</td>
</tr>
<tr>
<td>Intercept</td>
<td>-3.72377* (1.67421)</td>
</tr>
</tbody>
</table>

N: 37
Log-likelihood: .
F (1,35): 44.41295
Significance levels: †: 10% *: 5% **: 1%
Table 6: Newey-West Estimation of Outlays on Location of Median Member of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (DW-NOMINATE)</td>
<td>-5.30213† (3.05376)</td>
</tr>
<tr>
<td>Intercept</td>
<td>21.03500** (0.46407)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 3.01462

Significance levels: † : 10%  * : 5%  ** : 1%

Table 7: Newey-West Estimation of Defense Spending on Location of Median Member of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (DW-NOMINATE)</td>
<td>-4.57388 (3.65101)</td>
</tr>
<tr>
<td>Intercept</td>
<td>5.80718** (0.50414)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 1.56944

Significance levels: † : 10%  * : 5%  ** : 1%
Table 8: Newey-West Estimation of Agriculture Spending on Location of Median Member of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (DW-NOMINATE)</td>
<td>-0.37280 (0.36133)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.37746** (0.05000)</td>
</tr>
</tbody>
</table>

| N                                | 37                      |
| Log-likelihood                   | .                       |
| F (1,35)                         | 1.0645                  |

Significance levels: †: 10% *: 5% **: 1%

Table 9: Newey-West Estimation of Social Security Spending on Location of Median Member of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (DW-NOMINATE)</td>
<td>0.16671 (1.42024)</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.15130** (0.22882)</td>
</tr>
</tbody>
</table>

| N                                | 37                      |
| Log-likelihood                   | .                       |
| F (1,35)                         | 0.01378                 |

Significance levels: †: 10% *: 5% **: 1%
Table 10: Newey-West Estimation of Transfer Spending on Location of Median Member of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Median (DW-NOMINATE)</td>
<td>2.81213 (3.90477)</td>
</tr>
<tr>
<td>Intercept</td>
<td>6.28797** (0.55825)</td>
</tr>
</tbody>
</table>

N: 37
Log-likelihood: .
F (1,35): .51866

Significance levels: †: 10% *, 5% **: 1%

Table 11: Newey-West Estimation of Outlays on Gridlock Size of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (Income)</td>
<td>0.00035** (0.00013)</td>
</tr>
<tr>
<td>Intercept</td>
<td>18.57453** (1.11404)</td>
</tr>
</tbody>
</table>

N: 37
Log-likelihood: .
F (1,35): 7.83088

Significance levels: †: 10% *, 5% **: 1%
Table 12: Newey-West Estimation of Defense Spending on Gridlock Size of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>(Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (Income)</td>
<td>-0.00034**</td>
<td>(0.00010)</td>
</tr>
<tr>
<td>Intercept</td>
<td>8.91192**</td>
<td>(1.02011)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
$F_{(1, 35)}$ 11.07859
Significance levels: †: 10% ∗: 5% **: 1%

Table 13: Newey-West Estimation of Agriculture Spending on Gridlock Size of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>(Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (Income)</td>
<td>-0.00002*</td>
<td>(0.00001)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.59293**</td>
<td>(0.10773)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
$F_{(1, 35)}$ 4.05669
Significance levels: †: 10% ∗: 5% **: 1%
Table 14: Newey-West Estimation of Social Security Spending on Gridlock Size of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (Income)</td>
<td>0.00019** (0.00005)</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.58237** (0.49049)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 17.94369

Significance levels: † : 10% * : 5% ** : 1%

Table 15: Newey-West Estimation of Transfer Spending on Gridlock Size of Congress - Income

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (Income)</td>
<td>0.00052** (0.00011)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.84138 (1.17829)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 23.41046

Significance levels: † : 10% * : 5% ** : 1%
Table 16: Newey-West Estimation of Outlays on Gridlock Size of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (DW-NOMINATE)</td>
<td>-3.58797 (5.99396)</td>
</tr>
<tr>
<td>Intercept</td>
<td>20.02459** (2.51525)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) .35832

Significance levels: †: 10% *: 5% **: 1%

Table 17: Newey-West Estimation of Defense Spending on Gridlock Size of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (DW-NOMINATE)</td>
<td>-11.42230** (3.32536)</td>
</tr>
<tr>
<td>Intercept</td>
<td>10.61658** (1.51336)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 11.79857

Significance levels: †: 10% *: 5% **: 1%
Table 18: Newey-West Estimation of Agriculture Spending on Gridlock Size of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>(Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (DW-NOMINATE)</td>
<td>-0.91863**</td>
<td>(0.31170)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.76462**</td>
<td>(0.12821)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 8.68578

Significance levels: ṭ : 10%  * : 5%  ** : 1%

Table 19: Newey-West Estimation of Social Security Spending on Gridlock Size of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>(Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (DW-NOMINATE)</td>
<td>-4.69181*</td>
<td>(2.07491)</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.30290*</td>
<td>(0.94042)</td>
</tr>
</tbody>
</table>

N 37
Log-likelihood .
F (1,35) 5.11306

Significance levels: ṭ : 10%  * : 5%  ** : 1%
Table 20: Newey-West Estimation of Transfer Spending on Gridlock Size of Congress - NOMINATE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Std. Err.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Gridlock (DW-NOMINATE)</td>
<td>-13.76975** (4.54832)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.69075 (2.09927)</td>
</tr>
</tbody>
</table>

| N                          | 37                      |
| Log-likelihood             |                         |
| $F_{(1,35)}$               | 9.16538                 |

Significance levels: † : 10%  * : 5%  ** : 1%