

Potrafke, Niklas

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**652**

**Niklas Potrafke**



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**Parties Matter in Allocating Expenditures:  
Evidence from Germany**

**Berlin, December 2006**





## **Discussion Papers 652**

Niklas Potrafke\*

### **Parties matter in allocating expenditures: Evidence from Germany**

Berlin, Dezember 2006

\* Humboldt University of Berlin, Department of Economics and Management Science, Institute of Public Finance, Competition Policy and Institutions and Visiting Fellow at DIW Berlin, [niklas.potrafke@gmx.de](mailto:niklas.potrafke@gmx.de)

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DIW Berlin

German Institute for Economic Research

Königin-Luise-Str. 5

14195 Berlin

Tel. +49 (30) 897 89-0

Fax +49 (30) 897 89-200

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**Abstract:**

I test if parties matter with respect to the allocation of public expenditures in Germany. Considering the allocation of rights and duties due to the federal structure, two econometric models are estimated. First, a SURE model analyses spending at the federal level for the period from 1950 to 2003 and finds evidence for partisan politics and election year effects. Second, I examine the spending behaviour in the states from 1974 to 2004 in a panel data framework. In comparison to the federal level, policy has weaker impacts on the allocation of expenditures in the states.

**Keywords:** allocation of public expenditures, partisan politics, fiscal federalism

**JEL classification:** D72, H50, H72



## **1 Introduction**

### **1.1 Motivation**

The question, if whether parties matter has been an issue in political economics for several years. The partisan approach is tested with respect to different policy fields and a huge number of countries. Researchers find mixed evidence by applying several theoretical and empirical variants. However, most important at the beginning of such tests, a serious empirical investigation of policy differences requires the consideration of the government's real room of manoeuvre in economic policy. Actually, in what way could economic policies really be different? Where is a government mostly free to choose and independent of external circumstances? Coming back to the roots of public finance, this paper will therefore examine the composition of the budget. E. g. Musgrave et al. (1994:49) denote the budget as "government program in numbers". While policy via the revenue side is always a bit vague because of cyclical movements and the impact of the black economy, this is totally different on the expenditure side. Irrespective of the amount of revenues and expenditures and the need to take care of given allegiances, each government has to choose the purposes for which it will spend the revenues. It will prioritize. Different governments will have different preferences and spend the revenues with respect to their own and their partisans' beliefs. Up to now, to the best of my knowledge, this point has not received any attention in the empirical literature. In this paper, I will therefore draw on that and provide evidence that parties matter in allocating expenditures for the case of Germany.

### **1.2 Related empirical research**

The current empirical research testing the partisan approach examined public debt and the amount of public spending as objects of investigation in financial policy. Analysing the politics of different government types in OECD countries, Borelli and Royed (1995) find that government spending is higher under right than left governments. In accordance with the partisan approach, Cusack's (1997) results show that the left increases the size of the public sector whereas the right reduces it. Blais, Blake and Dion (1993, 1996) get similar results.



Alesina's et al. (1997) evidence analysing public debt is mixed, it depends on the observation period. Moreover, there are several other studies testing for partisan politics in fiscal policy.<sup>1</sup>

Single country studies for Germany mostly reject the hypothesis that parties matter in fiscal policy (e. g. De Haan and Zellhorst (1993)). Whereas these papers only consider the federal level, others just examine the state level. From an econometric point of view, the latter ones benefit from larger sample sizes. In addition, these papers analyze another facet of the fiscal federalism in Germany. Seitz (2000) primarily examines the fiscal policy of the German Laender. Explaining the amount of expenditures and debt with a panel data model in the period from 1976 to 1996, he does not find a significant impact of the party composition of the provincial governments. Referring to Seitz (2000), Jochimsen and Nuscheler (2005) test different hypotheses of debt accumulation. They use a bigger sample, from 1960 to 2000, and apply a dynamic panel data method. However, they also cannot find any evidence that parties matter in fiscal policy of the German Laender. In contrast, Rodden (2001) confirms the party-do-matter approach using panel data from 1974 to 1995: Left wing-governments spend and borrow more than right-wing governments. Oberndorfer and Steiner (2006) use a panel data set from 1985 to 2002 and come up with the result that parties matter with respect to the spending for universities in the German Laender.

Hence the current paper is the first one that examines fiscal policy on the federal and the state level together because of the allocation of rights and duties due to the federal structure. Therefore, in addition, the findings might provide a contribution to the discussion about the autonomy of the German states and fiscal federalism (e. g. Blankart (2005): Chapter 28).

The paper is organized as follows: Section 2 formulates falsifiable hypotheses originating from the theory of political business cycles. Section 3 briefly describes the institutional background in Germany by illustrating the federal structure and presenting the governing parties. Section 4 introduces the data on the federal and state level as well as their statistical properties. In section 5 the empirical models applying seemingly unrelated regression systems (SUR) are set up. Section 6 discusses the estimation results and section 7 concludes.

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<sup>1</sup> In Potrafke (2006) I test for political effects on the allocation of public expenditures in an OECD panel.

## 2 Theory and Hypotheses

The question whether parties matter or not stems from the huge literature of political business cycles. In this paper, the issue is if parties matter in allocating expenditures. My emphasis is not to find evidence for a single theoretical model. However, as this hypothesis has its theoretical origin in the literature of partisan theory and political business cycles, the alternative hypothesis that parties do not matter would simply be incomplete. There is no doubt that one implication of the political business cycle approaches by Nordhaus (1975) and Rogoff and Sibert (1988) and others is that all the politicians will do the same policy. Ideology does not matter. Policies will converge. But in addition, they imply a particular pattern between elections on the one hand and the impacts of economic policy on the other hand. Therefore an empirical application of the partisan approach in this context should be amended by tests for these specific cyclical patterns.

Nordhaus (1975)' opportunistic school claims that politicians fool the public just to win elections. They will boost the economy right before elections. Thus applied to the purpose of this paper, I formulate as first hypothesis

**Hypothesis 1:** Election years affect the size and pattern of public expenditures.

The rational political business cycle theory by Rogoff and Sibert (1988) and others criticizes the modelling by adaptive expectations and introduced rational expectations instead. In this approach, information asymmetries play a role as a source of the electoral cycles. The political incumbent tries to exploit his information advantage by signalling his economic competence before the elections. Hence, a testable hypothesis will be

**Hypothesis 2:** Pre-Election years affect the size and pattern of public expenditures.<sup>2</sup>

In contrast, the partisan approach focuses on the strong impact of party ideology. As a result, platforms and policies will not converge. Instead, right and left politicians will provide different policies by concentrating on the preferences of their partisans. The left party appeals more to the labor base and promotes expansionary policies, whereas the right party appeals more to capital owners and is therefore more concerned with keeping inflation down. This

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<sup>2</sup> Note that there is no explicit assignment between the two business cycle theories and hypothesis 1 and 2. Nordhaus (1975) approach does not necessarily imply that only election years matter as well as the one by Rogoff and Sibert (1988) is also somehow related to the impact of election years.

holds for both sub-approaches of the partisan theory - for the classical one developed by Hibbs (1977) as for the rational one developed by Alesina (1987). The application of the partisan theory results in the following hypothesis.

**Hypothesis 3:** The party composition of the governments affects the allocation of public expenditures.

Beyond this, all-embracing hypotheses regarding the detailed way of allocating the expenditures by different parties are not easy to formulate because of two reasons. First, there is no specific theoretical model for the allocation process in combination with the partisan approach. Second, it is impossible to classify all the 20 expenditure categories on a left-right scale or even to assign them to a particular coalition type. However, more concrete hypotheses might be necessary because of fundamental reasons in empirical work. Therefore, I will formulate hypotheses for these (core-) categories for which a mapping on a left-right scale is clear cut and leave open the others. Hence Table 1 already presents the different categories of public expenditure. The signs “+” and “-“ indicate an expected increasing or decreasing effect of the political variables on the categories, respectively.

Table 1.

**Expenditure Categories and hypotheses of the political effects**

Nr.	Expenditure Category	Election year	Pre-Election year	Left government
1	General Administration	-	-	
2	Foreign Affairs			
3	Defence			-
4	Public Safety and Order	+	+	-
5	Legal Protection			-
6	Schooling	+	+	+
7	Universities			
8	Other Education			
9	Research beyond Universities			
10	Cultural Affairs			
11	Social Insurance, Welfare and Veterans Support	+	+	+
12	Health, Environment, Sports and Regeneration	+	+	+
13	Housing and Land Use Planning	+	+	+
14	Municipal Affairs			
15	Alimentation, Agriculture and Forests			-
16	Energy, Water Management, Industry and Services			
17	Traffic and Communications			
18	Companies (Public Sector)	-	-	+
19	General Land and Capital Assets	+	+	
20	General Finance			

Moreover, coalitions consisting of two parties are standard in Germany. That is why it does not make sense to test for the effect of different types of government (number of coalition partners and minority governments) on the allocation of expenditures.

### **3 Institutional background**

#### **3.1 Fiscal federalism**

Germany is a federal state. That is why the allocation of rights and duties between the federal level and the 16 states has to become clear before analysing fiscal policy. To keep the analysis manageable, I will ignore the lowest level of government and its political actors, the local one (communities). In principle, Germany's constitution (Art. 30 and Art. 70 I) states, that as many as possible of the responsibilities should be with the states (German Laender). De facto, the federal government has most of the power. Considering fiscal policy, this fact mainly affects the revenue side of the states because the German Laender are barely autonomous in setting tax rates. Debt remains as the only discretionary source of financing their expenses. In contrast, the governments in the states possess some power on the spending side, namely they are somewhat free to choose the expenditures for the education system and cultural affairs. Seitz (2000: 186 ff.) and Rodden (2001: 6 ff.) give a more detailed outline of the fiscal federalism in Germany.

A typical characteristic of Germany's fiscal federalism is the fiscal equalization system. It harmonizes revenues across states. Transfers circulate from the federal level to the states (vertical) as well as between the states (horizontal). Since 1995, the New German Laender have participated in the system, so that the amount of payment has increased. Moreover, Seitz (2000:188) points out to distinguish between the two different types of Laender: "city-states" (Stadtstaaten) and "non city-states" (Flächenländer). That is why the budgets of the city-states also cover expenditures and revenues which are typically assigned to local authorities in the non-city states. In conclusion, the investigation of fiscal policy in Germany requires analysing the policy on the federal and state level in accordance with the allocation of rights and duties.

#### **3.2 Political Parties**

There are two large parties in Germany, the left Social Democratic Party (SPD) and the right Christian Democratic Union (CDU). In Bavaria, Germany's federal state with the biggest

area, the conservatives are not represented by the CDU but by their sister party Christian Social Party (CSU). However, there is no party competition between them and they form a single fraction in the federal parliament (Bundestag). That is why I will label both CDU. All the chancellors as well as the prime ministers in the states were members of one of these two big blocks, SPD and CDU. Therefore, one can test for partisan effects just on this left-right dimension. Differentiating between left and right will simplify the classification of the expenditure categories.

Furthermore, the much smaller Free Democratic Party (FDP) and Green party (GR) have played an important role as coalition partners. While the SPD has formed coalitions with all the other three parties, the CDU did never form a coalition with the Greens on federal or state level. I will also consider the impacts of the different coalition types because it might be that the simple left-right dimension may ignore ideological differences between government constellations in one camp (e. g. for the Left between SPD/FDP and SPD/GR coalitions). As minority governments and other government formations have played a negligible role, they will be subsumed under the named coalition types respectively (See Appendix A). I will not report the single regression results for simplicity reasons but discuss them verbally.

## **4 Data**

### **4.1 Federal Data**

The first data set contains yearly data for the total expenditure structure of the Federal Republic of Germany for the period from 1950 to 2003. Before the German Unification in 1990 the data refer to the former federal territory (western part). The data are taken from Germany's Federal Statistical Office (Fachserie 14.3.1, Funktionenplan). Missing data points for the period from 1950 to 1965 and for 2003 were provided upon request. Furthermore, single categories were made comparable to each other over time by the Federal Statistical Office. The expenditures are separated into the 20 different categories already given in Table 1. I will use them as dependent variables for the examination of the allocation of expenditures on the federal level.

As the states directly control for education and cultural affairs (categories 6 to 10), these categories are examined on the state level specifically. However, there also remains some power for the federal government, e. g. with respect to the construction of universities.

Regarding the other 15 categories, the rights and duties are with the federal government, so that the provincial governments are not free to choose their expenditures. Therefore, these 15 categories can only be used as dependent variables for the examination on the federal level. As the federal government has the control over these 15 categories, there are basically two sensible ways for the current analysis: Examining the pure expenditures on the federal level as well as the whole expenditures of the federal state (all jurisdictions together) because the states and communities have to obey the federal law. I analyse both, but will only report the results of the pure federal level. Thereby, the interaction between the federal and state level is considered adequately.

To avoid spurious regression in the spirit of Granger and Newbold (1974), stationarity of the time series has to be checked. The common ADF-Test appoints 18 of the 20 series to be  $I(1)$  on the federal level, and 14 of the 15 series on the aggregate level.<sup>3</sup> Nonetheless, I employ the first differences of all categories as dependent variables.<sup>4 5</sup>

## 4.2 State Data

Data describing the expenditure structure on state level are available from 1974 to 2004 (Federal Statistical Office) for 10 West German Laender. Like Seitz (2000), Rodden (2001) Jochimsen and Nuscheler (2005) and Oberndorfer and Steiner (2006), I do not include the new Laender because of two reasons. First, corresponding data are only available since 1992, after the German Unification in 1990. Second, investments in infrastructure (e. g. in universities) caused over proportional high expenditures in the years after the Unification. For similar reasons I do not include Berlin, which was divided before the German Unification and therefore the data contain structural breaks. In accordance with the power of disposal in the states the following expenditure categories are examined as dependent variables:

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<sup>3</sup> On the pure federal level the series "Public Order and Safety" and "Universities" and on the aggregate level the series "General Finance" are reported to be  $I(0)$ .

<sup>4</sup> With respect to the named series there could be a problem of over differentiation, thus generating a moving average unit root. But a uniform examination of the data justifies the chosen procedure.

<sup>5</sup> Cointegration between the dependent variables generally remains as an issue to take care of. However, in the considered case with relatively few observations and particularly many variables system cointegration tests are practically not feasible. In addition, even though cointegration would be present in some way, it would be difficult to model clearly because I do not consider a common error correction framework. As a result, I hope to explain the remaining variation after taking first differences.

1. Schooling
2. Universities
3. Extraordinary Subsidies to the Education System
4. Other Education
5. Science, Research, Development beyond Universities
6. Cultural Affairs

Note that in this data set six different categories reflect the expenditures for the education system and cultural affairs instead of five in the previous set describing the total expenditure structure of the federal and the state level together. This simply results from a more precise categorization inside of the state data set. Whereas the expenditures for “Schooling” and “Universities” are self-explaining, the other categories might be described a bit more in detail. “Extraordinary Subsidies to the Education System” are mostly transfers to students from low-income families (BaFög), but also scholarships and grants. Further and adult education belong to the “Other Education” as well as e. g. language courses for resettlers (Spätaussiedler). Moreover, since 1996, spending for hospitals was excluded from the budgets of the states. The Federal Statistical Office calculated this effect back to 1992. Therefore, small breaks occurred in 1992 with respect to total spending and for universities because of the collaboration of hospitals and universities in medical science. I will control for this effect using a dummy variable.

The problem of unit roots and cointegration generally also arises with panel data. As the time horizon with  $T = 31$  is very short, microeconometricians might doubt any time series inference and therefore ignore respective considerations. However, applying simple ADF-Tests, the single series are reported to be  $I(1)$ . Since regressions with non-stationary variables will lead to inconsistent estimates, I use first differences to be on the safe side. Besides this statistical reason, it also has a good economic interpretation, namely that changes over time are examined.<sup>6</sup>

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<sup>6</sup> Unfortunately, taking first differences does not necessarily eliminate the problem of “spurious regression” when cointegration or panel unit roots are present. Corresponding tests and estimation methods are a topic of current econometric research (See e. g. Breitung and Pesaran (2005)). In the given framework with a system of equations, “second generation” panel unit root tests would be needed which also control for contemporaneous correlation between the time series. As before, particular tests do not seem to be reasonable because of the small sample size.

## 5 The empirical models

### 5.1 A simple SURE model

As all categories described sum up to total expenditure and the government has to choose for what it will spend its resources, it seems quite obvious that the expenditures for the single categories are correlated with each other. This correlation between disturbances from different equations at a given time is known as contemporaneous correlation (Judge et al. (1988: 443 ff.)). The method of seemingly unrelated regression estimation (SURE) controls for this contemporaneous correlation and provides efficient estimates (going back to Zellner (1962)).<sup>7</sup> Therefore, I consider the following structural SURE model with 20 equations to test for the impact of the parties in government on the federal level:

$$\begin{aligned} \Delta \log \text{Expenditure Category}_j(t) = & \beta_{0j} + \beta_{1j} \Delta \log \text{Gross Domestic Product}_j(t) \\ & + \beta_{2j} \Delta \log \text{Population}_j(t) + \beta_{3j} \Delta \log \text{Unemployment}_j(t) + \beta_{4j} \Delta \log \text{Debt}_j(t) \\ & + \beta_{5j} \Delta \log \sum_{i \neq j} \text{Expenditure Category}_i(t) + \beta_{6j} \text{Unification}_j(t) + \delta_j \text{Political Dummy}_j(t) + u_j(t) \\ j = & 1, \dots, 20 \end{aligned} \quad (1)$$

Where the dependent variable  $\text{Expenditure Category}_j(t)$  is a  $(T-2) \times 1$  vector and denotes the change in expenditure category  $j$ . Two degrees of freedom are lost because of two reasons. First, I take first differences. Second, formal statistical tests indicate substantial autocorrelation in the residuals of the single equations. Therefore, the data are transformed by a Prais-Whinston Transformation to correct for first-order serial correlation (see, e. g. Greene (2003), p. 271 ff.). I follow the related studies to include as explanatory variables for control purposes: The first differences of the change in GDP ( $\text{Gross Domestic Product}_j(t)$ ), the change in the number of inhabitants ( $\text{Population}_j(t)$ ), the change in the unemployment rate ( $\text{Unemployment}_j(t)$ ) and the change in the public debt ( $\text{Debt}_j(t)$ ). For this reason, the general economic situation, the demographic development, the situation of the labour market and the general budgetary position are taken into account. Furthermore, the change of the sum of the expenditures, the federal government is responsible for, is included as explanatory variable ( $\sum_{i \neq j} \text{Expenditure Category}_i(t)$ ). The expenditures for category  $j$  must be excluded to avoid

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<sup>7</sup> In principle, the considered interaction between different expenditure groups could also be modelled by a Vector Autoregressive model (VAR). A VAR is basically a SURE system with autoregressive explanatory variables. This econometric set-up would be totally sufficient to test the given hypothesis, because I am not interested in the effect of some structural variables but only focus on that of the political variables. Unfortunately, specifying a VAR with 15 or 20 dependent variables may force the problem of too many insignificant regressors in an over dimensioned model. It is simply impossible to be set up properly in the given framework.



endogeneity problems. Hence, the model controls for the general spending behaviour and implied allocation effects in each equation. The dummy variable  $Unification_j(t)$  controls for the effect of increasing expenditures after the German Unification in 1990.

Most important, Political Dummy $_j(t)$  describes the political variables, on which this study focuses. Table 2 describes their mappings with respect to hypotheses 1 to 3.

Table 2:  
**Political dummy variables on the federal level**

Hypothesis	Dummy-Variable
1	Election
2	Pre-Election
3	Left

The variables Election and Pre-Election take the exact timing of the elections into account. Following Franzese (2000), they are calculated as

$$Election_j(t) = [(M-1) + d/D]/12$$

where M is the month of the election, d is the day of the election and D is the number of days in that month. In Pre-Election years the variable is calculated as

$$Pre-Election_j(t) = [12 - (M-1) - d/D]/12$$

In all other years, their values are set to zero. Therefore, I directly control for fluctuations and the fact, that there are no fixed election dates in Germany. The election dates are reported in Appendix A.1.

Hypothesis 3 will be tested on the simple left-right scale using the variable “Left”. The dummy “Left” takes on the value “1” in periods when a SPD chancellor was in office and zero otherwise. In election years, this type of government receives the value “1” which was in office for the longer subperiod of this particular year. For example, when the SPD/GR government followed the CDU/FDP government in the fall of 1998, this year was counted for the CDU/FDP etc.<sup>8</sup> Appendix A.1 also gives a detailed description of the governments’

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<sup>8</sup> In the alternative specification, the coalition type dummies take on the value “1” when the considered coalition type was in power and “0” otherwise. I distinguish between four different coalition types ruled in Germany since 1950 on the federal level: CDU/FDP, CDU/SPD, SPD/FDP and SPD/GR. Note that to avoid multicollinearity between these dummies, one of them must function as reference category. The estimated effects of the other dummies must then be interpreted as deviations from this reference category.

succession in time elapsed. Hence the Election and Pre-Election year variables are of dimension  $(T-2) \times 1$ . The variable “Left” is of dimension  $(T-5) \times 1$ , because it is not defined in the period from 1967 to 1969 when the grand coalition ruled.

## 5.2 A set of SUR equations in a panel data framework

The expenditures for educational and cultural affairs on the state level are expected to be contemporaneously correlated for the same reasons as before. That is why, I will also control for it using a SURE estimation method. Different from the analysis on the federal level, there is also variation between the single states. Hence, I stay with the general structure of model (1) in a panel data approach:

$$\begin{aligned} \Delta \log \text{Expenditure Category}_j(t) = & \beta_{0j} + \beta_{1j} \Delta \log \text{Gross Domestic Product}_j(t) \\ & + \beta_{2j} \Delta \log \text{Population}_j(t) + \beta_{3j} \Delta \log \text{Unemployment}_j(t) + \beta_{4j} \Delta \log \text{Debt}_j(t) \\ & + \beta_{5j} \Delta \log \text{Compensation of Employees}_j(t) + \beta_{6j} \Delta \log \sum_{i \neq j} \text{Expenditure Category}_i(t) \\ & + \beta_{7j} \text{Equalization}_j(t) + \beta_{8j} \text{City}_j(t) + \delta_j \text{Political variable}_j(t) + u_j(t) \end{aligned} \quad (2)$$

$j = 1, \dots, 6$

where  $\text{Expenditure Category}_j(t)$ ,  $\text{Population}_j(t)$ ,  $\text{Gross Domestic Product}_j(t)$ ,  $\text{Unemployment}_j(t)$ , and  $\text{Debt}_j(t)$  are now  $N(T-5) \times 1$  vectors and denote the respective variables on state level.  $\sum_{i \neq j} \text{Expenditure Category}_i(t)$  consists of the expenditures for education and cultural affairs, the governments of the states are responsible for (except category  $j$ ). As before, the data are transformed by a Prais-Whinston Transformation to correct for serial correlation as well as heteroscedasticity.<sup>9</sup> Imbalance of the panel causes further losses of degrees of freedom. The variable  $\text{Compensation of Employees}_j(t)$  (workplace) considers the economic development status. As before, I employ first differences of the change (logarithm) of all the economic control variables. The dummy variable  $\text{Equalization}_j(t)$  considers the fiscal equalization system. It takes on the value “1” for transfer payers and “0” otherwise. Similarly, the dummy variable  $\text{City}_j(t)$  controls for the difference between “city-states” (Stadtstaaten) and “non city-states” (Flächenländer). It is “1” in the case of the city-states Bremen and Hamburg and “0” otherwise. Moreover, two dummy variables are added because of the data preparation by the Federal Statistical Office. As mentioned above regarding the expenditures for “Universities”, a dummy variable controls for the effect

<sup>9</sup> In total, 60 correlation coefficients were estimated and used to transform the data.

of excluding hospitals from the budgets of the states within the observation period. Second, the spending for kindergartens was excluded from the “Schooling” category from 2002 to 2004, which is also considered.

In addition, the equation explaining the variation in the expenditures for Universities was supplemented by a dummy variable. As mentioned above, it controls for the effect of excluding hospitals from the budgets of the states within the observation period.

The set up of the political dummies conforms to the one above.<sup>10</sup> As before, the variable “Left” is not defined in periods with grand coalitions. Appendix A.2 covers the election dates as well as the exact government formations in every single state. The Election and Pre-Election year dummy variables are of dimension  $N(T-5) \times 1$ , whereas another 14 observation points are lost using the variable “Left” because of grand coalitions.

Table 3:  
**Political dummy variables on the state level**

Hypothesis	Dummy-Variable
1	Election
2	Pre-Election
3	Left

The error term  $u_j$  consists of an individual effect  $Z_\mu \mu_j$  and a stochastic component  $v_j$  (Baltagi 2001: 105):

$$u_j = Z_\mu \mu_j + v_j \quad j = 1, \dots, 6$$

where  $Z_\mu = (I_N \otimes I_T)$  and  $\mu_j' = (\mu_{1j}, \mu_{2j}, \dots, \mu_{Nj})$  and  $v_j' = (v_{11j}, \dots, v_{1Tj}, \dots, v_{N1j}, \dots, v_{NTj})$ .

To sum up, Baltagi (2001: 105 f.) concludes that each error component follows the same standard Zellner (1962) SUR assumptions imposed on classical disturbances. Furthermore, additional cross-equations variance components have to be estimated. However, as in a single panel data equation, the impact of the individual effect is of interest. If  $\mu_j$  contains only a constant term (here  $\beta_{0j}$ ), then OLS will provide consistent and efficient estimates for  $\beta_j$  and  $Z_\mu$ . If  $\mu_j$  is unobserved, but correlated with the other regressors of the model, OLS will be

<sup>10</sup> Regarding the specification with the different coalition types, two more government types have now to be considered because SPD and CDU ruled without coalition partners in some states. Hence, I distinguish between CDU, CDU/FDP, CDU/SPD, SPD/FDP, SPD/GR and SPD governments. With respect to the grand coalitions, I do not distinguish which of the two parties places the Prime Minister. As before, the periods of a CDU/SPD government act as reference category.

biased and inconsistent because of omitted variables. In this case, the fixed effects approach solves the problem. A common F-Test will help to decide which estimation procedure to use. Random Effects cannot be present because nearly the whole population is used. There is no room for randomness in the current framework.

## 6 Results

### 6.1 The federal level

Table 4 shows the regression results for the political variables on the federal level. It reports the coefficients and t-ratios for every single equation. By interpreting the coefficients, one has to be a bit careful. At first, I take logs of the levels so that the coefficients would reflect elasticities. In addition, I have to take first differences because of stationarity reasons. Thus, the estimated coefficients report the relative changes of the growth rates for the respective expenditure category. As mentioned before, it is impossible to test for a clear-cut pattern between every single category and coalition type in a sensible way. Therefore, we will focus on the expected as well as notable single effects. To decide on the hypotheses, joint F-Tests will be crucial.

In accordance with the political business cycles, I expect politicians to increase expenditures for categories which allow short run effects and affecting the preferences of the median voter before elections. Regarding the statistical significant effects in Table 4<sup>11</sup> the higher spending for “Housing and Land Use Planning” and “General Land and Capital Assets” seem to be in line with this claim. Higher expenditures for “General Land and Capital Assets” come along with lesser privatizations and thus be interpreted as preserving silver-plate before elections. In contrast, no intuitive explanation could be given for lower spending for “Public Safety and Order”, “Legal Protection” and “Traffic and Communications”. Higher expenditures for “Alimentation, Agriculture and Forest” and “Universities” do not seem to fulfil the preferences of the median voter, too. Marginal groups working for “Companies (Public Sector)” seem to be in a weaker position compared to the median voter. However, following

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<sup>11</sup> I do not include “Other Education” and “Municipal Affairs” because of too few observations for these categories on the federal level. The series for “Schooling” started in 1952 and the series for “Universities” in 1953. That is why T = 46 in this regression. In the alternative model for aggregate level (all jurisdictions together), “Municipal Affairs” are included and T = 52.

**Table 4:**  
**Regression Results. Federal level: Effects of the political variables on the allocation of expenditures (left government)**

	General Administration	Foreign Affairs	Defence	Public Safety and Order	Legal Protection	Schooling	Universities	Research beyond Universities	Cultural Affairs	Social Insurance, Welfare and Veterans Support	Health, Sports and Regeneration	Housing and Land Use Planning	Alimentation, Agriculture and Forest	Energy, Water Management, Industry and Services	Traffic and Communications	Companies (Public Sector)	General Land and Capital Assets	General Finance
Election	0.085 (1.58)	0.037 (0.32)	-0.00005 (-0.00)	-0.046 (-1.02)	-0.112** (-2.13)	-0.099 (-0.28)	0.151 (1.39)	0.043 (0.62)	0.016 (0.14)	-0.017 (-0.48)	0.103 (0.79)	0.264*** (2.76)	0.022 (0.26)	-0.171* (-1.72)	-0.066** (-2.07)	-0.194* (-1.68)	0.431** (2.21)	-0.003 (-0.11)
Pre-Election	0.051 (0.49)	0.028 (0.12)	-0.028 (-0.50)	-0.254*** (-2.97)	-0.125 (-1.23)	0.969 (1.41)	0.364* (1.74)	0.145 (1.08)	0.186 (0.82)	-0.010 (-0.15)	0.377 (1.50)	0.021 (0.11)	0.302* (1.89)	-0.074 (-0.44)	-0.020 (-0.33)	-0.063 (-0.36)	-0.135 (-0.35)	-0.030 (-0.48)
Left	-0.064 (-1.64)	-0.001 (-0.01)	0.002 (-0.11)	0.039 (1.29)	-0.029 (-0.77)	0.565** (2.23)	-0.023 (-0.34)	0.037 (0.76)	0.239*** (2.94)	0.039 (1.61)	0.222** (2.38)	0.022 (0.31)	-0.057 (-1.03)	-0.105 (-1.46)	-0.017 (-0.76)	0.140* (1.70)	-0.129 (-0.92)	0.004 (0.16)
R <sup>2</sup>	0.3256	0.5215	0.5439	0.4200	0.4285	0.3613	0.3235	0.6176	0.6915	0.5543	0.4184	0.3625	0.4475	0.2681	0.7857	0.1977	0.5188	0.4533
F-Statistic	2.53 (0.0075)	5.67 (0.0000)	8.24 (0.0000)	4.45 (0.0000)	4.48 (0.0001)	2.94 (0.0020)	2.65 (0.0051)	8.51 (0.0000)	11.36 (0.0000)	9.70 (0.0000)	3.82 (0.0001)	3.03 (0.0015)	4.24 (0.0000)	2.59 (0.0345)	21.18 (0.0000)	1.44 (0.1676)	6.29 (0.0000)	4.97 (0.0000)
T	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46

t-ratios in brackets; \*/\*\*/\*\*\*: significant at the 0.10/0.05/0.01 level.

this argument, politicians do not decrease spending for “General Administration” before elections. Moreover, the prospects that politicians might increase spending for “Schooling”, “Social Insurance, Welfare and Veterans Support”, and “Health, Environment, Sports and Regeneration” before elections are not fulfilled.

Furthermore, we see that left governments significantly affect specific expenditure categories. The effects on the educational and cultural expenditures are of special interest because of the respective examination on the state level. As expected, they strongly increase money for “Schooling”. I did not expect any specific effect on the expenditures for “Cultural Affairs”. The results show that left governments dispense more in this category on the federal level. Left governments gratify their clientele by strongly increasing the money for “Health, Environment, Sports and Regeneration”. This category includes all around environment protection and is thus one of the Green core topics. We also expected left governments to increase spending for “Companies (Public Sector)”. This hypothesis cannot be rejected by the findings.

Finally, in line with the partisan approach, there should be higher spendings for “Defence”, “Public Safety and Order” and “Legal Protection” under right governments. But regarding the estimation results, parties do not matter with respect to these categories. It seems reasonable that because of the Second World War, external factors like NATO-contracts had a higher influence on the German expenditures for defence than internal ones. However, the empirical findings do not support the expectations concerning these categories.

Most important for rejecting or not rejecting the falsifiable hypotheses if electoral effects and parties matter are F-tests on the political dummy variables. Therefore, referring to hypotheses 1 to 3 I first check the joint significance of the political dummy, respectively. Table 5 reports the results of the F-Tests.

The hypothesis that all the Election variables are jointly zero is rejected. Thus, election years affect the allocation of expenditures (Hypothesis 1). The same is true for pre-election years. They also have a strong influence (Hypothesis 2). By rejecting the null hypotheses that all the variables “Left” are jointly zero respectively, the partisan approach is fully supported on the federal level. Parties do matter.

Table 5:  
**F-Tests on the political variables. Federal level (left government)**

Variable	F-Statistic	P-Value
Election**	1.66	0.0428
Pre-Election***	2.30	0.0017
Left***	3.48	0.0000

\*/\*\*/\*\*\*: jointly significant at the 0.10/0.05/0.01 level.

As mentioned above, I check other specifications which strongly support the findings. First, I use single coalition dummies instead of the variable “Left”. Thereby, the ideological differences between the different left governments (SPD/FDP and SPD/GR) are considered. These results clarify in detail, which type of government forces the preference for certain categories. For example, I find that the SPD/GR government is responsible for the higher expenditures for “Health, Sports and Regeneration”. The SPD/FDP coalition increases spending for “Housing and Land Use Planning”. From an explorative point of view, this resembles the social democratic policy of subsidized housing in the 70ies. The SPD/FDP coalition disburses less for “Alimentation, Agriculture and Forests” and thus does not attend the conservative clientele like farmers. Furthermore, I estimate the effects of the political variables on the aggregated expenditures over all jurisdictions for which the federal government is responsible for. The results match the ones of Table 5. I also find strong evidence for Election year and Partisan, but no Pre-Election year effects. Not surprisingly, the allocation differs slightly with respect to single categories. In conclusion, the allocation of expenditures under the control of the federal government is highly driven by the political variables.

The evidence for the opportunistic business cycle as well as the partisan approach is not necessarily contradictory. First, the respective political variables do not continuously affect the same expenditure categories. Second, as pointed out above, the claim of the political business cycle theory is not simply the alternative to the partisan approach that parties do not matter, but also suggests a particular pattern between elections and economic variables. Moreover, Krause and Mendez (2005) argue that finding evidence for both approaches might not contradict because of party resemblance.

To test the specification of the model, I first look for efficiency gains of applying SURE in comparison to OLS. Both estimators are equal, if there will be no contemporaneous

correlation between the single equations (or completely the same regressors in every equation are used).<sup>12</sup> The Breusch-Pagan-Tests for no contemporaneous correlation can not be rejected in every single case at 0 percent significance level. Hence, there are strong efficiency gains from using SURE in the considered model. Economically, the expenditures in one category are dependent of the expenditures in the other categories, as expected.<sup>13</sup>

## 6.2 The state level

In accordance with the estimation procedures for a panel data model, I first check a fixed effect versus a pooled regression. An F-Test that all the fixed effects are zero can not be rejected. Thus, I employ a pooled regression with a common constant which is efficient in this case. Furthermore, the control variables  $Equalization_j$  and  $City_j$  are completely insignificant so that I drop them also for efficiency reasons. Applying the Breusch Pagan Test, the null hypothesis of no contemporaneous correlation can be strongly rejected. Hence there are also high efficiency gains by estimating SURE in the current model. Table 6 reports the regression results.

Again, for a further interpretation of the single coefficients in Table 6 one should keep in mind that I use first differences of logarithmic variables. Table 6 indicates that politicians increase the expenditures for “Schooling” and disbursed less for “Other Education” in Election years. While the first effect fulfills the prospects, there seems to be no intuitive explanation for the latter.

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<sup>12</sup> Note that the structural explanatory variables differ in every equation because of the Prais-Whinston Transformation.

<sup>13</sup> Unfortunately, the SURE method does not control for heteroskedasticity in the equations themselves. An examination of the single equations shows, that there is not always a constant variance which might cause a bias. My estimation results of the single equations with robust standard errors provide more significant political variables but nearly the same coefficients. However, it is very difficult to control for the correlation between and in the equations together. This particular parametric variance function is not easy to find. Even though a simple way for considering these two types of correlation together would exist, there would remain the trade-off between the uncertainty due to the FGLS-estimation and its information gain. Hence, as the contemporaneous correlation is very strong, I focus on that by applying SURE. Furthermore, I check the significance of the control variables also by F-Tests. They are all significant respectively.



Table 6:

**Regression Results. State level: Effects of the political variables on the allocation of expenditures (left government)**

	Schooling	Universities	Extraordinary Subsidies to the Education System	Other Education	Science, Research, Development outside Universities	Cultural Affairs
Election	0.023** (2.17)	0.017 (0.75)	0.031 (0.91)	-0.059* (-1.85)	-0.003 (-0.08)	-0.003 (-0.15)
Pre-Election	-0.011 (-1.32)	0.025 (1.43)	-0.014 (-0.54)	-0.014 (-0.58)	0.031 (1.11)	0.012 (0.82)
Left	0.001 (0.28)	-0.014 (-1.45)	0.010 (0.68)	-0.004 (-0.28)	0.006 (0.38)	- 0.025*** (-2.91)
R <sup>2</sup>	0.4975	0.2661	0.0485	0.2109	0.1365	0.3104
F-Statistic	25.62 (0.0000)	10.43 (0.0000)	2.41 (0.0103)	7.31 (0.0000)	4.32 (0.0000)	13.47 (0.0000)
N × T	246	246	246	246	246	246

t-ratios in brackets; \*\*\*/\*\*/\*: significant at the 0.10/0.05/0.01 level

I expected left governments to disburse more for “Schooling”. In fact, the results do not support this hypothesis. Rather, left governments decrease spending for “Cultural Affairs”. Thus these findings are not in line with the ones on the federal level and they do not indicate a well definable policy of allocating expenditures for education and cultural affairs on a simple left-right scale. Using different coalition types instead of the variable “Left”, it is also difficult to identify the particular behaviour of specific governments. This effect is due to the impact of grand coalitions which are not considered in the current specification using the variable “Left”. Overall, the numerical effects are much smaller than on the federal level; all the coefficients of the political variables are smaller than 6 percentage points. This implies that the political determinants affect the respective categories, but do not fundamentally change their allocation.

F-tests for the political dummies are used to decide whether parties matter on the federal state level. Table 7 reports the results.

Table 7:

**F-Tests on the political variables. State level (left government)**

Variable	F-Statistic	P-Value
Election	1.54	0.1625
Pre-Election	1.06	0.3818
Left*	1.97	0.0662

\*/\*\*/\*: jointly significant at the 0.10/0.05/0.01 level.

In contrast to the federal level, Table 7 does not report any evidence of political business cycles on the state level. Hypothesis 1 and 2 can be rejected. The reason for this finding might be that expenditures for education and cultural affairs only slightly affect the business cycle. On the other hand, the hypothesis that parties do not matter, can be rejected. These findings are partially supported by the model with coalition dummies instead of the variable “Left”. The five coalition type dummies together are significant at the 5.62 level. Pre-Election years do also have no influence, whereas Election years become jointly significant only caused by stronger single effects with respect to “Schooling” and “Other Education” as in Table 6. Again, the second specification confirms the result that parties matter and makes it robust. In comparison to the federal level, the allocation of expenditures in the states is not as strong affected by different coalition types and by the timing of elections.

## 7 Conclusion

This paper examines the allocation of public expenditures with respect to political effects for the case of Germany. Thereby, the budget becomes a new object of investigation for testing partisan and political business cycle approaches. The differentiation seems reasonable because the clienteles of the parties benefit differently. In fact, I find that parties matter in allocating expenditures, whereas the exact way they do is difficult to predetermine and to define because of the number of categories and coalition types. The differentiation on a simple left-right scale allows a classification of the core categories and the comparison of the federal and state level. The results become robust by estimating different specifications. Consequently, the examination of several expenditure categories provides a respectable data set for a single country study. However, from a statistical point of view, the number of observations remains small and therefore the results must be handled with care.

Furthermore, in contrast to previous research, I take Germany’s federal structure into account by examining the federal as well as the state level. Analysing fiscal policy in Germany needs to consider the allocation of rights and duties between the jurisdictions. All the more, the empirical findings are interesting regarding the effects on the federal level in comparison to the states. First, governments on the federal and state level seem to have different preferences to allocate expenditures for cultural affairs. Second, there are structural differences between policies on these two levels. Politicians change the allocation of expenditures for education and cultural affairs much more than their colleagues in the states. Hence these findings might

also be interpreted as evidence for the small influence of the states in the German federal system.

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## Appendix

### A. Election dates and party composition of the governments

#### A.1 The federal level

Elections were held in: 06-Sep-1953, 15-Sep-1957, 17-Sep-1961, 19-Sep-1965, 28-Sep-1969, 19-Nov-1972, 03-Oct-1976, 05-Oct-1980, 06-March-1983, 25-June-1987, 02-Dec-1990, 16-Oct-1994, 27-Sep-1998, 22-Sep-2002 and 18-Sep-2005.

#### A.2 The state level

Table 8:

#### Election dates in the states from 1974 to 2005

<b>Baden-Wuerttemberg</b>	<b>Bavaria</b>	<b>Bremen</b>	<b>Hamburg</b>	<b>Hesse</b>
04-April-1976	27-Oct-1974	28-Sep-1975	03-March-1974	27-Oct-1974
16-March-1980	05-Oct-1978	07-Oct-1979	04-June-1978	08-Oct-1978
25-March-1984	10-Oct-1982	25-Sep-1983	06-June-1982	26-Sep-1982
20-March-1988	12-Oct-1986	13-Sep-1987	19-Dec-1982	25-Sep-1983
05-April-1992	14-Oct-1990	29-Sep-1991	09-Nov-1986	05-April-1987
24-March-1996	25-Sep-1994	14-May-1995	17-May-1987	20-Jan-1991
25-March-2001	13-Sep-1998	06-June-1999	02-June-1991	19-Feb-1995
26-March-2006	21-Sep-2003	25-May-2003	19-Sep-1993	07-Feb-1999
			21-Sep-1997	02-Feb-2003
			23-Sep-2001	
			29-Feb-2004	
<b>Lower Saxony</b>	<b>North Rhine-Westphalia</b>	<b>Rhineland-Palatinate</b>	<b>Saarland</b>	<b>Schleswig-Holstein</b>
09-June-1974	04-May-1975	09-March-1975	04-May-1975	13-April-1975
04-June-1978	11-May-1980	18-March-1979	27-April-1980	29-April-1979
21-March-1982	12-May-1985	06-March-1983	10-March-1985	13-March-1983
15-June-1986	13-May-1990	17-May-1987	28-Jan-1990	13-Sep-1987
13-May-1990	14-May-1995	21-April-1991	16-Oct-1994	08-May-1988
13-March-1994	14-May-2000	24-March-1996	05-Sep-1999	05-April-1992
01-March-1998	22-May-2005	25-March-2001	05-Sep-2004	24-March-1996
02-Feb-2003				27-Feb-2000
				20-Feb-2005

Source: Statistical State Offices

The first government of the Federal Republic of Germany in the period from 1949 to 1953 consisted of members from three different parties: CDU, FDP and DP (Deutsche Partei). In the successive government, there were also ministers from the BHE (Gesamtdeutscher Block/Bund der Heimatvertriebenen und Entrechteten) and the FVP (Freie Volkspartei). Since these coalitions were a result of the young democracy in Germany after the Second World War, I label the period from 1950 to 1957 as CDU/FDP. These governments were in accord with the period from 1958 to 1966 in which a pure CDU/FDP government was in power. During the next three years, a Grand Coalition (CDU/SPD) reigned. Then a SPD/FDP government took over up to 1982. From 1983 to 1998 a CDU/FDP government was in office, while SPD/GR government ruled from 1999.

In **Baden-Wuerttemberg** the CDU was in power up to 1991, then a grand coalition (CDU/SPD) took over for four years and from 1996 to 2004 it was ruled by a CDU/FDP coalition. There were no coalitions in **Bavaria** during the whole observation period: The CDU (CSU) was in power all the time. The SPD reigned in **Bremen** up to 1991. Then, a coalition consisting of SPD, FDP and the Green-Party was in office for three years. I label this coalition as SPD/FDP coalition because the FDP hold more mandates in Bremen's parliament than the Greens. After that, a grand coalition took over. **Hamburg** was ruled by a SPD/FDP coalition from 1974 to 1977. Then SPD reigned alone up to 1986, whereas from 1987 to 1990 there was again a SPD/FDP government and from 1991 to 1993 the SPD was in office once more. In the period from 1993 to 1997, the SPD formed a coalition with the so called "Statt-Partei". I label this period also as SPD regnancy. Then, there was a SPD/GR government from 1998 to 2001. Then in 2002 and 2003, there was a coalition consisting of the CDU, FDP and the so called "Schill-Partei" in office. I label this coalition as CDU/FDP. From 2004 the CDU reigned alone. In **Hesse**, a SPD/FDP coalition was in office up to 1982 and afterwards a SPD/GR government up to 1986. A CDU/FDP coalition was in power from 1987 to 1990. Then again a SPD/GR coalition took over up to 1998. Since 1999, a CDU/FDP government reigned. In **Lower Saxony**, a SPD/FDP coalition ruled up to 1977. From 1978 to 1985 the CDU reigned alone, whereas it must share the power from 1986 to 1989 with the FDP. A SPD/GR government followed for four years and in 1994 the SPD could get the whole power. In 2003, a CDU/FDP government took over. **North Rhine-Westphalia** was ruled by the SPD during the whole observation period. In **Rhineland-Palatinate**, the CDU reigned alone up to 1986. Then a CDU/FDP government followed for four years. In 1991, a SPD/FDP

government took over. In **Saarland**, the CDU ruled from 1974 to 1976. Then a CDU/FDP government was in power up to 1984 (In 1977, there was reorganisation of the cabinet beyond the regular elections (cabinet Roeder V). From 1985 to 1999 the SPD was in power alone, whereas from 2000 the CDU reigned. The CDU reigned in **Schleswig-Holstein** up to 1987. Then, the SPD ruled alone up to 1995. From 1996 there was a SPD/GR coalition.