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Does the Left Spend More? A Meta-Analysis of Partisan Politics

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Abstract

This study provides a quantitative review of the empirical literature on partisan politics. Given the voluminous work on this subject, we focus on the relationship between government ideology and public spending. By exploiting a dataset of 800 estimates from papers published between 1992 and 2018, we conduct a meta-analysis. Taking into account the differences in the various categories of spending, proxies of ideologies, estimations methods, as well as, data and publication characteristics, we conclude that more left-wing governments do spend more, although the effect tends to weaken over time.

Keywords: Partisan politics, government ideology, meta-analysis

JEL Codes: D72, H00, P16

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1 Introduction

Partisan theory discusses the idea that a governments ideological position can influence its policy-making decisions. Politicians with ties to specific segments of the electorate, adopt policies to enhance the well-being of their core constituencies when in office (Franzese and Jusko, 2006), with competing parties having different preferences over policy outcomes (Drazen, 2000). The literature has extensively focused on the different policies adopted from left-wing and right-wing governments, often perceived to be driven by ideological considerations[1]. Hibbs argues that the support of working class to left-wing parties comes from the fact that these parties are more likely to pursue policies that favour low unemployment. On the other hand, he argues that right-wing parties draw support from up-scale societal groups that have most probably invested in financial capital, favouring policies that promote low inflation. It is this idea that the early partisan theory models try to explore with the presence of adaptive retrospective citizens that allow for ideological effects along an exploitable Phillips curve over a governments full term (Franzese and Jusko, 2006).

Subsequent theoretical models introduce rational voters with uncertainty over election outcomes being the crucial insight that allows for partisan effects on the economy (Alesina, 1987). This rational partisan theory (RPT) model predicts that these effects emerge only during the first half of a government‘s term after the elections, as in the second half the partys identity is already known when wage bargaining contracts are signed (in the first term). Hence, the RPT model implies that in the case of a left-wing party (right-wing party) winning elections unemployment will be below (above) its natural rate[2].

The theoretical predictions of the models have been put to econometric test, with results providing a mixture of evidence conditional upon the set of countries under consideration and the specific policy instruments under examination (Potrafke, 2017). With regard to

[1]Hibbs (1992) argues that the use of ideology should be perceived as the adoption of policies that are in line with the interests and revealed preferences of the core constituencies.

[2]See Hibbs (1992) for a review of the early evidence on partisan and the rational partisan theory models. More recent studies include Drazen (2000) and Franzese and Jusko (2006).

partisan effects on economic activity, Alesina and Roubini (1992) corroborate the predictions of RPT, for a set of 18 countries from 1960 to 1987. Along the same lines, Alesina et al. (1997) provide further evidence in favour of the RPT with GDP growth, unemployment and inflation being the variables under investigation. On the other hand, Faust and Irons (1999) find some evidence of differences in real outcomes during the first part of presidential terms in U.S. from 1948 to 1995, as the ones predicted by the model, but fail to establish a connection between these evidence and partisan politics. More recently, Osterloh (2012) and Potrafke (2012) reassert the importance of political ideology for economic performance with their evidence suggesting the presence of ideology induced effects on GDP growth rates, the former for 23 countries over 1971-2004 and the latter for a set of 21 countries over 1951-2006. With respect to partisan effects on monetary policies empirical research has provided once again mixed results that do not fall directly under the predictions of the RPT (Drazen, 2000). For example, Alesina *et al.* (1997) provide some supportive evidence arguing that changes in inflation are in line with what the models predict. On the contrary, Sheffrin (1989) documents that empirical evidence on monetary cycles are not consistent with the theoretical predictions as other fluctuating macroeconomic factors have a significant effect[3].

Another strand of the literature studies the presence of partisan effects on fiscal policy and focuses on a number of expenditure categories. For example, Blais *et al.* (1993) show that with respect to government expenditures left-wing governments spend more than right-wing using data for 15 countries over 1960-1987. On the other hand, Bräuninger (2005) argues that it is not the right or left ideology that affects the expenditure level, but the parties preferences as expressed in their manifestos. The results of the literature focusing on a more disaggregated level of expenditures remain mixed and inconclusive. For instance, Jensen (2012) argues that left-wing governments are associated with higher pensions and family services but not with higher health care expenditures or with higher unemployment

[3]A number of papers take into account central bank independence that hampers incumbents ability to interfere with monetary policy when studying the presence or not of partisan effects (see among others Boix (2000), Sakamoto (2008) and Belke and Potrafke (2012)).

protection. The absence of ideology-induced results on social expenditures dynamics is also documented by Kittel and Obinger (2003) for 21 OECD countries from 1982 to 1997. In addition to expenditures, tax rates and revenues have also been subject to investigation for ideology-induced effects. Angelopoulos *et al.* (2012) focus on the presence of partisan effects on the tax structure for 16 OECD countries from 1970 to 2000. Their evidence suggest that left-wing governments depend more on capital taxation than labour income taxation and are associated with increased consumption taxes, in line with the results of other related studies (e.g. Beramendi and Rueda; 2007). With respect to their magnitude, some recent studies suggest that ideological effects became weaker after the 1990s (e.g. Herwartz and Theilen; 2014, 2017), while others document that such effects are also present in additional policy decisions as, for instance, privatization and market deregulation, even after the 1990s (Potrafke, 2017).

Both theoretical and empirical papers on partisan politics and their effects on various aspects of the economy, either macroeconomic outcomes or fiscal policies, have been the subject of various reviews. Insights in the early years of the literature conclude that "serious empirical testing of the strict RTP is the most urgent item on the Partisan Theory agenda" (Hibbs 1992, p.371). Subsequent literature reviews suggest that "there is a general agreement on the existence of partisan effects per se, especially on economic activity. However, there is far less consensus on the mechanism at work" (Drazen, 2000, p.93).

In this paper, we examine whether the different estimated ideology effects on government spending can be explained by the different study designs that have been used across the literature. We do so by conducting a meta-analysis[4]. As discussed above, the literature of partisan politics examines the effects of government ideology on a wide area of policy aspects. In order to be able to make meaningful comparisons across studies, our analysis had to focus on a single policy outcome. In this respect, we choose to explore partisan effects on government spending motivated by the voluminous, yet inconclusive empirical

[4]For a meta-analysis in other aspects of public policy see García-Quevedo (2004).

literature on this topic. Moreover, government spending and the general role of fiscal policy has attracted new research interest, especially in the aftermath of global financial crisis. The deployment of unconventional monetary policy tools has raised new questions about the stance of fiscal policy (Correia *et al.*, 2013; Foresti, 2018).

We collect 28 empirical studies published over the last 26 years and define aspects related to the different categories of government spending, ideology proxies, model specification issues, econometric techniques used and data characteristics. We examine whether these study design issues can explain in a systematic way the reported estimates found in the collected papers. As discussed in the next sections, we propose a series of potential drivers that explain the variation of the reported estimates. We employ Bayesian model averaging (BMA) in order to deal with the problem of model uncertainty. This problem becomes quite significant when the number of drivers is large and there is no *a priori* knowledge whether certain factors are more important than others.

To the best of our knowledge this is the first quantitative review that studies the ideology-spending nexus[5]. The partisan politics literature will be further benefited by additional future meta-analytic work focusing on other policy fields. The structure of the paper is as follows. Section 2 discusses the process followed in order to collect the meta-data sample. Section 3 describes the moderator variables used in this study. Section 4 presents the empirical model, the results, as well as, additional robustness checks. Section 5 concludes.

2 Data Collecting Process

The first source of papers is the detailed survey of Potrafke (2017). In order to be as inclusive as possible, we also searched in Google Scholar using partisan politics, government ideology and government spending as keywords. This process produced 63 papers in total. Our inclusion strategy consists of two criteria. The first criterion for a study to be included in the

[5]Imbeau *et al.* (2001) review the effects of ideology on policy outcomes in general, without focusing on government expenditures.

meta-data sample is to report at least one estimated coefficient of the effect of government ideology on public spending. Therefore, we excluded papers that focus on other aspects of public policy outcomes, such as revenues, debt, unemployment and privatization. The second inclusion criterion relates to the broader definition of government ideology. To ensure comparability across studies, we include papers that use several ideology proxies measuring the power of left-wing over right-wing governments. This convention is also imposed by the fact that the vast majority of the papers measures the power of left-wing over right-wing governments (left-right-scale). Using the above two criteria, we finally ended up with 28 papers that examine the impact of ideology on several categories of government spending. This process resulted in a total of 800 estimates which constitute our meta-dataset. The full list of the studies included is provided in the Appendix.

Our analysis relies on the partial correlation coefficients and not on the direct estimated effects reported by the studies or the corresponding t-statistics. In this way, we overcome the problem of incomparability of the reported estimates across studies. The partial correlation coefficient is calculated as; $r_{ij} = t_{ij}/\sqrt{t_{ij}^2 + df_{ij}}$ where t and df are the t-statistics and the degrees of freedom, respectively, while i and j refer to the i observation from the j study. The corresponding standard errors are equal to $\sqrt{(1 - r_{ij}^2)/df_{ij}}$. This approach renders all estimates comparable regardless of the different volatility proxies used[6]. Table 1 reports both the unweighted and the weighted means of partial correlation coefficients. Both measures indicate a statistically significant positive effect. Sorting the reported partial correlations per year of publication, as depicted in Figure 1, we observe that the average of the reported estimates is positive for the whole period under examination. This means that more left-wing governments tend to spend more. However, as the fitted-value line indicates, there is a declining trend. This reflects the evidence provided by Potrafke (2017), according to which ideology matters, but after 1990s, its effect becomes less pronounced. Another interesting message from Figure 1 is the high degree of heterogeneity across the reported

[6]The calculations follow the technical discussion in Doucouliagos *et al.*(2012).

correlation coefficients. This can be observed in a more straightforward manner when we split the estimates across different categories of spending. Figure 2 shows the dispersity of the collected estimates per spending category. Based on the findings above, our analysis aims to explain in a systematic way these differences.

Figure 1 here

Table 1 here

Figure 2 here

3 Explaining the Observed Differences

The next step is the modelling of the reported heterogeneity. We divide the existing literature into five broad groups of moderator variables, with each group capturing a specific feature of partisan politics. In particular, we consider the following dimensions: 1) the spending category, 2) the measures of ideology, 3) the econometric method, 4) the model specification and data characteristics and, 5) the publication features. For each group, we define several moderator variables in order to capture in detail all the potential driving forces.

The first group of moderator variables takes into account various types of government spending. As Figure 1 shows, the literature focuses on both aggregated (total) and disaggregated amounts. Treating the total government expenditure as the base category, we discern among seven broad disaggregated categories; 1) military, 2) health, 3) social protection 4) educational, 5) environmental, 6) housing and 7) cultural. This leads to seven separate dummies, with each assigned to the value of 1, when its corresponding spending category is used. For instance, the *military* dummy takes 1 if the paper focuses on military expenditures and so on.

The second major group of variables is related to the different ideology proxies. Throughout the past two decades, a large number of variables have been used. As in other quantitative

surveys in economics (Arestis *et al.*, 2015), where it is rather impossible to capture all the variables employed, the best research strategy is to categorise the proxies into groups. We consider as reference group the cabinet seat shares of left-wing parties. The second category (named as *dummies*) covers all the estimates from papers that use a dummy variable in order to distinguish left and right-wing governments. In this respect, the variable *dummies* is assigned to 1 when the estimate is drawn from a paper that uses a dummy to capture government ideology. The third moderator contains papers that have used indexes that measure the degree of government ideology[7]. This moderator (called *Ideo Indexes*) takes 1 when an index is used and 0 otherwise. Although each index has its own merits, it is not possible to create a dummy for each one of them. That would result in too many moderators that have only a limited number of 1s and, practically, it would create problems to the estimation process. However, to check the validity of the above strategy, we discuss an alternative grouping in the robustness subsection.

The third category captures the different estimation methods that have been used. As discussed in Potrafke (2017), the econometric technique may be an important factor in explaining the diversity of the reported estimates. We separate the estimates from the collected studies into three different groups. The first group, which acts as the base category, consists of papers that use some form of least squares (e.g., OLS, pooled OLS or GLS). The second variable is a dummy that takes 1 when the observed estimation comes from a panel estimation method (fixed or random effects), while the third one includes the estimates from studies that use more advanced estimation techniques, such as GMM.

The fourth group of moderator variables refers to the model specification, i.e. the specific form of the estimated equation. Throughout the collected papers, this equation takes several forms; from a quite parsimonious model, containing four to eight variables in total, (Brauninger, 2005; Gaston and Rajaguru, 2013) to a more extended specification with fifteen to eighteen covariates (Leibrecht et al. 2011; Bove et al. 2017). We distinguish among thir-

[7]Budge *et al.* (1993), Woldendorp (1998, 2000), and Potrafke (2009) are included in this category.

teen variables that are most commonly inserted as control group in the estimated equation. Furthermore, we account for the number of countries that are included in each empirical study. Finally, we consider the sample period of each paper by adding the average year of each study (*Average Year*).

The last group of moderator variables accounts for publication characteristics. The empirical literature of partisan politics has attracted the research interest of both economists and political scientists. Therefore, our collected pool of papers contains studies published in journals of both fields. In order to capture this specific feature, we add a dummy (*Economics Journal*) that takes 1 when the estimate corresponds to a study published in an economics journal and 0 otherwise[8]. A second publication aspect is the journal quality and is captured by adding the impact factor as a separate variable (*ifactor*). Finally, we take into account the impact of each study by the number of citations (*citations*)[9]. Table 2 summarises the moderator variables and their definitions used in our analysis.

Table 2 here

4 Meta-Regression Analysis

4.1 Model Specification

The key purpose is to identify the main drivers that explain the variation of the reported estimates and, therefore, affect the ideology-government spending relationship. This section explores which of the factors analysed above systematically affect the reported estimates. Our meta regression model can be written as:

$$r_{ij} = c + \sum_{s=1}^{30} \beta_S X_{S,ij} + e_{ij} \tag{1}$$

[8]We use the Association of Business Schools (ABS) list as a guide to the distinction between economics and political science journals.

[9]The cut-off date for the number of citations is July 2018, when we concluded the data collection process.

where r is the partial correlation, the X matrix contains the moderator variables, the corresponding coefficients, while i is an index for a regression estimate from the jth study. In cases where the amount of regressors is large, choosing among alternative models becomes difficult. In our case, the usage of 30 regressors results to 230 (more than 1 billion) alternative models to choose from. This means that the model space consists of M_1,...,M_j models, where $j \in [1, ..., 230]$. This kind of uncertainty signifies the researchers inability to identify which model is the best. Additionally, not taking into account uncertainty leads to erroneous inference (Draper, 1995)[10]. One way to overcome this problem is to employ model averaging techniques. Bayesian model averaging (BMA) techniques have the advantage of assigning a prior probability to each model, then to update these priors based on the data and, finally, to average across models. Therefore, the key feature is that the inference is not based on individual models, but on weighted averages. Specifically, the posterior distribution of coefficients is the weighted posterior distribution using each model. The weight is given by each models posterior model probability. More formally, the posterior probability distribution is written as:

$$p\left(\beta|\, r, X\right) = \sum_{j=1}^{2^{30}} p\left(\beta|\, r, X, M_j\right) p\left(M_j|\, r, X\right) \tag{2}$$

where $p\left(\beta|\, r, X, M_j\right)$ is the posterior distribution under model M_j and $p\left(M_j|\, r, X\right)$ is the posterior model probability.

We begin our analysis by assuming the unit information prior as parameters prior. Regarding the model prior, we assume the uniform model prior that gives to each model the same prior probability. We also assume an alternative set of priors in order to test the robustness of our results. Under this framework, whether a regressor can be considered a robust driver depends on how frequently appears in the alternative models. This leads to the notion of posterior inclusion probability, which is the sum of posterior model probabilities

[10]See Havranek *et al.* (2017) for recent example in meta-analytic context

(PIP) for all the models that include the specific regressor; that is:

$$PIP_i = \sum_{j=1}^{2^{30}} p\left(M_j | \, r, X\right) \tag{3}$$

where $i \in [1, ..., 30]$ denotes each individual regressor. As this equation shows, each moderator variable has a specific PIP. The higher the PIP of a variable the greater its explanatory power, corresponding to the notion of statistical significance in frequentist analysis. In the next section, apart from the estimated PIPs, we also report the posterior mean and the posterior standard deviation. Due to the extremely large number of models, only a subset of these models is feasible to be estimated. This is done using a Markov chain Monte Carlo (MCMC) algorithm, which provides an approximation of the posterior distribution by simulating a sample from it[11].

4.2 Results

According to the best models from the BMA results, variables from all categories seem to explain the heterogeneity of the reported estimates. The empirical findings are summarised in Table 3 that reports the estimated PIPs, as well as, their posterior means and standard deviations. In order to identify which variables are the most robust drivers, we use the criterion developed by Kass and Raftery (1995). The effect of a variable is considered as weak, positive, strong or decisive if its PIP lies between 0.5-0.75, 0.75-0.95, 0.95-0.99 and 0.99-1, respectively. To make the results more legible, we use a visual representation in Figure 3, where the models with the highest posterior inclusion probabilities are summarised. The horizontal axis measures the cumulative model probabilities with the best models depicted on the left. As we move to the right, each models posterior probability diminishes. In the vertical axis, the moderators are sorted by descending order according to their PIP. In other words, variables on top of the axis play a more significant role in explaining heterogeneity

[11] We use the Metropolis-Hastings algorithm. For technical details, see Zeugner and Feldkircher (2015).

as compared to the ones in the bottom. The red colour (lighter grey) indicates that the variable is included, and its estimated sign is negative, while the blue colour (darker grey) indicates a positive sign.

Starting from the spending categories, the military dummy is found to be negative across almost all models. This becomes evident from the fact that the horizontal bar that corresponds to the military variable has no gaps and is continuously red, indicating that it appears always with a negative sign. Treating as reference group the total expenditures, our findings support that studies that solely focus on military government spending estimate a weaker relationship between left-wing ideology and expenditures. Therefore, this variable proves to be a robust driver of the observed heterogeneity. This is in accordance to the evidence provided by Albalate *et al.* (2012) and Bove *et al.* (2017), according to which military expenditures are higher during right-wing administrations.

The second important finding is that differences in ideology indexes matter. Both dummies and ideo indexes are found to be present in almost all of the estimated models and therefore, are having high PIPs. Specifically, the use of indexes tends to produce more positive results compared to the share seats measures. In other words, studies using ideology indexes tend to report a more positive relationship between government spending and left-wing governments. The opposite is true for the case of dummies. Their use as proxies of ideology tends to give less positive estimates than the use of share seats. Thus, the measure of ideology employed is proved crucial to the final outcome. Given its significance as the main explanatory variable of interest, we create a different grouping in the next subsection.

Another important outcome is the issue of the econometric methodology. Both moderators (*Panel* and *GMM*) PIPs are found to be decisive and appear constantly in models with a negative sign. When a more advanced econometric technique is used, then the reported estimates tend to be less positive, compared to the studies that use a form of least squares estimation technique. This practically means that studies that do not take into account endogeneity tend to over-estimate the effect of ideology on government spending. The im-

portance of taking into account the endogeneity problem in the present context has also been addressed by Potrafke (2017). This may also contribute in explaining the declining trend reported in Figure 1; more recent studies tend to use more modern techniques that take into account endogeneity.

The exact specification of the estimated model is also an important aspect of the literature. This is reflected by the fact that five dummies from the fourth category are found to be important drivers. Studies that control for the level of economic activity (GDP), the growth rate ($GDPgr$), the inflation and the fiscal position tend to produce a smaller partial correlation, all else equal. Thus, basic macroeconomic fundamentals appear to be key factors in explaining the observed heterogeneity. This suggests that the level of development, the inflationary process, as well as, the fiscal condition are factors that influence the reported results. The same appears to hold for trade openness. Specifically, studies that take into account the level of trade openness tend to produce larger partial correlations. The latter result reflects the so-called globalisation effect that has been extensively used as control in many branches of applied economics research (with growth econometrics and growth-finance literature being the most famous examples). On the other hand, other measures of globalisation (like the globalisation index developed by Dreher, 2006) that have been included in the control set are not found to be statistically significant. Moreover, other macroeconomic characteristics, like the unemployment rate or the population structure, do not have a statistically significant effect. This means that the partisan effect on government spending matters equally for low- and high-unemployment economies. The same is true for countries with ageing population and those with younger population, as the population-structure variable is not found to be significant. Furthermore, neither the coalition nor the elections variables appear to influence partial correlations, suggesting that the partisan effect on public spending is equally likely to occur under both coalition and non-coalition governments and regardless of the timing of elections.

Finally, some publication characteristics can also explain the heterogeneity in partial

correlations. Firstly, the most influential studies (i.e., those with higher number of citations) tend to report larger ideology-induced effects on government spending. The most cited study in our sample by Huber *et al.* (1993) with 1,244 citations supports the view of a strong and positive relationship. On the other hand, studies (that are not so recent), as for instance, Kittel and Winner (2005) with much less citations (323), provide results in favour of a weak relationship between ideology and spending. Interestingly, estimates with less precision (as indicated by a higher standard error, *ser*) find evidence of stronger ideology effects. The variable *ser* has a significantly high PIP, with a systematically positive sign across models. This constitutes an indication that there is a selective reporting effect. Finally, we do not find any difference between publishing in an economics or a political science journal. Therefore, the results of a study do not depend on whether the analysis is conducted by a political scientist or an economist.

Table 3 here

Figure 3 here

4.3 Robustness

We start the robustness section by considering a supplementary dichotomy of ideology proxies. Potrafke (2017) discusses extensively the drawbacks of such measures and his motivation for the development of a new index discussed in Potrafke (2009). In this respect, we split the *Ideo Index* variable into two new candidate drivers; the first is assigned to 1 only when the Potrafke index is used (*Potrafke*), while the second takes 1 for all the remaining indexes (*Other Indexes*). Our results remain quantitatively and quantitatively the same under this alternative coding and are reported in Table 4 and Figure 4, respectively. The use of indexes still tends to report a larger partial coefficient supporting the partisan theory. Also, the variable *dummies* continues to be an important driver in conditioning the ideology-spending nexus; studies that use a dummy as ideology proxy report a smaller effect.

Table 4 here

Figure 4 here

The second robustness check relates to the assumptions regarding priors. Instead of UIP and uniform as parameters and model priors, we now assume Zellners g and beta-binomial, respectively. We choose the above since are considered more appropriate for case where there is not a priori knowledge. To facilitate the comparison between the two estimations, we depict the two PIPs for each variable in Figure 5. Visual inspection suggests that the PIPs of each variable are almost identical regardless of the set of priors used. As last robustness control, we estimate the model with frequentist techniques without addressing the issue of model uncertainty. Table 5 presents the results based on mixed effects[12]. The variables that were found robust drivers of the observed heterogeneity in the BMA approach also appear to be statistically significant bearing the same sign in the frequentist analysis.

Figure 5 here

Table 5 here

5 Conclusions

The present study exploits the plethora of empirical studies on partisan politics by conducting a quantitative literature survey. The empirical research on partisan cycles has been extended to various policy fields. The meta-analytic approach herein focuses on the effects of government ideology on public spending in OECD economies. The collected papers, which have been published in both economics and political science journals, cover a period of 26 years providing a significant pool of reported estimates. The significant degree of heterogeneity of these estimates, both across and within studies, as well as, the conflicting results

[12]For more details for mixed effects, see Havranek and Isrova, 2011). We also estimated OLS. The results remain the same and are available upon request.

obtained, constitute the main motivation of our analysis; that is, to synthesize and evaluate the evidence published so far, by exploring the factors that systematically affect the reported estimates. To this end, our analysis involves a detailed identification of the most commonly used candidate factors, ranging from the differences in spending categories, the proxies of government ideology and the set of control variables to various aspects capturing methodological differences in research design and publication characteristics.

In general, we find that ideology still matters (e.g., Jäger, 2017 reaches the same conclusion in a different setting). Precisely, more left-wing governments do spend more. However, this positive relationship tends to become weaker as we move forward in time. One of the factors is the adoption of more advanced econometric techniques that take into account the issue of endogeneity. Moreover, the government spending categories are found to be an additional important driver; in accordance to earlier evidence, more left-wing administrations tend to spend less for military purposes. Not surprisingly, the proxy for measuring the concept of government ideology is also an important dimension that influences the reported results. The usage of ideology indexes tends to report a more positive relationship than simple measures based on the share of cabinet seats. Finally, the specification of the estimated equation plays a role in the final outcome, suggesting that the evidence of the literature hinge on the choice of the control variables which tend to influence the magnitude of the reported estimates. Interestingly, some publication characteristics are also found to be statistically significant, with our evidence suggesting that more cited papers tend to support a stronger partisan effect on government spending. Our BMA findings remained robust to additional alternatives on the coding of government ideology, the set of priors, as well as, different econometric approaches.

Overall, the answer to the title question is yes, but the effect tends to decline over time and remains conditional on a number of factors that are more likely to influence the partisan cycle effect on government expenditure. In this context, our findings provide implications for the study design of the partisan politics literature, especially amid the heterogeneous trends

that emerge in the political landscapes and the complexities that arise for the measurement of government ideology as already stressed by Potrafke (2017). However, for a more conclusive overview, additional quantitative surveys are needed. The present paper is a first attempt to quantitatively analyse the empirical literature with main focus on a specific aspect of partisan politics. As future research project will enrich our understanding by examining other policy-making fields, such as taxation, debt and privatization.

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Disclaimer

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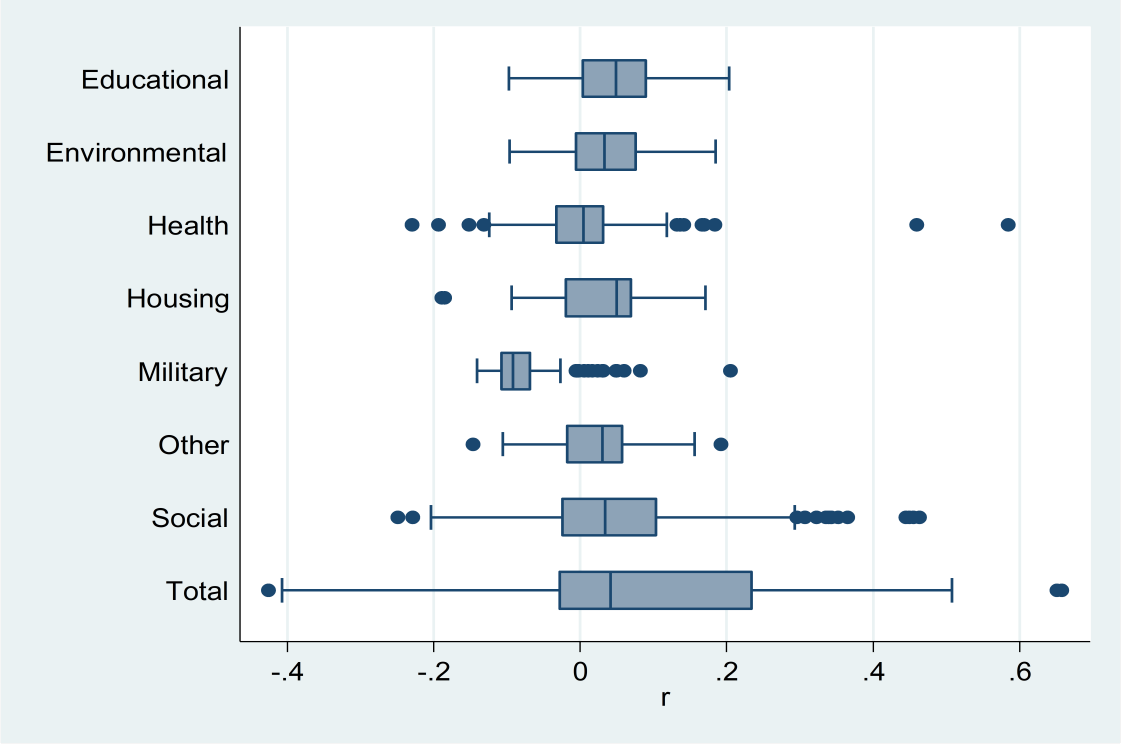
Figures

Figure 1: Estimated partial coefficient (r) per year of publication

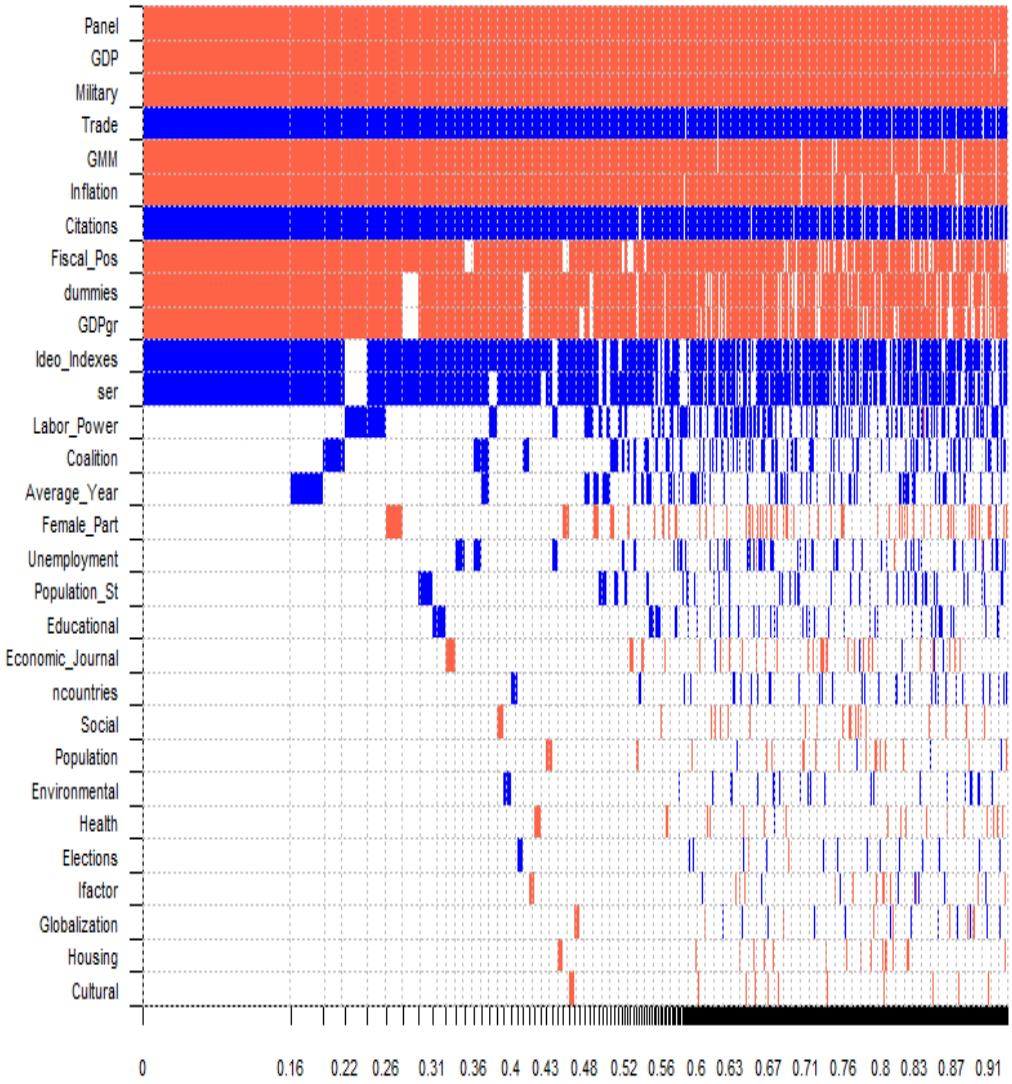
Notes: The figure depicts the estimates (partial correlation coefficients) of the effect of ideology on government spending reported in the empirical literature over time. The horizontal axis shows the publication year of the examined studies.

Figure 2: Boxplot of partial correlation (r) per spending category



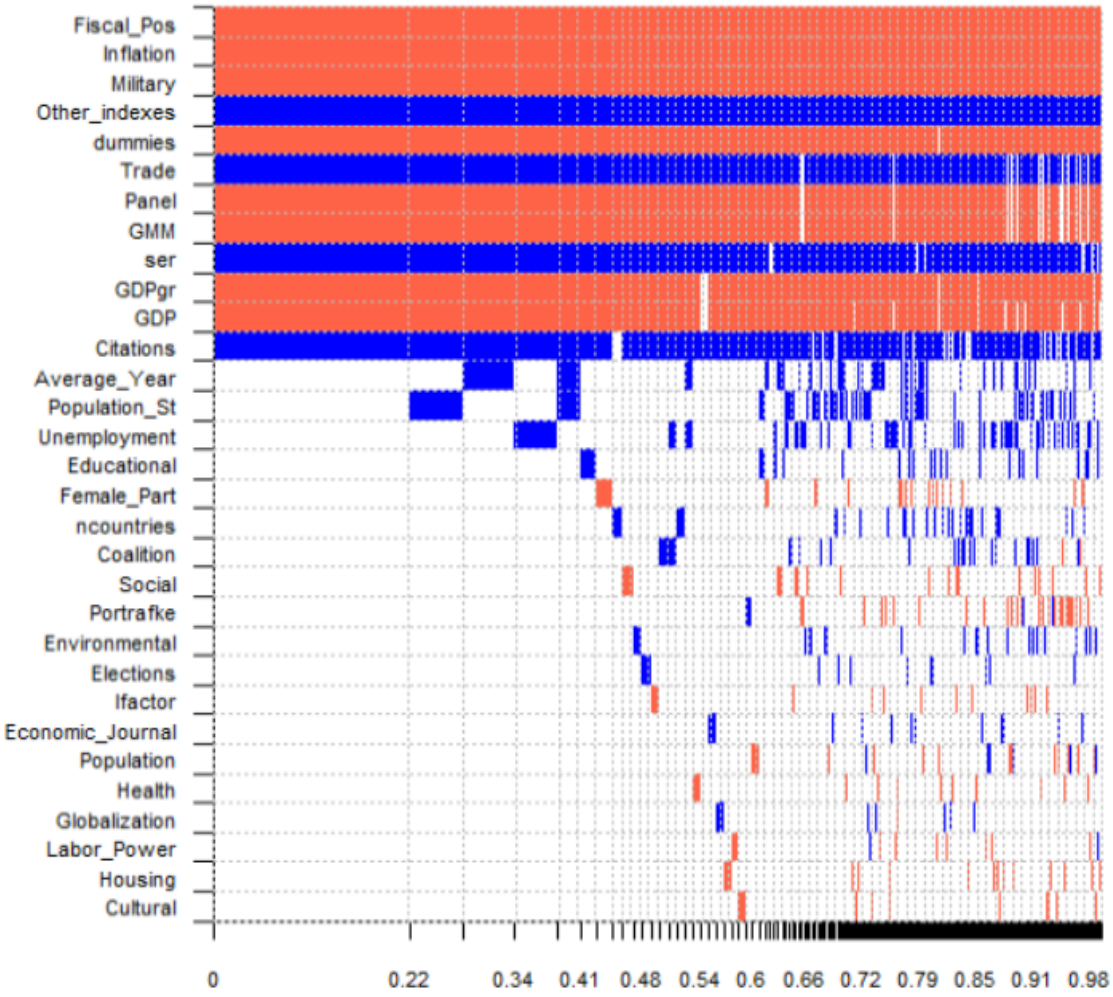
Notes: The figure depicts the boxplot of the collected estimates (partial correlation coefficients). The estimates are sorted according to government spending categories.

Figure 3: Bayesian Map I



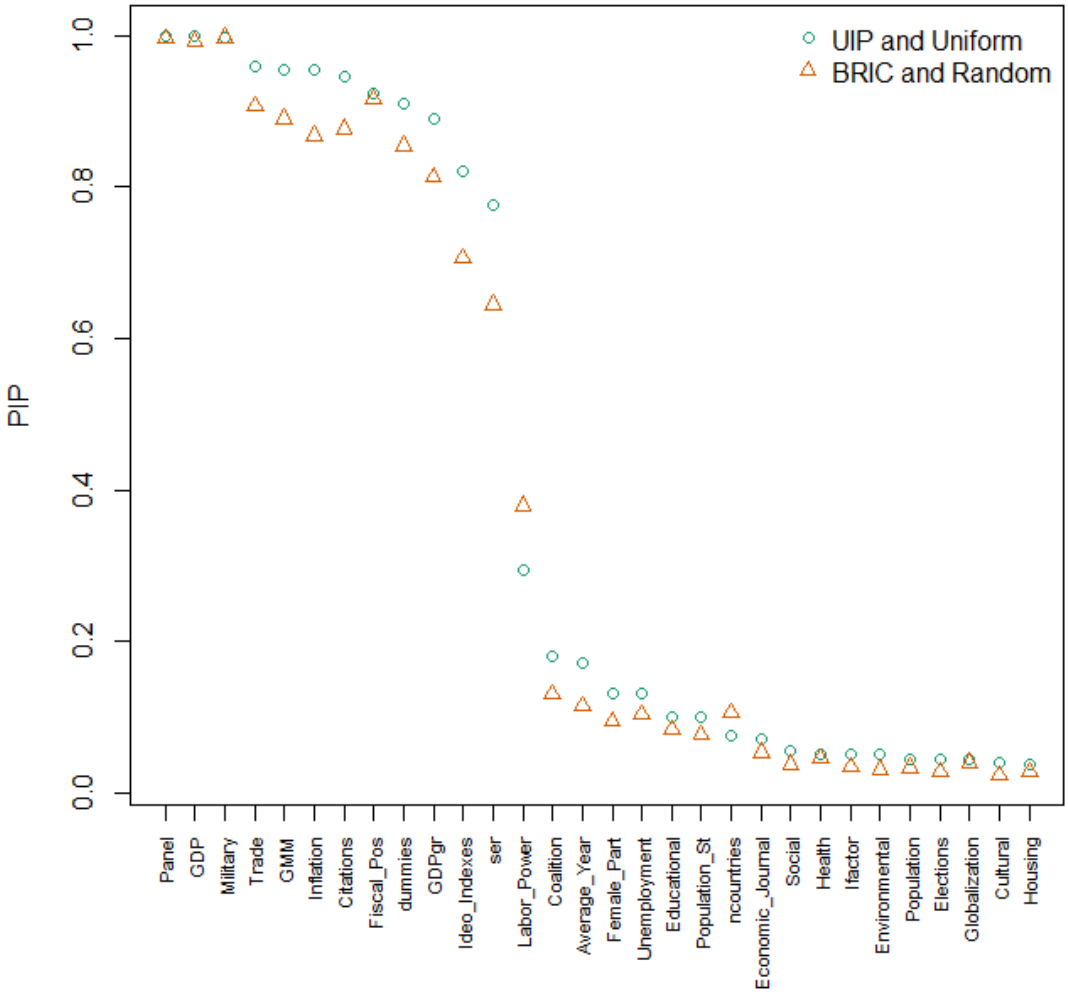
Notes: The horizontal axis measures the cumulative posterior model probabilities, while the vertical one depicts the moderator variables that are explained in Table 1. Each column shows a different model. Each variable on the vertical axis is sorted according to its posterior inclusion probability in descending order meaning that variables on the top of the axis appear more frequently across different models than the ones at the bottom. Red colour (light grey) shows negative sign, while blue colour (dark grey) shows positive sign. Blank entries indicate that the variable is not included in the model. 3000 models with the highest posterior probabilities are shown, while assuming unit information prior as parameters prior and uniform model prior.

Figure 4: Bayesian Map II



Notes: The horizontal axis measures the cumulative posterior model probabilities, while the vertical one depicts the moderator variables that are explained in Table 1. Each column shows a different model. Each variable on the vertical axis is sorted according to its posterior inclusion probability in descending order meaning that variables on the top of the axis appear more frequently across different models than the ones at the bottom. Red colour (light grey) shows negative sign, while blue colour (dark grey) shows positive sign. Blank entries indicate that the variable is not included in the model. 3000 models with the highest posterior probabilities are shown, while assuming Zellners g prior as parameters prior and beta-binomial model prior.

Figure 5: Comparison between two different sets of priors



Notes: The graph compares two BMA exercises that use two different sets of priors. The first model is the model estimated using UIP and uniform as parameters and model priors, respectively. The second model uses Zellners g and beta-binomial as parameters and model priors, respectively. The vertical axis depicts the estimated PIPs and the horizontal axis shows the variables. The cycles and the triangulars show the estimated PIPs of each variable for each set of priors.

Tables

Table 1: Mean Estimate of the Partial Correlation Coefficient

	Unweighted			Weighted		
	Mean	5%	10%	Mean	5%	10%
r	0.031	0.022	0.040	0.029	0.019	0.039

Notes: The table reports the mean values of the effect of ideology on government spending. 5% and 95% denote the 5th and 95th percentile, respectively. *Weighted* denotes the mean estimate that is weighted by the inverse of the number of observations that are reported in each study.

Table 2: List of Moderator Variables

Variable Name	Description	Mean	SD
r	Partial correlation of the effect of ideology on government spending	0.031	0.127
ser	Standard error of the estimated partial coefficient (r)	0.077	0.045
Spending Category			
Total	Total spending (base)	0.172	0.378
Military	1 if the dependent variable is military spending	0.128	0.338
Health	1 if the dependent variable is health spending	0.150	0.357
Social	1 if the dependent variable is social protection spending	0.338	0.473
Educational	1 if the dependent variable is educational spending	0.071	0.257
Environmental	1 if the dependent variable is environmental spending	0.054	0.226
Housing	1 if the dependent variable is housing spending	0.045	0.207
Cultural	1 if the dependent variable is cultural spending	0.043	0.202
Ideology Proxies			
Share	1 seat shares of the left-wing (base)	0.228	0.419

Continued on next page

Table 2 – continued from previous page

Variable Name	Description	Mean	SD
Dummies	1 if dummies	0.455	0.498
Ideo-indexes	1 if indexes	0.318	0.466
Estimation Method			
LS	least squares estimator (base)	0.701	0.464
Panel	1 if random-fixed effects estimator	0.199	0.399
GMM	1 if panel GMM estimator	0.100	0.300
Specification and Data			
Fiscal Pos	1 if model controls for fiscal position	0.045	0.207
GDP	1 if model controls for GDP	0.325	0.469
GDPgr	1 if model controls for GDP growth	0.182	0.386
Election	1 if model controls for elections	0.541	0.498
Inflation	1 if model controls for inflation	0.073	0.259
Unemployment	1 if model controls for unemployment	0.821	0.383
Population	1 if model controls for population	0.512	0.500
Population St	1 if model controls for population structure	0.373	0.484
Trade	1 if model controls for trade openness	0.253	0.435
Labour power	1 if model controls for labour power	0.048	0.213
Globalisation	1 if model controls for globalisation	0.185	0.388
Female part	1 if model controls for female participation	0.025	0.156
Coalition	1 if model controls for coalitions	0.070	0.255
Ncountries	Number of countries	14.921	6.548
Publication Features			
Economics journal	1 if published in economics journal	0.803	0.397
ifactor	1 Impact factor	1.552	1.061
Citations	Number of citations	99.850	15.571
Average year	Publication date (trend)	1994	9.178

Table 3: BMA results

Variable	PIP	post Mean	post SD
ser	0.817	0.385	0.222
ncountries	0.053	4.669e-6	2.798e-5
Average Year	0.166	3.557e-4	9.184e-4
Military	0.998	-0.0733	0.0153
Health	0.034	-3.159e-4	0.003
Social	0.041	-3.388e-4	0.002
Educational	0.080	0.001	0.007
Environmental	0.037	5.077e-4	0.004
Housing	0.026	-1.665e-4	0.003
Cultural	0.026	-1.405e-4	0.003
Coalition	0.178	0.008	0.020
Fiscal Pos	0.929	-0.070	0.029
GDP	0.998	-0.129	0.030
GDPgr	0.900	-0.073	0.032
Election	0.032	2.163e-4	0.002
Inflation	0.978	-0.145	0.043
Unemployment	0.109	0.003	0.010
Poulation St	0.092	0.001	0.006
Population	0.035	-2.811e-4	0.003
Trade	0.981	0.083	0.024
Labour Power	0.251	0.019	0.039
Globalisation	0.030	1.256e-4	0.003
Femate Part	0.113	-0.006	0.021
GMM	0.980	-0.098	0.028
Panel	0.999	-0.091	0.017
dummies	0.916	-0.094	0.040
Ideo Indexes	0.859	0.074	0.037
Economics Journal	0.057	-0.001	0.007
ifactor	0.030	-3.227e-5	0.001
Citations	0.969	1.567e-4	5.065e-5

Notes: PIP stands for posterior inclusion probability.We assume unit information prior as parameters prior and uniform model prior.

Table 4: BMA results-Alternative Ideology categories

Variable	PIP	post Mean	post SD
ser	0.980	0.487	0.148
ncountries	0.064	5.576e-6	2.939e-5
Average Year	0.204	4.502e-4	0.001
Military	0.999	-0.077	0.014
Health	0.032	-1.854e-4	0.002
Social	0.051	-4.907e-4	0.003
Educational	0.073	0.001	0.006
Environmental	0.043	6.573e-4	0.004
Housing	0.029	-1.587e-4	0.003
Cultural	0.029	-1.243e-4	0.003
Coalition	0.062	0.001	0.009
Fiscal Pos	1.000	-0.113	0.022
GDP	0.961	-0.089	0.029
GDPgr	0.969	-0.088	0.027
Election	0.037	3.544e-4	0.003
Inflation	0.999	-0.192	0.003
Unemployment	0.169	0.004	0.012
Poulation St	0.200	0.004	0.011
Population	0.033	-1.619e-4	0.003
Trade	0.984	0.065	0.016
Labour Power	0.030	-1.095e-4	0.006
Globalisation	0.031	1.255e-4	0.003
Female Part	0.065	-0.002	0.012
GMM	0.982	-0.062	0.016
Panel	0.996	-0.120	0.029
dummies	0.996	-0.120	0.029
Potrafke	0.049	-0.002	0.016
Other Indexes	0.999	0.134	0.023
Economics Journal	0.033	0.349	0.004
ifactor	0.035	-1.542e-4	0.001
Citations	0.945	1.312e-4	5.151e-5

Notes: PIP stands for posterior inclusion probability. We assume Zellners g prior as parameters prior and beta-binomial model prior.

Table 5: Frequentist Results

Variable	Coefficient	SD	p-value
ser	0.374	0.158	0.016
ncountries	-3.355e-5	7.340e-5	0.642
Average Year	0.003	0.001	0.011
Military	-0.065	0.024	0.007
Health	-0.016	0.023	0.485
Social	-0.007	0.019	0.675
Educational	0.024	0.023	0.285
Environmental	0.021	0.0251	0.403
Housing	-0.005	0.025	0.820
Cultural	-0.004	0.025	0.846
Coalition	0.093	0.034	0.006
Fiscal Pos	-0.092	0.026	0.001
GDP	-0.164	0.027	0.000
GDPgr	-0.091	0.025	0.000
Election	-0.002	0.015	0.872
Inflation	-0.141	0.044	0.002
Unemployment	0.021	0.021	0.326
Poulation St	0.021	0.015	0.179
Population	0.015	0.019	0.424
Trade	0.092	0.024	0.000
Labour Power	0.058	0.039	0.140
Globalisation	0.013	0.021	0.530
Female Part	-0.031	0.041	0.446
GMM	-0.107	0.025	0.000
Panel	-0.096	0.017	0.000
dummies	-0.141	0.032	0.000
Ideo Indexes	0.066	0.025	0.011
Economics Journal	0.019	0.029	0.511
ifactor	0.008	0.014	0.383
Citations	2.325e-4	5.610e-5	0.000

Notes: In the frequentist exercise, we include all the explanatory variables.

Appendix: Studies used

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