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IN DEFENSE OF EARMARKS:
CAN EARMARKS FOSTER A MORE PRODUCTIVE CONGRESS?

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ABSTRACT

This paper explores the connection between earmark allocations and legislative productivity in Congress from 1993 and 2012. I hypothesize that members use earmark allocations to buy political support for controversial legislation. This exchange between members increases the likelihood of passing legislation without compromising the language in the bill. Therefore, I theorize that more earmark allocations in a given fiscal year will increase legislative productivity in the corresponding session of Congress. To that end, I expect the 2006 and 2010 earmark moratoriums to have a negative effect on legislative productivity in the years after they were enacted. Given the results of my statistical analysis, I find that (1) the moratoriums effectively stopped earmark spending; and (2) there exists a positive correlation between earmark allocations and legislative productivity. These results support the theory that the earmark moratoriums helped decrease legislative productivity between 2007 and 2013.

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Chapter 1

Earmarks and their Effect on Legislative Productivity

Over the past few years, the American people have witnessed an increasingly dysfunctional Congress. As seen through the 2010 debt ceiling crisis and recent fiscal cliff negotiations, Congress has showcased its inability to pass laws – let alone a budget – in a timely manner. This has led the President and political pundits to label it as the "Do-Nothing" Congress, and rightfully so. According to the Library of Congress, the 112th Congress has been the least productive Congress in history, passing only 333 bills in its two year term, which accounts for less than half of what its predecessor produced (Library of Congress 2013). It's not surprising then why the Congress' job approval rating is at an all-time low, registering at 6 percent (Klein 2013). In the words of Representative Charlie Dent (R-PA), "Congress is now rated slightly above or below cockroaches and colonoscopies" (Peters 2012). To that end, Congress' inability to pass laws raises the question: "Why has legislative productivity in Congress fallen over time?"

This paper will examine what factors dictate legislative productivity from one Congress to the next. Conducting this study is essential because it will allow the American people to understand why Congress is dysfunctional and help Congressmen and women create mechanisms to promote productivity. Furthermore, this understanding can help avert future budget crises that have plagued the American economy over the past three years. Numerous economists have contended that the uncertainty surrounding the future of the federal government's role in the American economy decreases consumer and investor confidence, which in turn stalls hiring and deters consumption. According to the Bureau of Labor and Statistics,

throughout the 2010 debt-ceiling debate, monthly job growth fell approximately 120,000 jobs while consumer confidence fell 34 points between the months of May to August (Bureau of Labor and Statistics 2012). Now, as Congress engages in another debt-ceiling debate, researching better ways to ensure that Congress passes laws could not only improve its approval rating, but also stave off a future recession. Therefore, researching legislative productivity is crucial to the health of the American economy as Congress and the President debate the future of fiscal policy.

This study will attempt to answer this question by analyzing the effect of the 2006 and 2010 earmark moratoriums in Congress. While other notable factors like party control, party polarization, and campaign financing may contribute to changing productivity figures, self-imposed earmark bans in Congress may be preventing members from building winning coalitions on controversial legislation. Although considered wasteful spending, earmarks many promote legislative efficiency because they "grease the wheels" of Congress. Earmarks can simply buy-off political support which in turn ensures the passage of bills. These moratoriums, therefore, may contribute to the inefficiencies in Congress today. To that end, this study will first review past literature regarding the use of earmarks in Congress. Then, it will use a two-stage interrupted time series model to test whether the amount of bills passed by Congress changed in conjunction with the amount of earmarks appropriated before and after the bans. These tests will produce results which will be discussed thereafter.

Chapter 2

Theoretical Understanding of Legislative Productivity

Many scholars understand legislative productivity as a coordination game within Congress. Collectively, Congress must pass relevant legislation in a timely manner otherwise they are held accountable by the electorate in future elections. Therefore, under the assumption that members are predominantly motivated by reelection (Mayhew 1974), Congress as an institution must coordinate legislation to meet the electorate's expectation that government operates efficiently. Evidence of this phenomenon can be seen in the failure of the 112th Congress to pass Hurricane Sandy relief this January. After the aid package failed to pass the House, New Jersey Governor Chris Christie blasted Congress' inability to act by saying: "Americans are tired of the palace intrigue and political partisanship of this Congress ... this used to be something that was not political. Disaster relief was something that you didn't play games with" (Henninger 2013). Since then, 24 Congressmen have founded an advocacy group called "No Labels" in order to help coordinate cooperation across the aisle and foster a more productive government (Peters 2013).

Several studies have explored this connection between Congressional legislative performance and electoral accountability. In a study linking Congressional job approval ratings to House elections from 1980 to 2000, Jones and McDermott found that, "Congressional approval has a positive and a significant effect on voting for candidates from the majority party in the House regardless of incumbency status" (Jones & McDermott 2002, 8). However, many scholars assert that most voters fail to even make a distinction between parties when assessing

Congressional performance. Adler, Ensley and Wilkerson addressed this issue in the 2008 study, which found that, "voters who approved of Congress' job performance were more likely to support majority and minority party incumbents" (Adler, Ensley & Wilkerson 2008, 16), in House elections between 1980 and 2002.

Over the years, scholars have attempted to conceptualize how Congress addresses this collective action problem through a variety of theoretical models. These include: the partisan, governing, median voter and conditional government theories. Going forth, I will describe each theory in the context of legislative productivity to illustrate how members of Congress coordinate policy in face of partisanship and ideological differences.

The partisan theory on legislative politics provides the most conventional look at lawmaking in a two-party system. According to Cox and McCubbins, the majority party possesses the ability to set the legislative agenda. Acting as a political cartel, the majority party exercises this power through "gatekeeping" – the ability to withhold legislation from the House floor for a vote. This in turn allows the majority party to only consider bills that the party is confident it can pass. Therefore, legislative productivity is determined by the majority party's ability to mobilize its members around party-sponsored policy (Cox & McCubbins 2005, 15).

The partisan theory, however, doesn't take into account the electoral accountability in response to an unproductive legislature. This issue is addressed in Adler and Wilkerson's governing theory of legislative politics. According to both scholars, Congress does not have discretion over its agenda; rather, it addresses policy issues in response to exogenous events: "Congress could defer addressing an issue like 9/11 or Katrina in favor of longstanding partisan priorities, but we think this is unlikely. Although Congress is not formally required to take up

such issues, ‘compulsory’ is probably the best way to describe how legislators think about them” (Alder & Wilkerson 2010, 2).

Put in the context of legislative productivity, Adler and Wilkerson contend that under the pressure of electoral accountability, Congress will produce compulsory legislation on a bi-partisan basis in order to ensure it meets the electorate’s expected level of legislative performance. Congress, however, will fail to pass discretionary legislation, which they define as legislation that does not possess a broad-based sense of urgency within Congress. Discretionary legislation will fail to pass because opposing members of Congress can vote down the bill without the shared consequence of electoral accountability. This theory is supported through both scholars’ 2007 study, which compared the passage rates of compulsory and discretionary legislation in the 102nd and 105th Houses. Adler and Wilkerson found that while discretionary bills accounted for 80 percent of the total floor legislation, only 4 percent passed the chamber. Likewise, compulsory legislation accounted for just 13 percent of total floor legislation but passed 55 percent of the time in the 102th, and 43 percent of the time in the 105th House (Alder & Wilkerson 2010, 17).

The ability for Congress to compromise on compulsory legislation can be explained through the median voter theorem. This theorem states that, assuming legislators’ voting preferences are single-peaked, a majority-rule voting system will select the outcome most preferred by the median voter (Krehbiel 2004, 2). In the context of passing compulsory legislation, members will compromise until the median policy preference is reached so as to not jeopardize their collective chances of reelection. Therefore, creating different policy outcomes in Congress is dependent upon manipulating the median preference of its members.

The conditional government model has attempted to understand how the median preference can be manipulated in a two-party system. According to Aldrich, members create parties to collectively pass bills that produce policy outcomes away from the chamber median. This in turn creates legislative records distinct to each party, which then can be used by party members to campaign for reelection. The necessity and ability for the majority party to create these outcomes is predicated upon the number of members in the party and heterogeneity of their preferences. Aldrich asserts that when the majority party possesses a larger share of Congress, the majority party median moves closer to the Congressional median as the majority party simply accounts for a larger portion of Congress (Aldrich 2000, 215). This effect allows the majority party to pass policy that is similar to what would occur "naturally" on the floor. Wiseman and Wright support this claim in their 2008 study on Congressional voting behavior. They write:

> "Over the past 150 years in the US House, the average distance between the chamber and minority party medians has been three times the distance between the chamber and majority party medians. Consequently, even if the majority party does not control the agenda and median voter outcomes ensue, those outcomes will be significantly biased in the majority's favor" (Wiseman & Wright 2008, 5).

Although policy outcomes may inherently favor the majority parity, a larger majority party share generally increases the diversity in party preferences, which subsequently creates more diluted, centrist policy. Cox and McCubbins expand this idea when they assert, "The more heterogeneous the preferences within a given coalition, the more that coalition's partners will wish to limit the proposal rights of other partners, which generally entails strengthening their own and others' veto rights" (Cox & McCubbins 2004, 7). Members react this way because they represent the needs of specific districts, not bound to abstract party

platforms, which motivates them only to vote for party-sponsored policy outcomes so long as it's in their self-interest. Toward this end, when the majority party attempts to produce policy, "party leaders will use tools at their disposal – agenda control, closed rules, whips, and so on – to achieve outcomes that the median member of the majority party will prefer to outcomes that would occur in the absence of party leadership" (Wiseman & Wright 2008, 10). Therefore, success in creating policy outcomes away from the chamber median depends upon artificially creating homogenous preferences to move the majority's median.

Chapter 3

Connecting Earmarks to Legislative Productivity

Earmarks can help mitigate these challenges by allowing party leaders to create legislation that doesn't gravitate toward the Congressional median while still retaining support of the majority. Acting as a another tool in a party leader's toolbox, earmarks can buy political support from members that would ordinarily oppose policy outcomes, thereby shifting the Congressional median away from the center. This not only produces more favorable policy outcomes for the majority party, but also gives members the collective benefit of a more productive legislature. Without earmarks, opposing members face the trade-off between a productive legislator and favorable policy outcomes. Under these circumstances, if members vote with their opposition, they ensure legislative productivity yet misrepresent their district's political preferences. Likewise, if members vote against their opposition, they maintain the status-quo yet risk the political backlash from an unproductive legislature. Earmarking reduces this opportunity cost by distributing federal appropriations to those that oppose controversial legislation in exchange for their votes, which collectively benefits Congress as a whole. In other words, earmarks simply serve as the cost of doing business in Congress. Diana Evans supports this claim in her book, *Greasing the Wheels of Congress*, as she writes:

> "Policy coalition leaders create legislative majorities for controversial general interest legislation [by buying] legislators' votes, one by one, favor by favor… Where attainment of a secure majority on the merits seems doubtful, distributive

benefits provide the extra margin of support to compensate for pressures that otherwise might persuade members not to vote for such a bill" (Evans 2004, 29).

Members of Congress are susceptible to this strategy because the distributive benefits from earmarking increases the likelihood of reelection. According to a 2012 study conducted by Stratmann, a 10 million dollar increase in earmarks leads to as much as a one percent increase in the incumbent's vote-share (Stratmann 2012, 27). Earmarks are effective in winning over the electorate because they are generally allocated to district-specific projects that benefit targeted industries, campaign contributors or constituency groups, which are in turn leveraged by Congress for political support. Lazarus, Glas and Barbieri confirm this theory in their 2012 study, which analyzed the effect of earmarks on the 2008 and 2010 Congressional elections. They found that Democratic incumbent campaign receipts increased by 25,000 dollars for every additional earmark provided to the incumbent's district. This also reduced the strength of electoral challenges the incumbent faced, thereby clearing the path for re-nomination (Lazarus, Glas & Barbieri 2012, 266).

In addition to direct campaign contributions, earmarks help members acquire support from interest groups and political action committees (PAC's). According to Fisher and Rocca, earmarks allow Congressmen to publicly take positions on certain issues outside of their voting record. This in turn provides members the opportunity to signal their policy preferences to interest groups and PAC's in order to, "advertise the direction and intensity of their positions to potential donors" (Fisher and Rocca 2012, 4). Fisher and Rocca explored this connection by analyzing the relationship between defense earmarks and campaign contributions from defense PAC's in the 110th Congress. They found a statistically significant positive relationship between the two (Fisher and Rocca 2012, 28).

While numerous studies have supported the assumptions connecting earmarking and legislative productivity, formal research has not been completed to support this theory. Diana Evans attempted to prove the relationship between vote-buying and pork-barrel spending through a case study analysis on the 1987 and 1991 transportation appropriations bills and NAFTA legislation. While her research is supported through statistical analysis, her results cannot be indicative of any long-term trends due her small sample size. Therefore, statistical research studying multiple appropriations bills over a longer period of time is necessary to fill the gap in this research.

While the distributive benefits of earmarks may incentivize members of Congress to compromise, earmarks may not be fully responsible for changing levels of legislative output. In recent years, Congress has become increasingly polarized surrounding the direction of government fiscal policy. According to VoteView, a political database that tracks and calculates party polarization through Congressional voting records, party polarization is at its highest level since the end of Reconstruction (VoteView 2013). This heighten sense of polarization may be a sign that the opportunity cost of compromising on legislation in exchange for earmarks is too high, making earmarks ineffective. In addition, polarization may be making earmarks irrelevant to the coalition building process as both parties are currently debating federal spending levels.

Furthermore, campaign finance reform may be the reinforcing this increasingly polarized environment. Since “Citizens United v. Federal Election Commission”, PAC’s have dramatically increased the amount of campaign contributions in federal elections, making them the leading contributors to Congressional races. The Center of Responsive Politics reports that outside spending by PAC’s in Congressional elections has increased 70 percent between 2008 and 2012 – from about 400 million to 680 million dollars in just four years (Open Secrets 2013). This

exponential increase in campaign financing may be leading incumbents to align their votes with PAC platforms in order to garner more campaign contributions. This in turn may be incentivizing Congressmen to vote on a more ideological basis as accepting earmarks in exchange for political support is too risky and not as cost-effective relative to PAC funding.

Given these theories, the one-time moratorium in 2006 and the 2010 ban on earmarks may be preventing Congress from benefitting from the legislative value earmarks provide. By eliminating earmarking, majority party leaders theoretically lose a tool in their toolbox. Winning coalitions become harder to create as the opportunity cost for members supporting opposing legislation increases, forcing members to vote strictly on an ideological basis. The effects of these bans can be seen through Congressional legislative productivity in recent years. Since the 109th Congress was elected in 2008, Congress has passed fewer bills than the year before, making the 113th the least productive Congress in history (Library of Congress 2013). While other variables including polarization and campaign finance reform may also contribute to the lack of the bills passed annually, eliminating earmarks as a political tool may be heightening Congress' downward trend in legislatively productivity.

Chapter 4

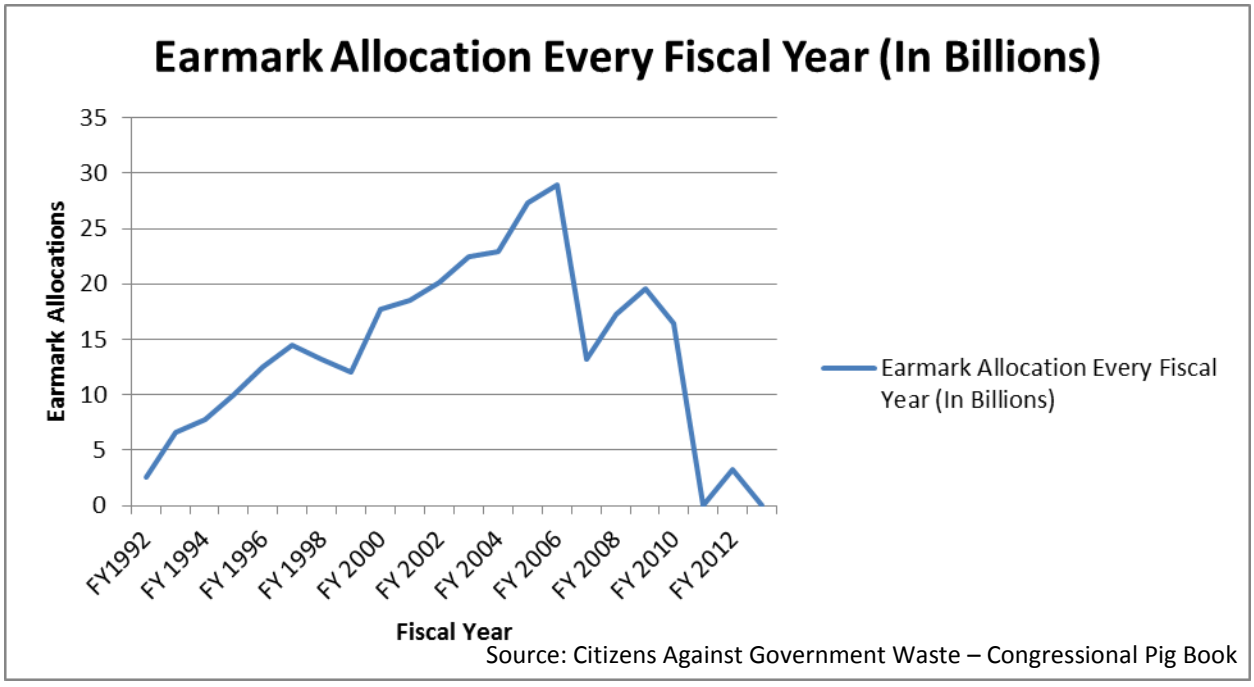
Empirical Analysis

I test the connection between earmarking and legislative productivity through a two stage interrupted time series design. This type of model measures the effect of an intervention between two observations over time. In this case, an interrupted time series model allows me to analyze the impact of the earmark moratoriums given the statistical relationship between earmarking and legislative productivity. To that end, I run two regression models. The first model measures the impact the 2006 and 2010 earmark moratoriums had on earmarking allocations, while the second model measures the effect earmark allocations have on legislative productivity from 1993 to 2013. Analyzing the results of both models will prove whether the moratoriums significantly affected legislative productivity.

In the first regression model, I test the statistical effect the moratoriums had on earmark allocations for every year they were in place. These moratoriums act as "interventions" in the interrupted time series design and are added to the regression analysis by using a dichotomous variable, labeled Earmark Moratorium. This dichotomous variable shows the initial impact of the moratoriums had on earmark allocation levels. I also add a trend variable, labeled Earmark Moratorium Trend, to show annual effect of the moratoriums for each consecutive year the moratoriums were enacted. This variable counts each year the moratoriums were in effect. Finally, I add a counter variable to control for the overall trend in earmark allocations over time. Similar to Earmark Moratorium Trend, this variable counts each fiscal year earmark allocations were appropriated. This variable is labeled as Annual Trend.

I expect earmark allocations to initially decrease after the 2006 and 2010 earmark moratoriums were enacted and slowly increase each after the moratoriums were in effect. Figure I illustrates these expectations clearly as it graphs earmarks allocation levels in each fiscal year from 1991 to 2012. As depicted on the graph, earmark allocations substantially fall after FY 2006 and the increase each year after until they drop once again in 2010.

Figure 1



Source: Citizens Against Government Waste – Congressional Pig Book

The equation for the first regression model is as follows:

$Y = b + b_1X_1 + b_2X_2 + b_3X_3$

Where:

Y is the dependent variable, which represents earmark allocations. This variable indicates the amount of federal funding allocated as earmarks in given fiscal year and is numerated in billions of dollars.

B is the Y-intercept. This measure signifies the amount of earmark allocations Congress would appropriate if the moratoriums were not in effect

X_1 is a dichotomous variable that represents the existence of the 2006 and 2010 earmark moratoriums Observations denoting when the moratoriums were in place are scored as "1". All other observations are scored "0".

B_1 is the coefficient for X_1. This measure represents the change in the level of earmark allocations when the moratoriums were in effect.

X_2 is a counter variable that signifies the trend in earmark funding after the moratoriums were established. Observations before 2010 are scored "0" and are numbered "1, 2, 3, 4…" beginning in 2010 and after.

B_2 is the coefficient for X_2. This measure represents the change in the level of earmark allocations every consecutive year after the moratoriums were enacted.

X_3 is a counter variable that represents the overall trend in earmark funding from 1991 to 2012. Observations are numbered "1, 2, 3, 4…" starting in 1991.

B_3 is the coefficient for X_3. It represents the annual change in earmark funding over time.

From there, I test the effect of earmark allocations on legislative productivity. This test will prove whether the earmark moratoriums had any appreciable effect on legislative productivity. In the second model, the dependent variable is legislative productivity while the independent variable is earmark allocations. I control for the session of Congress and add a counter variable to tease out any underlying trends in legislative productivity. In addition, I add three explanatory variables to strengthen the model and control for any competing hypotheses. The variables include party polarization, Congressional PAC contributions, and divided government.

Assuming a positive relationship exists between earmarking and legislative productivity, I expect to see legislative productivity to decrease once the earmark moratoriums take place. While both party polarization, Congressional PAC contributions, and divided government may mute the effects of distributive benefits of earmarking, this expectation falls in line with the theory above. By eliminating earmarks, the majority party loses its ability to buy political support through distributive benefits, which prevents it from building winning coalitions that create favorable party outcomes. This in turn decreases the likelihood that legislation will pass the floor, thereby decreasing Congressional legislative productivity.

Figure 2

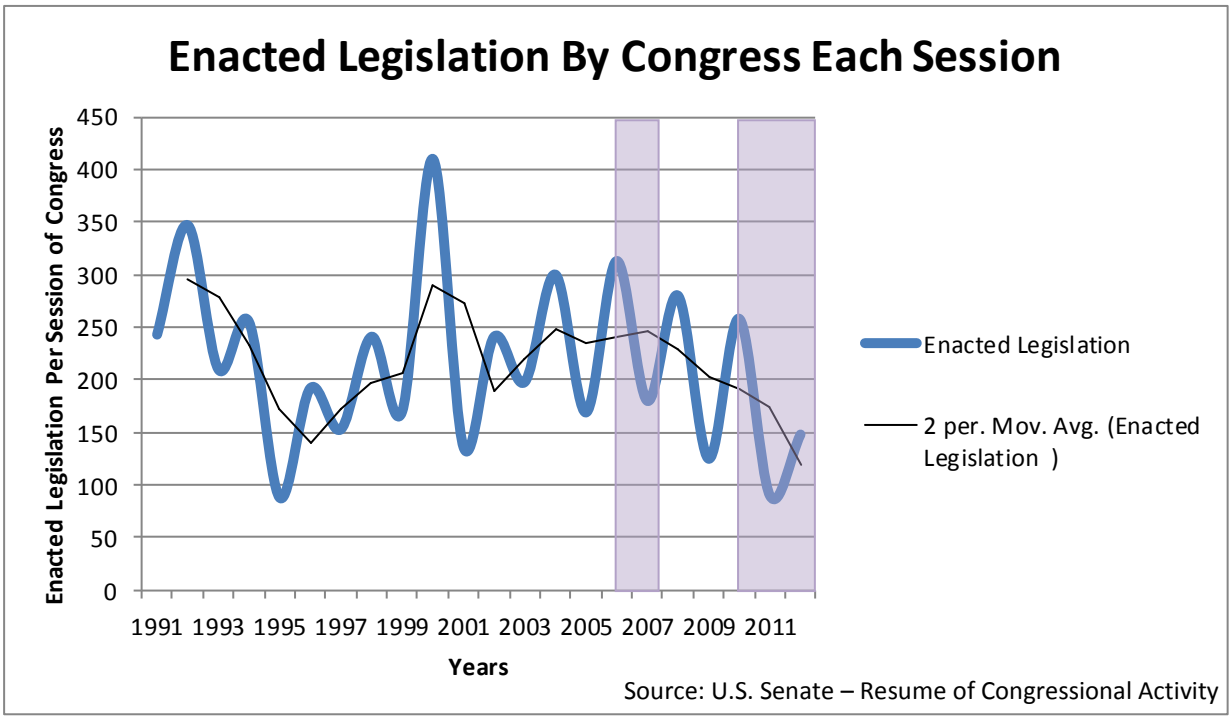


Figure 2 illustrates my theory by showing the effect the moratoriums had on legislative productivity from 1991 to 2013. In this graph, levels of legislative productivity, measured through the amount of publicly enacted laws, are displayed over time. Each shaded area represents the enactment of the 2006 and 2010 intervention. In both cases, legislative

productivity falls during periods when the moratoriums were in effect. The level and slope of the decrease will be tested further in my analysis.

The equation for the second regression model is as follows:

$$Y = b + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$$

Where:

Y is the dependent variable, which represents legislative productivity. This variable is measured through the number of public legislation enacted by Congress in a given session. Generally, sessions of Congress run from early January to late December.

B is the Y-intercept. This measure indicates the amount of legislation Congress would pass if each independent variable had no effect on the regression analysis. It can be considered Congress' baseline legislative productivity.

X_1 is the amount of earmarking funding allocated in the appropriations process. This variable is measured through the amount of federal funding allocated as earmarks in given fiscal year. This variable is numerated in billions of dollars.

B_1 is the coefficient for X_1. This measure represents the change in amount of public legislation enacted by Congress for every 1 million dollar change in the amount of earmark allocations. Earmark allocations for each fiscal year are paired with legislative productivity of the previous calendar year (i.e. FY 2007 is staggered with 2006). Since Congress annually votes on a budget for the following year, any earmark inserted into an appropriations bill would most likely effect legislation during the time of appropriations process.

X_2 is a counter variable that signifies the overall trend in legislative productivity from 1991 to 2012. Observations are numbered "1, 2, 3, 4…" beginning in 1991.

B_2 is the coefficient for X_2. This measure represents the change in the level of legislative productivity every consecutive year after the moratoriums were enacted.

X_3 is a dichotomous variable that distinguishes the first or second session of Congress. Observations are scored "0" for the first session and "1" for the second session.

B_3 is the coefficient for X_3. It represents the difference in legislative productivity between the first and second session.

X_4 represents the level of party polarization in Congress. This variable is measured through VoteView's DW-NOMINATE scores which assesses member preferences through roll-call voting records.

B_4 is the coefficient for X_4. This measure signifies the change in legislative productivity for a .1 unit change in the level of party polarization.

X_5 is the amount of PAC funding a candidate receives in a given year. This variable is measured in nominal dollars from the FEC's summary tables.

B_5 is the coefficient for X_5. This measure represents the change in legislative productivity from a one million dollar change in PAC funding.

X_6 represents the existence of divided government. This variable is scored "1" if the control of the federal government is divided between two parties and "0" if it isn't.

B_6 is the coefficient for X_6. This measure represents the difference in legislative productivity if the government is divided.

Data

Data for these variables are collected from a variety of sources. Earmark allocations are measured through the amount of funding Congress allocates as earmarks each fiscal year, while legislative productivity is measured through the amount of bills passed between each session of

Congress. By operationalizing both variables in such a manner, I am able to see if there is a relationship between the amount of funding allocated as earmarks and the amount of bills passed in a given year.

Data for both earmark allocations and passed legislation are collected in different ways. Earmarking data are sourced from the Congressional Research Service (CRS) and Citizens Against Government Waste (CAGW). I have to consult with two data sources because both organizations count earmarks differently and thus produce different figures. According to Porter and Walsh, earmarks are found in the text of House and Senate appropriations bills, subcommittee reports, and conference committee reports (Porter and Walsh 2009, 11). In its three Earmark Memorandums to Congress, the CRS neglected to tally earmarks found in conference committee reports in 11 of the 13 appropriations bills. This omission artificially decreases the amount of earmarks actually allocated each fiscal year.

Unlike the CRS, CAGW collects earmarks from all three sources in their annual publication, the Congressional Pig Book. However, CAGW defines earmarks allocations as "pork", which must meet one of seven criteria:

1) Requested by only one chamber of Congress;
2) Not specifically authorized;
3) Not competitively awarded;
4) Not requested by the President;
5) Greatly exceeds the President's budget request or the previous year's funding;
6) Not the subject of Congressional hearings; or
7) Serves only a local or special interest.

This definition, while thorough, excludes some earmarks from their dataset. This becomes apparent in the CAGW's data tables, "as the number of pork projects counted by CAGW is substantially smaller than the number of earmarks counted by the CRS, despite the fact that the combination of these seven criteria seems broad enough to reach virtually any earmark" (Porter and Walsh 2009, 13). Both of these datasets, however, are correlated at a level of .895, which support the notion that these data present an accurate picture of earmarking trends from 1991. I will not use the CRS data because, unlike the CAGW, it does not cover every fiscal year from 1991 to 2012.

I collect legislative productivity figures from the Resume of Congressional Activity (RCA). The RCA is published by the Senate after each session of Congress and provides legislative statistics for both chambers. It lists the amount of public legislation passed by both Congress and the President each session. I will use this figure as gauge for legislative productivity as it represents the amount of laws passed in each session. These data are reliable and valid because it is produced by the Library of Congress in the Congressional Record. This database tracks every bill's history from sponsorship to passage.

Data for explanatory variables also come in a variety of forms. Party Polarization is measured through VoteView's DW-NOMINATE scores. This dataset calculates members' ideological preferences through roll-call voting records on a scale from 0 to 1. Polarization scores are calculated by taking the mean preferences of members in each party, and then subtracting the party means from one another. The difference between these scores serves at the party polarization score. Because preferences cannot be quantified, the validity of these scores is questionable. However, the DW-NOMINATE scores serve as the only numerical standard for

ideological differences in Congress. In addition, VoteView's dataset is the "industry standard", used by political scientists in most Congressional studies.

Congressional PAC campaign contributions are taken from the Federal Election Commission's (FEC) PAC summary files. These files outline all PAC contributions to Congressional candidates each year from 1991 to 2012. Contributions are organized by PAC and the date in which the contribution was made. These data are reliable and valid because it is produced by FEC, the government agency solely responsible for overseeing campaign financing in U.S. elections. Although the FEC relies mostly on PAC's and candidates to report their receipts and disbursements, the FEC cross-checks financing reports from both parties and has a history of investigating numerous elections.

Chapter 5

Results

Table I

Table I: Effect of Earmark Moratoriums on the Amount of Earmark Allocations in a Given Fiscal Year, 22 Fiscal Years

Dependent Variable: Amount of Earmark Allocations in a Given Fiscal Year (Billion Dollars)

Independent Variable	Model 1	
Earmark Moratorium	-13.86	***
(0 = No Moratorium, 1 = Moratorium)	44.633	
	-2.99	
Earmark Moratorium Trend	-5.36	##
	2.22	
	-2.41	
Annual Trend	0.95	###
	0.21	
	4.52	
Session of Congress	0.85	###
(0 = 1st Session, 1 = 2nd Session)	2.15	
	0.394	
Constant	6.54	
R-Sq	0.72	

Coefficients are unstandardized; standard errors and t-values are listed below coefficients

 # = p<0.10, ## = p<0.05, ### = p<.01. two-tailed tests.

** = p<0.10, ** = p<0.05, *** = p<.01. one-tailed tests.*

Table I illustrates the first regression in the two-stage interrupted time series model. This regression tests the impact of the 2006 and 2010 earmark moratoriums on earmark allocations in each fiscal year from 1991 to 2012. The dependent variable being tested is the amount of earmark allocations per fiscal year, which is denoted in billions of dollars. Two intervention variables are employed. They are Earmark Moratorium and Earmark Moratorium Trend. Earmark Moratorium explains whether the level of earmark allocations changed before or after the enactment of an earmark moratorium, while Earmark Moratorium Trend tracks the change in the level of earmark allocations during the years after the moratoriums. Two control variables are also added to strengthen the model. They are Annual Trend and Session of Congress. Annual Trend tracks the change in the level of earmark allocations from year to year, while Session of Congress shows whether the level of earmark allocations differs from one session to the next. This analysis will take place over 22 fiscal years from 1991 to 2012.

The results from this test prove whether or not the earmark moratoriums were able to curtail earmark allocations after the moratoriums were enacted. This connection allows me show whether the moratoriums changed the relationship between earmark allocations and legislative productivity during 2006 and after 2010. Examining the relationship between earmark allocations and legislative productivity takes place in the second regression analysis in Table 2.

The results of the first stage regression analysis in Table I show a negative correlation between earmark moratoriums and earmark allocations. The coefficient to the independent variable, Earmark Moratorium, shows that an earmark moratorium initially decreases earmark allocations by 13.86 billion dollars. This result is statistically significant at a 99 percent confidence level as its p-value is less than .01 under a one-tailed test. I employ a one-tailed test

because I do not expect earmark moratoriums to increase earmark allocations. The standard error for this finding is 4.63 billion dollars.

In addition to an initial drop in allocations, earmark allocations also decrease every fiscal year after the moratoriums were enacted. As seen through the variable Earmark Moratorium Trend, for every consecutive year a moratorium is in place, earmark allocations decrease by 5.36 billion dollars. This result is statistically significant at the 95 percent confidence level as its p-value is less than .05 under a two-tailed test. I employ a two-tailed test because it is uncertain whether earmark allocations would increase or decrease after the moratoriums. Theoretically, Congress and favored lobbying groups could find unconventional ways to secure earmark funding even as they face a tougher regulatory environment. The standard error for this finding is 2.22 billion dollars.

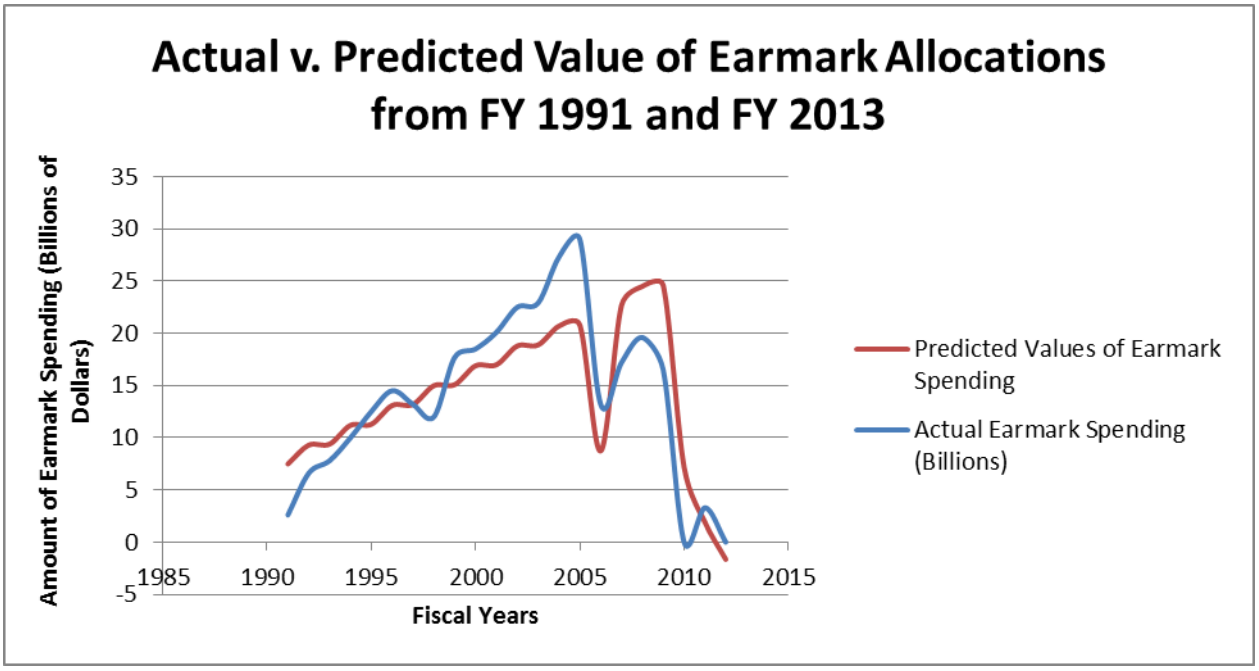
Over time, however, earmark allocations actually increase by .95 billion dollars each year from 1991 to 2012. The control variable, Annual Trend, possess a coefficient of .95, signifying that earmark allocations are expected to increase by .95 from year to year throughout this period. This result is statistically significant at the 99 percent confidence level as its p-value is less than .01 under a two-tailed test. I employ a two-tailed test because, historically, earmarks allocations in Congress are dependent upon members' need for district-specific projects. The standard error for this finding is .21 billion dollars.

When controlling for session of Congress, Table I results indicate that more earmark funding is appropriated in the second session of Congress relative to the first. The coefficient to the variable, Session of Congress, shows that Congress appropriates .85 billion more dollars in earmark allocations during the second session than the first. This result is statistically significant at the 99 percent confidence level as its p-value is less than .01 under a two-tailed test. I employ

a two-tailed test because I do not expect allocations to change depending upon the session of Congress. The standard error for this finding is 2.15 billion dollars.

Finally, the Constant shows that Congress appropriates a baseline of 6.54 billion dollars during the first session. This result does not factor in any of the intervention or control variables into the analysis. In total, the Table 1 analysis can explain 72 percent of the variance when testing the effect of the earmark moratoriums on the amount of earmark allocations from 1991 to 2012.

Figure 3



These results are illustrated in Figure 3, which graphs the actual value of earmark allocations in conjunction with the corresponding predicted values derived from the Table 1 analysis. The blue line represents the actual values while the red line represents the predicted values. Depicted in the chart above, the predicted values accurately capture the changes in earmark allocations over time as both lines mirror each other. In line with the regression results, earmark allocations increase steadily from FY 1991 to FY2006 until they fall dramatically in

response to the 2006 earmark moratorium. Then, after the moratorium is lifted, earmark allocations pick up at the pre-2006 levels until falling each consecutive year after the 2010 earmark moratorium. To the end, I can say with certainty that the earmark moratoriums were responsible for the decrease in earmark allocations in 2006 and after 2010.

Table II

Table II: Effect of Earmark Allocations on Legislative Productivity in each Session of Congress, 22 Sessions

Dependent Variable: Amount of Bills Passed in One Session of Congress

Independent Variable	Model 1		Model 2	
Earmark Spending	1.73		2.26	**
(In Billions of Dollars)	1.55		1.54	
	1.12		1.47	
Annual Trend	-3.47	#	12.13	
	1.97		8.87	
	-1.77		1.37	
Session of Congress	117.56	###	90.92	##
(0 = 1st Session, 1 = 2nd Session)	25.04		37.2	
	4.69		2.44	
PAC Contributions	---		0.01	
(In Millions of Dollars)			0.01	
			0.39	
Party Polarization	---		1297.38	**
			657.31	
			-1.97	
Divided Government	---		-3.18	
(0 = Undivided, 1 = Divided)			27.89	
			-0.11	
Constant	172.73		1060.33	
R-Sq	0.57		0.68	

Coefficients are unstandardized; standard errors and t-values are listed below coefficients
 # = p<0.10, ## = p<0.05, ### = p<.01. two-tailed tests.
** = p<0.10, ** = p<0.05, *** = p<.01. one-tailed tests.*

Table II illustrates the second regression analysis in the two-stage interrupted time series model. This analysis is split into two models, Model I and Model II. Model I tests the impact earmark allocations have on legislative productivity. The dependent variable being tested is legislative productivity, or the amount of public legislation passed by Congress and the President during each session of Congress. The independent variable, labeled as Earmark Spending, represents the amount of earmark allocations appropriated during a given fiscal year, which denoted in billions of dollars.

It is important to note that, as mentioned in the previous section, earmark allocations for each fiscal year are paired with legislative productivity figures of the previous calendar year (i.e. FY 2007 is staggered with 2006). Since Congress annually votes on a budget for the following year, any earmark inserted into an appropriations bill would most likely effect legislation during the time of appropriations process.

Two control variables are also added to strengthen the regression analysis. They are Annual Trend and Session of Congress. Annual Trend tracks the change in legislative productivity from year to year while Session of Congress shows whether legislative productivity differs from one session to the next. This analysis takes place over each session of Congress from 1991 to 2012.

Model II runs the same test as Model I but incorporates three more control variables into the regression analysis. These three variables include PAC Contributions, Party Polarization, and Divided Government. They serve as alternate explanations to changes in legislative productivity. The first of these three variables, PAC Contributions, signifies the number of PAC contributions made to federal campaigns each year. The second variable, Party Polarization, represents the average polarization score between both chambers during each Congress. The third variable,

Divided Government, shows whether legislative productivity differs when Congress or the Presidency split between two parties.

The results from both Model I and II prove whether or not earmark allocations have any effect on legislative productivity. Model I tests this connection while Model II strengthens the analysis by adding explanatory variables, which control for other competing theories. These findings are then compared with the first stage regression results in Table I to test whether the earmark moratoriums had any effect on changes in legislative productivity.

Model I

The results of Model I show a positive correlation between earmark allocations and legislative productivity. The coefficient to the independent variable, Earmark Spending, shows that for every one billion dollar increase in earmark allocations, legislative productivity increases by 1.76 laws. However, this result is not statistically significant as it fails to pass a one-tailed test and possesses a standard error of 1.55 billion dollars.

Both control variables in Model I, however, show significant results. The variable Annual Trend reports a coefficient of -3.47, signifying that legislatively productivity decreases by 3.47 laws from year to year. This result is significant at the 90 percent confidence level under a two-tailed test. I employ a two-tailed test because legislative productivity is increasingly volatile from session to session. This finding has a standard error of 1.97 laws.

In addition, the variable, Session of Congress, reports a coefficient of 117.36, indicating that more laws are passed in the second session of Congress relative to the first. This result is significant at the 99 percent confidence level under a two-tailed test. I employ a two-tailed test because I do expect legislative productivity to change depending on the session of Congress. This finding has a standard error of 4.69 laws.

Finally, I find that Congress passes a benchmark of 172.3 laws during the first session. This result is reported by the Constant, which does not factor in any of the other variables into the analysis. In total, the Model I analysis can explain 57 percent of the variance when testing the relationship between earmark allocations and legislative productivity from 1993 to 2012.

Model II

The results of Model II show a positive correlation between earmark allocations and legislative productivity. The coefficient to the independent variable, Earmark Spending, indicates that for every one billion dollar increase in earmark allocations, legislative productivity increases by 2.26 laws. This result is significant at the 95 percent confidence level under a one-tailed test. I justify its significance under one-tailed test because I do not expect earmark spending to decrease legislative productivity. Used as a political tool, the distributive benefits from earmarks would only incentivize members to vote on behalf of legislation they would otherwise oppose. This finding has a standard error of 1.47 laws.

Both control variables, Annual Trend and Session of Congress, originally used in Model I show mixed results. Annual Trend reports a coefficient of 12.13, signifying that legislative productivity increases by 12.13 laws from year to year. However, this result is insignificant under a two-tailed test. Session of Congress possesses a coefficient of 90.92, which indicates that Congress passes 90.92 more laws in the second session relative to the first. This finding is statistically significant at the 95 percent confidence level under a two-tailed test and possesses a standard error of 37.2 laws.

The added control variables in Model II produced mixed results as well. The variable PAC Contributions has a coefficient of .01, meaning that a 1 million dollar increase in

contributions increases legislative productivity by .01 laws. This result, however, is insignificant under a one-tailed test. Likewise, the variable Divided Government reports a coefficient of -3.18, indicating that legislative productivity drops by 3.18 laws when control over the federal government is divided between both parties. This finding is also insignificant under a one-tailed test.

The only control variable that possesses significance is the variable Party Polarization. According to its coefficient, a .1 change in the polarization score increases legislative productivity by 1297.38 laws. This result is significant at the 95 percent level under a one-tailed test. I employ a one-tailed test because I do not expect Congress to become more productive as both parties become more polarized. Members that possess more moderate views will have a greater chance at cooperating on legislation, which will create a more productive Congress. This finding has a standard error of 657.31 laws.

Finally, Model II shows that Congress passes a benchmark of 1060.03 laws during the first session. This result is reported by the Constant, which does not factor in any of the independent variables into the analysis – mainly Party Polarization in this case. In total, the Model I analysis can explain 68 percent of the variance when testing the relationship between earmark allocations and legislative productivity from 1991 to 2012.

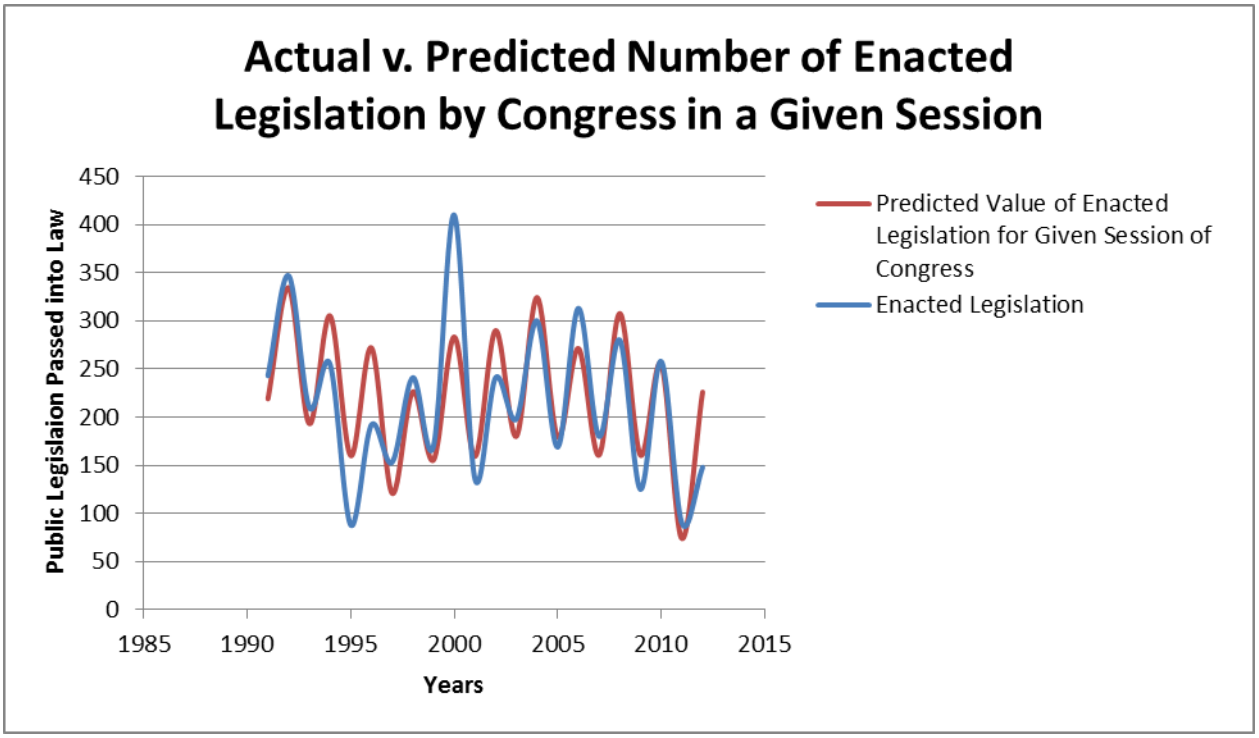
Analysis

The difference in results between Model I and Model II can be attributed to the lack of explanatory variables in Model I. This exclusion produced biased coefficients within Model I as the existing variables could not fully explain the relationship between earmark allocations and legislative productivity. Evidence of this can be seen through Model I's low R-sq value of .57, which indicates that Model I could only explain 57 percent of the variance.

By adding PAC Contributions, Party Polarization, and Divided Government as explanatory variables, Model II provides a more accurate picture of the relationship between earmark allocations and legislative productivity. Model II possesses an R-sq value of .72, signifying that it could explain 72 percent of the variance – a difference of 15 percent between the models. To that end, Model II can best explain the effect of earmark allocations on legislative productivity.

The results of Model II are illustrated in Figure 4 below, which graphs the actual value of enacted legislation in conjunction with their predicted values from 1991 to 2012. The blue line represents the actual values while the red line represents the predicted values. As seen graphically, the predicted values capture most of the variance in legislative productivity for the exception of the years 1995 and 2000. This reinforces the notion that earmarking has a positive effect on legislative productivity as decreases in enacted legislation after 2006 coincide with the enactment of both earmark moratoriums.

Figure 4



Calculating the substantive impact the earmark moratoriums had on legislative productivity can be done by taking the coefficient of Earmark Spending (2.26) and multiplying it by the coefficient of Earmark Moratorium (-13.96).

2.26 * -13.96 = 31.55, or approximately, 32 laws.

Next, to account for the decrease in legislative productivity each year after, I multiply the coefficient of Earmark Spending by the coefficient of Earmark Moratorium Trend.

2.26 * -5.36 = 12.11, or approximately 12 laws.

Therefore, given this calculation, Congress can expect legislative productivity to decrease by 32 laws initially after an earmark moratorium. Productivity will then decrease by 12 laws annually until earmark funding equals zero.

Chapter 6

Conclusion

At the start of this paper, I set out to ask the question, "Why has legislative productivity fallen over time?" The results from the Table I and Table II analysis prove that the 2006 and 2010 earmark moratoriums were partially responsible for the decreases in the legislative productivity since the 109th Congress. The Table I analysis tested the impact the earmark moratoriums had on earmark appropriations each fiscal year. The results from Table I indicate that since 1991, earmark allocations have increased by an average of 950 million dollars annually. After the 2006 and 2010 earmarks were enacted, earmark allocations then initially fell by an average of 13.96 billion dollars and decreased by an average of 5.96 billion dollars every consecutive year thereafter.

The Table II analysis then tested the effect of these moratoriums to legislative productivity by analyzing the relationship between earmarking and legislative productivity. The Table II results showed that a 1 billion dollar increase in earmark allocations increases legislative productivity by 2.26 laws. This positive relationship demonstrates that changing levels of legislative productivity and earmarking follow the same trend. Therefore, decreases in legislative productivity can be attributed to the earmark moratoriums as earmarks allocations fell to historic lows after 2006. According to the regression equation in both Tables, the enactment of moratorium initially decreases productivity by 32 laws and 12 laws every year thereafter.

The results from this analysis, however, are predicated upon the addition of other explanatory variables in the model including the basic trend variable. Party Polarization in particular helps account for the difference in variance between Model I and Model II, which

creates a more accurate picture of the relationship between earmark allocations and legislative productivity. According to Model II, a .1 percent increase in the Congressional polarization score decreases legislative productivity by about 1297 laws. Party polarization's dominating effect on Congressional productivity can be indicative of the recent rise of the Tea Party in the House of Representatives, which has drawn the Republican Party farther to the right, making legislation harder to pass. Evidence of this can be seen through Speaker Boehner's failed "Plan B" proposal in the fiscal cliff negotiations through December of 2012. "Plan B" never reached the House floor because Boehner calculated the proposal would be voted down as it was too compromising for Tea Party members and too radical for House Democrats. In this case, party polarization made compromising toward the median voter preference more costly for members on each side of the political spectrum.

The addition of control variables, like Session of Congress, also helped increase the accuracy of the analysis. The Table I and II results show that Congress appropriates 850 million more dollars to earmarks and passes 90.92 more laws in the second session of Congress relative to the first. These findings can be attributed to Weisberg and Waldrop's assertion that Congress is more productive in the second session because it follows a fixed-interval work schedule. Assuming members are motivated by reelection, Congress produces more legislation in second session in order to reap the political benefits of a productive Congress, which allows members to make good on campaign promises, advertise their achievements, and sell the electorate on their voting record (Weisberg and Waldrop 1972). Critchfield et al. tested this theory on Congressional activity from 1949 to 2000 and found that, "Congress completes most of its legislative work during the final months of a session, and thus appears to 'procrastinate' in much

the same way that laboratory subjects often do when working on fixed schedules of reinforcement" (Critchfield et al 2003, 482).

Given this analysis, the entirety of the Table I and II results provide a balanced response to the question, "Why has legislative productivity fallen over time?" The results show that given Congress' work habits session to session, the 2006 and 2010 earmark moratoriums along with rising party polarization scores helped decrease legislative productivity over time. While increases in party polarization levels show a greater effect on legislative productivity, the earmark moratoriums contributed to the annual decreases in productivity – and potentially heightened its downward trend.

Under an earmark moratorium, the majority party metaphorically loses a tool in their toolbox. They lose the ability to use the distributive benefits from earmarks to purchase votes for controversial legislation. Without earmarking, the majority party can no longer provide incentives for opposing members to support its legislation unless it proposes more centrist policies. However, as Congress becomes more polarized, members from both parties possess a higher opportunity cost if they choose to vote for more centrist legislation. Compromising on policy may fuel an increasingly polarized electorate to vote for candidates that are ideologically-driven and who promise to uphold a certain set of political beliefs. Earmarking can mitigate this issue by reducing the opportunity cost of compromising, thereby creating a greater capacity for winning coalitions and a more productive legislative environment.

There are, however, several limitations in this analysis. The first is the limited number of observations in the model. Because CAGW only produces earmark figures from FY 1991 to FY 2013, I was only able to create 22 observations, which restricted the amount of control variables I could add to the analysis. The second limitation is the validity of the earmark data. While the

CAGW provides a clear and detailed definition of earmark spending, Congress and other federal agencies, including the Congressional Research Service (CRS), calculate earmarks differently and consequently leave scholars with a range of earmark data. It is important to note that I didn't use these figures because the CRS's dataset did not cover every fiscal year from 1991 to 2013. The third and final limitation is the inability to distinguish legislative productivity between sessions of Congress. From its proposal to passage, all bills have different timelines, which often span sessions. In this analysis, I calculated legislative productivity as the amount of bills passed in one session of Congress. This calculation may be criticized because bills passed in one session could be a product of Congressional politicking in the previous session depending upon the political environment or significance of the legislation. Adjusting my analysis to incorporate a bill's timeline and significance would require me to track every bill passed since 1991 and arbitrarily label its significance.

Given these limitations, more research should be devoted to continuing this analysis as earmark data grows over time. This will provide for a larger sample size, which will allow scholars to include new control variables and produce results more indicative of long-term trends. Future research should also find ways to control for the significance of legislation. Theoretically, Congress is more likely to pass insignificant legislation without the need for the distributive benefits of earmarks. It could be the case that Congress' most productive sessions are those where members passed a majority of insignificant legislation. Finally, new research should explore the connection between political polarization and earmark allocations. My theory on the relationship between earmarking and legislative productivity assumes that members vote on a more ideological basis once earmarks are abolished because there are no incentives to cooperate.

Coalition builders may offer other incentives to opposition members that do not factor into this analysis.

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