# Political parties and higher education spending:

# Who favours redistribution?

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**Abstract:** A nation's endowment with human capital is an important source of economic prosperity, yet education systems as well as the amount of public spending differ both between and within industrialized countries. Traditional approaches in comparative political economy explain education spending from a perspective in which leftist parties favour human capital formation. In contrast, recent approaches claim that – with regard to public financing of higher education in stratified education systems – the basic assumptions of partisan theory rather lead to the opposite hypothesis. In such systems, a pattern of reverse redistribution emerges, under which electoral incentives let right parties favour increases in higher education budgets. We test both claims within the decentralized German education system. Our encompassing empirical strategy provides clear support for the latter hypothesis in the 16 German states between 1992 and 2003. The results imply that the partisan composition of government and preferences for redistribution continue to matter.

**Keywords:** Comparative political economy, Education spending, Higher education, Partisan theory, Time-series-cross-section, Germany

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## 1. Introduction:

Benjamin Franklin famously noted that "an investment in knowledge always pays the best interest". In fact, a country's endowment with human capital is an important source of economic prosperity (cf. Barro 1997). Still, while most industrialized nations have universal primary and secondary education systems, the approach to the increasingly important sector of tertiary education varies. Both among and within advanced industrialized democracies, significant differences with respect to the structure, the access to and the public investment in higher education can be found (Ansell 2010). While public funding is arguably only one dimension of education policy, its different levels can be expected to mirror the varying priorities governments attach to the public support of tertiary education. What – beyond demand side and structural factors – can explain such differences in governmental priority?

In the tradition of classical partisan theory, scholars have suggested that the government's composition in terms of political parties affects public education spending (Boix 1997). This stream of literature treats governmental education expenditures by and large as political supply side measure of economic intervention. Following a constituency-based argument, subsequently, 'left' parties are expected to favour comparatively higher education expenditures in order to increase the human capital stock of their traditional electorate among the working class. This expectation has found overwhelming empirical support in a range of cross-national studies (e.g. Boix 1997; Castles 1998; Iversen and Stephens 2008; Busemeyer 2009a).

A closer look at higher education, however, indicates that the distributional consequences of public investment into this segment of education do not necessarily favour the classical electorate of the left. While the degree of social stratification varies by education system (Pfeffer 2008), the social background is positively related to a student's likelihood of

attending university (Lucas 2001; Archer et al. 2003). Against this setting, a range of theoretical and empirical studies on the economics of education imply that public, i.e. tax-based financing of higher education leads to a reverse redistribution effect (Creedy 1995; Fernandez and Rogerson 1995; García-Peñalosa and Wälde 2000). These results oppose the classical hypothesis of left-wing education spending. Rather, more recent approaches to the political economy of higher education lead to the expectation that the positive re-distributive effects for their electoral constituency let 'right' parties favour a comparatively higher spending on tertiary education (Ansell 2008; Jensen 2009; see also Wolf 2006: esp. 205).

The purpose of this article is to provide a rigorous empirical test of these competing partisan hypotheses. While studies of this type typically employ cross-national data, the fundamental, historically grown structural differences of education systems (Iversen and Stephens 2008; Ansell 2010) and especially the different levels of government vested with legislative authority in this field render quantification in a simple cross-national framework questionable. Particularly in the politics of education spending, sub-national results often oppose the conventional wisdom produced in comparisons at country level (Wolf, 2006). This study therefore turns to the sub-national level as well, thereby addressing the actually responsible level of government while holding most institutional factors in the political organisation and the higher education system constant.

In this regard, Germany allows for an excellent testing ground as educational policies are completely decentralized resulting in a variety of developments including public education spending. The sixteen sub-national German states are by and large autonomous in regulating, administrating, and most important, financing university level education (Hepp 2002; Oberndorfer and Steiner 2006; Wolf 2006; Freitag and Schlicht 2009). Expenditure decisions thus depend on political majorities on exactly this level of government (Hetmeier 2000).

To map the proposed distributive logic of these expenditure decisions, our dependent variable measures the share of tertiary education spending in the overall state budget. Rather than focussing on the GDP share of higher education, we propose this alternative measure to more adequately capture the partisan decision to prioritise certain policies and thus clienteles over others under budgetary constraints. In other words, we explain variation in a governments' relative preference for tertiary education. As a further step in bringing the statistical model closer to the data generating process, we rely on the partisan composition of government at the actual time of the budget decision. Finally, we aim to enhance the validity of our results by increasing the number of observations applying a time-series cross-section design with varying statistical specifications. Taken together, the study tests the influence of the partisan composition of government on the budgetary share of tertiary education expenditures in the German states using annual data between 1992 and 2003.

The remainder is structured as follows: the next section outlines the competing theoretical claims in more detail and reviews the relevant political economy literature. Section 3 describes the data, controls and model specifications employed in the analysis. Section 4 presents and discusses the statistical results on partisan effects while section 5 concludes with their wider implications.

## 2. Partisan theory and the political economy of higher education in Germany

The basic tenet of classical partisan theory holds that parties do matter for a government's policy output (Hibbs 1977): differences in governmental action can be explained by drawing on the varying preferences of governing parties. Basically, approaches in this tradition claim that the policies of 'left' and 'right' parties differ because their respective electorates represent different factors of production. While 'right' parties are assumed to foster the

interests of capital holders in high income strata, parties on the left side of the political spectrum are expected to serve the interest of labour embodied in the working class. In line with the "objective economic interests and subjective preferences of their class-defined core political constituencies", Hibbs (1987) argued that 'right' governments put low tax burdens and price stability to the fore while policies of 'left' governments should privilege redistributive approaches which benefit the working class.

The essential idea that left parties favour governmental redistribution in line with the economic interests of their clientele has been taken up in the seminal works of Charles Boix (1997; 1998). Contrasting Hibbs, however, he argues that governmental leeway in macro-economic demand-side polices has become limited in a globalised world. This background condition rather shifts the focus to public education spending which must be considered as the major supply-side strategy of 'left' parties. Since increasingly open economies raise the demand for high skilled labour, the relative strength of the working class can be especially enhanced by investing in human capital formation. Based on this reasoning and in line with the clientelist logic of classical partisan theory, thus, one should expect that 'left' parties in government prioritise public spending in education (Boix 1997: 815; cf. Castles 1998: 174ff). In analysing the overall supply of education spending in the OECD countries between 1960 and 1990, Boix (1997) finds clear evidence for this expectation. Comparable empirical findings have been replicated in several studies also for more recent periods (e.g. Castles 1998; Schmidt 2002; Busemeyer 2007; Iversen and Stephens 2008, Wolf, 2009).

Debates about a 'third way' of social democracy (Giddens 2000) and the observation of insider-outsider politics on part of social democratic parties (Rueda 2005) instilled a more fine grained perspective on preferences of the working class and the resulting strategies of left wing parties. With regard to public education policies, especially the works of Busemeyer

(2008, 2009a, see also 2009b) derive and test more precise expectations on partisan effects against this background. Particularly, he expects that left parties should increasingly support tertiary education. On the one hand, this is due to the fact that the 'education expansion' has raised expectations of the working class which increasingly seeks access to higher education (Busemeyer 2009a: 110). On the other hand, it serves the goal of social democratic parties to expand their constituency to the middle-class, which also benefits from a publically financed tertiary education system (ibid.; see also Ansell 2006). Empirically, Busemeyer's analyses of OECD-countries in the eighties and nineties support the theoretical claim and show that social democratic participation in government is associated with increases in university enrolment and overall public spending on higher education. Similarly, Iversen and Stephens (2008) forcefully argue that left parties expand their tertiary education spending to reduce the elitist character of tertiary education by ensuring that low-income groups also have access. And indeed, also their results bring about a statistically positive relationship between the government participation of left parties and the public spending on higher education on the country level.

Taken together, both the classic as well as the more recent applications of partisan theory would let us expect that left parties prioritise public spending on tertiary education in Germany more than right parties do. This leads to the following hypothesis:

*Hypothesis 1:* *The higher the cabinet share of 'left' parties, the higher the budgetary share of public spending on tertiary education.*

However, the inclusion of specific characteristics of tertiary education systems may also lead to opposing expectations if the clientelist logic is consequently applied (e.g. Busemeyer 2009a: 110). An initial approach in this vein has been developed by Carsten Jensen (2009). Contrasting the argument of Iversen and Stephens (2008), he contends that the increasing de-industrialisation also raises the demand for social protection among the constituencies of right-wing parties. While de-industrialisation initially had a more aversive effect on low-income groups, its progress consecutively also raises the risk exposure of middle and high-income classes. Against this background, higher education becomes a valuable tool for right-wing governments in pleasing the demands of their electorate. One the one hand, higher education adapts the recipient's skills to the changing labour market and thus creates security against unemployment. On the other hand, higher education spending is "among the least redistributive welfare programs, because usage is skewed towards middle- and high-income groups, i.e. the constituency of right-wing parties" (Jensen 2009: 4). In other words, the more deindustrialization progresses, the more will right-wing parties spend on higher education to meet the preferences of their clientele. Using the Iversen and Stephens country-level sample – 18 OECD countries between 1991 and 2000 – Jensen basically confirms this expectation.

Yet, apart from de-industrialisation – a variable that arguably exhibits a common positive trend over time – Jensen's argument critically hinges on the degree of social selectivity in the tertiary education system. The clientelist logic of public spending on higher education under right wing governments is only applicable if the beneficiaries of such policies are indeed the higher income strata of the respective society.

This argument is particularly prominent in the encompassing work of Ben. W. Ansell on political preferences for education policies. Like other authors, Ansell (2010) attaches a high

social relevance to education policies in a globalising world but develops much more sophisticated models of "targeted redistribution". In higher education (see Ansell 2010: ch. 5, Ansell 2008), governments are expected to face a "trilemma" as they can achieve only two out of the three objectives of mass enrolment, full public subsidization, and low total public cost. Along this triangle, three models of higher education systems can be observed: the partially private model comes with high levels of enrolment and is relatively inexpensive for the public, the mass public model achieves similar enrolment but its high costs are borne by the public, while the elite model is publically financed but relatively inexpensive as enrolment rates are low. In the short-term, partisan preferences for public spending on higher education will depend on the respective model as it determines for which social strata and thus partisan clienteles policy decisions will be beneficial. Contrasting the view that left-wing parties will always push for public spending in education, "the impact of partisanship is thus conditional on the structure of the existing higher education system." (Ansell 2010: 165). Since access to higher education is skewed towards the wealthy, in elite models it will rather be right wing parties that support public financing of higher education since this distributes public money to the benefit of their clientele (ibid.: 176-80). Left-wing parties will be more reluctant to spend in this area until enrolment has reached mass levels (cf. Ansell 2008: 205 et sqq.).

Clearly, national systems vary in their degree of access to higher education and with respect to how much the resulting stratification is based on actual individual ability and performance or rather depends on social background as captured by parental educational attainment and income (Pfeffer 2008; Schlicht 2010: 260). According to findings of the Programme for International Student Assessment (PISA), Germany is among the most socially selective school systems with regard to access to secondary schools which again allow access to post-

secondary education (Freitag and Schlicht 2009: 48 pp.). Indeed, Germany's higher education system itself is characterised by a high degree of socio-economic selectivity. This can be shown by drawing on the classification of students by social background in the social surveys of the "Deutsches Studentenwerk", the German National Association for Student Affairs (BMBF 2004: 114 et sqq.). While 81 out of 100 children with a "high" social background enrol at a university, only 11 out of 100 children with a "low" social background enter tertiary education at all. In the year 2003, 61% of the students of German universities had a "high" or "medium high" social background. In addition, this over-representation of certain social strata did not decrease over time. The share of students with a high social background has in fact more than doubled between 1982 and 2003, while the share of children from the working class was cut to half (BMBF 2004: 119, 122, 137).

Besides this massive and increasing overrepresentation of higher social strata in the student body, the higher education sector differs from other classic supply-side policy fields in a further important respect: intergenerational transfers. Indeed, 89% of German students receive some kind of financial support by their parents. About 50% of an average student's expenditures are covered out of her parents' pocketbook. More strikingly, this share of parental financing rises with the social background of the student (BMBF 2004: 161; 171; 176). These high intergenerational transfers as a specific characteristic of the German tertiary education system render it even more typical for an "elite model" of higher education (cf. Ansell 2010: 204-8). Considering Germany's stratified education system with its high intergenerational stability and additionally taking into account the positive income effects of education as well as the parental burden of financing residual costs (tuition, fees, housing), the picture differs from one in which the working class predominantly benefits from public tertiary education spending. Under these conditions, the main beneficiaries of generous

public spending on higher education are the families from the upper classes of society. The more the government invests in tertiary education institutions, the higher is their return on the resources invested in the education of their offspring.

Thus, if we stick to the core tenets of partisan theory according to which right parties serve high-income constituencies in governmental decision making (cf. Hibbs 1977; Busemeyer 2007: 587),[1] we should rather expect a more targeted redistribution in German higher education policy (cf. also Centrum für Hochschulentwicklung 2000; Haupt 2005; Oberndorfer and Steiner 2006). Pointing in this direction, Wolf (2006: 219 pp.), for example, finds a negative effect of social democratic government participation on the GDP-share of tertiary education spending in the western German states. Contrasting the first hypothesis, there is thus a competing expectation on partisan priorities for financing university level education:

*Hypothesis 2:* *The higher the cabinet share of right parties, the higher the budgetary share of public spending on tertiary education.*

The following section outlines an empirical strategy to test these mutually exclusive hypotheses.

## 3. Data, controls and model specification

We test the hypotheses empirically in the sixteen German states which entails two distinct advantages. On the one hand, it holds institutional factors of the overall political and economic context and characteristics of the education system constant. Focussing on a prime example for elite models of higher education provides a crucial case for discriminating among the competing partisan logics. On the other hand, Germany provides an adequate testing ground for partisan differences as the individual sub-national state governments are

by and large autonomous in regulating, administrating and financing university level education (Hetmeier 2000; Hepp 2002; Oberndorfer and Steiner 2006). This, however, raises some doubts with regard to the country-level results provided by the literature discussed above. While Germany is an ideal-type elite model, the partisan composition of the national government can hardly affect short-term political decisions for higher education spending and a focus on the sub-national level is warranted. In addition, the common requirement of annual (rarely biennial) state budgets and election periods of four to five years provide sufficient variation on both, our major dependent and independent variables.

On the *dependent side* we measure the share of higher education expenditures in the state budgets.[2] With this operationalisation we consciously deviate from most of the traditional accounts of public education spending discussed above. Having emerged from a literature that originally aimed at explaining the overall public expenditure quota, most authors measure education spending as a share of country's gross domestic product (GDP). While this variable indeed measures the overall supply of public education, it is rather crude in capturing the more refined partisan logics according to which governments serve particular clienteles by investing in particular policy fields and in particular sectors thereof. We argue that focussing on the budgetary share of higher education better approximates the data generating process by representing the *priority* a government attaches to this particular policy (see also Hetmeier 2000: 31 or Ansell 2006: 17). In other words, our dependent variable captures the relative preference a partisan government affixes to higher education spending given all other political demands or functional necessities it faces in budgetary decision-making. Consider a shrinking state budget, for example: The party in government might be forced to limit overall government spending while the theoretically much more relevant

question is whether tertiary education spending would be disproportionately affected by such cuts.

These advantages are particularly visible in the German context. Here, the budgets under study are affected by a massive, cross-state fiscal redistribution mechanism, the so-called "Länderfinanzausgleich". Arguably, this influences the absolute resources any state government might spend on higher education which in turn confounds measures expressed as a GDP-share or as a per-capita value (see Wolf 2006: 30; 172 pp.). In contrast, our approach of measuring the relative budgetary preference a government is more robust to such effects: it more closely captures the distributional government decision after the absolute size of the budget is known. Besides, the proposed measure combines these helpful properties with advantages of the classical approach. By taking different sizes of the state budgets into account it enables meaningful comparison across units. Further, a relative measure allows us to ignore time-dependent effects common to all units such as inflation, for example.

On the *independent side*, our key variable is the partisan composition of the state government. Here, we also move closer to the data generating process. When using cabinet shares of parties in a given year, researchers often resort to taking only those parties into account that were in government for the larger part of that year (cf. Oberndorfer and Steiner 2006: 12), whereas others use cabinet shares weighted by days in government in a given year (cf. Freitag and Bühlmann 2003). Whereas the former operationalisation clearly uses less information than available, the latter leads to confounded effects of different parties in government during the analysed year. Most importantly, both commonly used options basically ignore the political process by which the decisions of interest are brought about. By and large, a state's budget for a given year is actually fixed once it passes parliament. Therefore the

relevant composition of government should be measured on the exact date the budget was passed. Accordingly, we inquired these dates of all sub-national budget resolutions in our sample and coded the party shares of the government in office at exactly this day.

In classifying the parties which held office during the investigation period we relied on the general perception of the German political landscape. Accordingly, the Christian democrats (CDU)[3] and the liberals (FDP) are considered as 'right' parties within the theoretical framework outlined above while the social democrats (SPD) and the far left (PDS) conform to the theoretical expectations on parties at the 'left' part of the political spectrum. This classification is consistent with the respective party values on the left-right coding scheme of Laver and Budge (see Klingemann et al. 2006). In contrast, we refrained from classifying the German Greens as a right or as a left party in the sense of our theoretical argument. On the one hand, the manifestos of the German Green party hold decidedly left policy positions on some issues but more liberal ones on others (Rudzio 2000: 163 pp.; see also the respective MANIFESTO data, Klingemann et al. 2006). On the other hand, the party's constituency recruits itself increasingly among higher income strata and especially among university students (Forschungsgruppe Wahlen 2005: 78-80). Thus, a positive influence of Green party shares would be consistent which each of the duelling hypotheses, rendering discrimination along this variable impossible.

While this article is primarily interested in the competing expectations on partisan effects, several *control variables* are necessary in explaining the budgetary share of higher education. Important in this regard are short-term fluctuations in the demand for tertiary education. While the number of students as a respective measure may be plagued by endogeneity, we employ the share of 19 year olds graduating from high school with the *Abitur*, i.e. the German education degree granting university access, as an exogenous measure for the

functional necessities a German state faces.[4] Focusing on the demand for governmental priorities also implies the possibility of competition between different social groups. Other empirical results, for example, show that the expenditure for education decreases with a higher share of persons aged 64 and older because a large budgetary share is re-distributed to this social group (Oberndorfer and Steiner 2006). Further, long-term socio-economic explanations for governmental priorities are based on developments such as increased social differentiation, economic growth and modernization (Schmidt and Siegel 2003). In this regard, modernization of a German state as measured by the share of employees in the primary sector should affect expenditure in higher education (Boix 1997). More important, advanced economic development as measured by the GDP per capita should increase education expenditures, as this implies more room to manoeuvre for the state on the one hand (Verner 1979: 174; Boix 1997), but is also linked to a higher demand in a well educated workforce on the other (Castles 1998: 87; Busemeyer 2009a). To complete the argument of overall budget constraints we also consider the ratio of debt to the budget, therefore accounting for changing budget conditions influencing the possible leeway of the overall budget and resulting policy priorities (Busemeyer 2009a: 113). To account for economies of scale, we also include population size to assess whether larger states may spend "proportionally less on education and to measure the impact of population growth" (Ansell 2006: 18).[5] Last but not least, a variable embracing the special structure of the German city-states' budgets is included. As the budgets of Hamburg, Berlin and Bremen comprise positions that are usually part of municipal budgets in other German states (Oberndorfer and Steiner 2006; Wolf 2006: 23-4), these states have a consistently lower share of higher education expenditures for purely technical reasons.

Data on our variables are available for the *investigation period* 1992 through 2003, where 1992 marks the first year for which all 16 German *states* (including those in the former German Democratic Republic) had a regular budget passed by the sub-national parliament. The 2003 end-date is governed by changes in the data generating process, namely an uprising debate concerning the introduction of tuition fees from 2003 onwards (see below), restructuring schemes regarding the implementation of the Bologna process (KMK und BMBF 2007: 8) and a change in the budgeting of (re)construction of universities (Winkel 2006: 31). All in all, our data consist of 192 observations.[6]

The analysis of time-series cross-section data offers three main advantages compared to cross-sectional data: first, an increased number of cases, second, the possibility to control for temporal effects, and third, to take omitted variable bias at least partly into account by explicitly modelling unit specific effects (Wooldridge 2003: 438-40; Plümper and Troeger 2007: 124). It does, however, come at a cost in terms of the complexity of *model specification*. The field is still in flux and some serious discussions about how to best handle this type of data structure have taken place over the last years without settling on universally agreed procedures.

To justify our choice, thus, we firstly present a standard fixed effects (FE) model with unit effects (model 1 in Table 1). FE-models, however, result in so-called within specifications meaning that only the change in the independent variable within one state enters the final equation estimated. The variance between states is completely "explained" by the vector of unit fixed effects. This excludes time-invariant variables and, more important, it artificially limits the explanatory power of rarely changing variables (cf. Kittel and Winner 2005: 271-5; Plümper et al. 2005; see also Wooldridge 2003: 473).

One possible way to avoid this is a Random-Effects (RE) model (model 2). As the name implies, however, this specification assumes that unit effects represent a random variable and that unobserved unit effects and independent variables are uncorrelated. With regard to the question of partisan effects, the assumption that certain right-hand side variables are independent of the characteristics of specific German states is rather heroic. Besides debt and degree of modernisation this is especially valid for variables capturing partisan government shares: here the southern states of Baden-Württemberg and Bavaria are notorious for their consistently high governmental shares of 'right' parties across time.

Due to its widespread use and in order to justify the importance of a more adequately specified econometric model, in model 3 we present another common approach (BKS) which contains a lagged dependent variable and a full set of time and section dummies. Although this "Beck-Katz-Standard" (Beck and Katz 1995) surprisingly prevails in many empirical approaches, it should be noted that it artificially inflates model fit measures and that the dummy variables absorb a large share of theoretically relevant variance and thereby possibly bias the coefficients of other independent variables (Plümper et al. 2005).

In order to tackle the problems inherent to models 1 to 3, we finally consider a Fixed Effects Vector Decomposition (FEVD, model 4) model as the most suitable option to trace partisan effects in tertiary education spending across states and across time. This estimator suggested by Plümper and Troeger (2007) allows for the estimation of time-invariant and rarely changing variables in a fixed effects model by applying a three step procedure. First, a conventional fixed effects model is estimated. Second, the vector of the unit-specific fixed effects estimates is regressed on the rarely changing and time invariant variables using OLS. Finally, a model including the rarely changing and time invariant variables and the residuals from the second stage (eta) is estimated. Plümper and Troeger (2007) show that the

estimator has sound properties compared to the alternatives, especially with regard to variables that are rarely changing.[7]

Two final aspects in specifying econometric models of panel data need to be considered in order to avoid inefficient estimations (Studenmund 2001: 318 pp.; Wooldridge 2003: 125-6). First, this concerns temporal correlation in the error terms which inflates standard errors. One solution would be the inclusion of a lagged dependent variable (LDV) in the right-hand side of the estimation equation (cf. model 3) which, however, entails the danger that the LDVs absorb the influence of the theoretically interesting variables (Achen 2000). We thus relied on an autoregressive model in which the current error term is adjusted by factoring in the error of one previous period (AR1).[8] Finally we control for the problem of panel heteroskedasticity (i.e. varying error terms across the states), by resorting to the more conservative strategy of basing significance levels on panel corrected standard errors (PCSE; Beck and Katz 1995: 638).

[Table 1 about here]

Table 1 compares the estimation results of different model specifications. For the ease of presentation, we present only the estimation results for the cabinet share of Germany's major right party, the Christian Democratic Union (CDU), for now.

Assessing the differences between the coefficients of the FE and RE specifications, the assumption of randomly distributed error terms for the sixteen states appears to be violated. The usually more efficient RE estimator here comes at the expense of inconsistent coefficient estimates. An F-test for $a_i=0$, a Hausman test for systematic differences ($p <$

0.02), and a Breusch Pagan LM test ($p < 0.00$) clearly confirm this view. As a consequence, the more consistent but less efficient fixed effects approach has to be preferred. This however means dropping time-invariant variables and – given the small number of time periods – an even more inefficient estimation of slowly changing independent variables. The resulting problems are most apparent for the city-state dummy which controls for the underestimation of the tertiary education share in the respective states. The highly-significant coefficient in the expected direction becomes only visible under the FEVD specification in model 4.

Against these observations, we decided to apply the FEVD procedure and identified the slowly changing or "sluggish" variables as those where the ratio of between to within variance exceeds 2.8. Plümper and Troeger (2007: 133) show that the FEVD estimates are more efficient compared to simple fixed effects for this threshold, even if we allow for a correlation of up to .5 between independent and unobserved variables. The threshold identifies the city-state dummy, but also the measures for higher education demand, GDP per capita, population size and primary sector employment.

Particularly this last variable further underlines the suitability of the FEVD specification for: The share of employees in the primary sectors of the German states varies much less across time than it does between states. This is easily comprehensible if one compares the metropolitan state of Berlin to the much more rural southern states of Germany. Technically speaking, however, the vector of fixed effects in model 1 and also the lagged dependent in model 3 absorb the large parts of the 'between' variation leaving only very little 'within' variation for estimation. Only if this is accounted for as in the FEVD model, the sign of this variable becomes negative which is consistent with modernization theory and extant empirical results at the international level (cf. Boix 1997).

## 4. Results: Partisan priorities for tertiary education spending

Our above discussion of the most adequate model specification summarised in Table 1 has already provided a first glimpse on partisan effects: we observe a consistently positive and significant influence of the Christian democrats which is consistent across all econometric specifications shown. A higher cabinet share of Germany's major party on the right leads to a significantly higher priority of public spending on university-level education.

To further dig into this result, this section focuses the coefficients of the remaining party shares which are summarized in Table 2. Partisan influence has been estimated separately for each party due to multicolinearity[9] and we used the specifications and vectors of control variables discussed in the preceding section. As controls behaved consistently as in table 1, we refrained from presenting them here in order to preserve clarity.

[Table 2 about here]

Beyond the result on the German *CDU* whose participation in government clearly increases the budgetary priority of tertiary education, we find further and strong support for the reverse redistribution hypothesis in Table 2. Consistent with the CDU, participation of the second major party on the 'right' of Germany's political mainstream, the liberal *FDP* is associated with an increased share of tertiary education in a federal state's budget. Admittedly, this result is less robust than the one for the CDU under different model specifications but in the light of the suitability of the FEVD model it adds to the picture of higher relative spending under right-wing governments.

This pattern finds additional support if we consider the German social-democrats, the major left-leaning party. Contrary to the classic supply side perspective on the relationship between social-democratic government and education spending, the German *SPD* is associated with lower relative spending on university education in those models that do not unnecessarily remove available variation from the estimation (i.e. FEVD and RE). This clearly contrasts the prominent results of Boix (1997) who, however, relied on overall education spending at the county level only. But it conforms with more recent approaches to the political economy of particular education sectors such as tertiary education (Ansell 2006, 2008; Jensen 2009).

In line with the results for the SPD, also the coefficients for the far-left (*PDS*) exhibit negative signs in explaining tertiary education spending but closely fail to reach statistical significance at least in the FEVD-specification. However, we treat this finding with caution since the PDS was only part of a very few governments. Finally, the *Greens* miss conventional levels of significance by far in the FEVD model while the comparison across models points to a negative influence if there is an effect at all. For the above mentioned theoretical reasons this should not be further interpreted in discriminating the two hypotheses on partisan influence.

[Figure 1 about here]

Figure 1 summarizes the partisan effects across the different estimation methods and across the political spectrum of Germany. Clearly, the budgetary priorities for tertiary education shift as we move from the far-left to the right end of Germany's political landscape. Strikingly, effect signs switch exactly between the SPD and the CDU being the major left

and right parties of the political mainstream. Yet, the alert reader might suspect that the effects we show are rather small. A one percentage point increase in PDS cabinet shares, for example, accounts for 'only' somewhat more than a one percentage point decrease of the budgetary share for higher education. And yes, if we take the 2003 budget of North Rhine-Westphalia as an exemplary basis, a one percent budget share amounts to solely 316.715 €. However, such effects can quickly add up to substantial changes in the political outcome. On the one hand, German sub-national elections usually produce much more than single percentage point changes in the cabinet shares. In the extreme party results can vary between 0 and 100% and in our sample the standard deviation of the major parties is 37% (SPD) and 39% (CDU) respectively. On the other hand, such partisan swings are fixed for four to five years. Depending on the extant level of tertiary education, our estimated effects of partisan swings quickly run into millions of Euros – a result that that is largely reproduced across the different statistical estimators.

To asses the validity of these results even further, we have conducted a range of further robustness analyses.[10] First of all, we ran separate models for eastern and western states, controlling for historical peculiarities of former GDR states and possibly differing roles played by the far-left PDS in these states. These specifications do not substantially alter the results, with the minor exception of the significance of FDP shares which declines to the 11 percent level. Secondly, we replaced our main independent party variables with the 'conventional' measure of weighted cabinet shares which also provides support to the second hypothesis. The party variables all show the expected signs, however, the FDP shares shortly fail to reach the statistical significance whereas the far-left PDS shares reach it, lowering relative tertiary education spending as predicted by hypothesis 2. Third, following Freitag's and Schlicht's (2009) approach to capture differences in social inequality in

education (granting access to university) across the states yields the same results as presented in the main analysis, again except for the negative effect of the far-left PDS which also becomes statistically significant in these models Lastly, we have also inquired alternative operationalisations of e.g. demand and modernisation. Summing the robustness checks up, signs and significance levels of party variables remain as presented in the main analysis, with the exception of the two small left and right parties whose significance fluctuate in a very narrow interval around the 10 percent level.

Pulling all this evidence together, the data-analysis provides strong support for the reversed redistribution hypothesis: Contrary to the expectations of classic partisan theory and in line with more recent arguments in political economy, governmental responsibility of Germany's left parties is associated with a significantly lower priority on tertiary education spending, while the governmental participation of right-wing parties leads to higher levels of relative spending on tertiary education.

It has to be noted that these results come under the control of several other tenets of comparative political economy, the results of which are summarised in model 4 in Table 1. The share of elderly as a highly plausible source of budgetary competition exhibits the effect we expected, though its negative influence reaches significance only in the FEVD model adding only little explanatory power. A higher GDP per capita increases the relative share of higher education spending, while the percentage of the workforce employed in the agricultural sector decreases governmental priority of this budget entry. A consistently positive effect also emanates from the budgetary share of public debt. An increase in this variable constrains the overall budgetary leeway which should lead to cuts in the overall budget. However, where large debt shares occur, our results suggest that tertiary education has been affected relatively less as measured by the budgetary share they account for. In

other words, a greater level of debt increased the relative governmental priority of tertiary education spending. The economy of scale argument of larger populations cannot be supported by our data; population size exhibits a significant positive influence suggesting higher priority given to tertiary education spending. However, accounting for possible endogeneity, this result comes to no surprise since there is a strong incentive for people to move where the economy flourishes and government provides public goods. Further, the city-state dummy corrects the level of education expenditures downward purely for reasons of budget structure (see above). A particular surprising finding is the negative sign of our major demand variable in the FEVD-specification. A higher share of 19 year olds graduating from high school appears to lower the governmental priority of tertiary education spending in the German states. However, this finding has to be treated with caution as pupils leaving secondary education in one federal state may also enter university in another state. Considering attractiveness of metropolitan areas for young people this may also be captured in the negative coefficient of primary sector size. Note further, that Busemeyer (2007: 594) who used 'tertiary enrolment' as an alternative indicator of demand did find no discernible influence on education spending. Here, investing in the development of further demand indicators may prove fruitful. Most importantly, however, controlling this set of alternative explanations for governmental priority in tertiary educations spending further fosters confidence in the results we found for the influence of partisan cabinet shares.

## 5. Conclusion

In line with recent approaches to examine differing partisan influence across educational sectors (Ansell 2010, 2008, 2006; Busemeyer 2007, 2009a; Jensen 2009) this article applies the assumption that political parties in government cater to their constituencies in financing

the higher education sector. While the traditional literature (Boix, 1997, Iversen and Stephens 2008) treats all investment into human capital formation as a domain of the left, our results provide support for the more recent insight that classical partisan theory should be reverted for public spending on higher education in a stratified education system with high intergenerational transfers.

In Germany's socially selective system of tertiary education, especially higher and upper middle class families send their offspring to university and finance their education. Thus, any increase in public spending on higher education disproportionately benefits these social strata as the return on their investments in education are increased by public money. In line with the traditional assumption of partisan theory that high-income strata are a major electoral basis of 'right' parties, we therefore hypothesized the conservative or liberal camp in Germany rather than the left to support higher spending on tertiary education.

In this light, Germany is a crucial case for the more recent approaches to the political economy of education. As opposed to the literature's emphasis of country-level data, the perspective on sub-national units is warranted as the data generating process might be missed otherwise: in Germany, higher education is the almost exclusive responsibility of the sub-national *states* and a core topic in state-wide electoral campaigns. In this vein, the paper traces actual partisan effects on relative tertiary education spending with annual time-series cross-sectional data from the German states between 1992 and 2003.

This empirical strategy is enriched with three additional features. First, instead of explaining the overall supply of education spending as measured by GDP or per-capita quotas, we more closely focus on partisan priorities by relying on the budgetary share of tertiary education spending as the primary dependent variable. Drawing up the variable this way is especially

relevant during financial crisis and budget cuts when governments – and voters – do not only have to choose among spending options but also need to decide where to cut public financing and where not. In addition, this variable is insensitive towards cross-state fiscal transfers that are special feature of German federalism. Second, we suggest a superior operationalisation of the influence of parties in government on spending variables, as we model the data generating process more closely by relying on the cabinet shares on the exact date the budget resolution was passed. Finally, we employ an econometric method that allows us to better estimate the influence of time-invariant and sluggish variables and compare its results to more conventional approaches of estimation. We believe that the adoption of these approaches would also be fruitful to the wider field of empirical studies in political economy, be it on the sub-national or the country level.

On the issues analysed here, this empirical strategy provides clear support for the second theoretical proposition: The stronger the cabinet share of 'right' parties in Germany's federal states, the larger the relative governmental expenditure on higher education. Economically 'left' parties, on the other hand, are consistently associated with lower relative spending on higher education. In sum, the politics of higher education in the German states lend support to Ansell's (2010) conjecture that education policy is subject to "targeted redistribution" by the governing parties. This view is also consistent with the discussion and partial introduction of tuition fees particularly pushed in states governed by the right end of Germany's political spectrum from 2003 onwards. Such fees of approx. 500€ per semester effectively serve as an entry price, slow-down the expansion of enrolment and thus are a valuable tool for right-wing parties to assure a targeted redistribution to their clientele (cf. Fernandez and Rogerson 1995).

Clearly, future research should complement these results. From our perspective, three routes appear fruitful here. First, a closer look on the progressivity of the tax system and the individual returns on education investments could provide more insight on the actual re-distributive capacity of higher education (see e.g. Blöndal et al. 2002; Iversen and Stephens 2008). Second, a closer look on the German Greens could illuminate the causal mechanisms that drive our macro-level result as this party proposes economically left positions but generates voter support disproportionately from students as well as from highly educated and increasingly wealthy segments of the society. Finally, future research should look more closely at external influences, such as the Bologna process, that transform the structure of the sector, and focus on the interactions between party political interests at the different levels of sub-national, national and supranational government.

Yet, apart from these suggestions, this article highlights that party differences still do matter in public policy, but do so in a much more nuanced way than the classical partisan theory would lead us to expect. In line with the more recent approaches to the political economy of education, the wider implication of our results is that while the face of the welfare state is changing in a globalised world, the partisan composition of government and the question who favours redistribution remain to be of utmost importance.

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**Table 1:** Tertiary education spending – Comparison of estimators

| | Budgetary share of tertiary education spending | | | |
|---|---|---|---|---|
| | (1) FE | (2) RE | (3) BKS | (4) FEVD AR1, PCSE |
| Party: CDU | 0.35* | 0.61*** | 0.32* | 0.29* |
| | *(0.20)* | *(0.19)* | *(0.19)* | *(0.17)* |
| Demand (i) | -0.01 | -0.00 | 0.01 | -0.13*** |
| | *(0.02)* | *(0.02)* | *(0.02)* | *(0.01)* |
| Elderly | 0.10 | 0.04 | 0.11 | -0.21*** |
| | *(0.08)* | *(0.07)* | *(0.08)* | *(0.06)* |
| Primary Sector Employment (i) | 0.46** | 0.04 | 0.37* | -0.48*** |
| | *(0.21)* | *(0.14)* | *(0.22)* | *(0.05)* |
| GDP per capita (log) (i) | 2.53*** | 1.20* | 0.36 | 1.28*** |
| | *(0.92)* | *(0.69)* | *(0.91)* | *(0.27)* |
| Debt | 0.77*** | 0.80*** | 0.68*** | 1.42*** |
| | *(0.16)* | *(0.16)* | *(0.18)* | *(0.16)* |
| Population (log) (i) | 9.43*** | 1.38*** | 8.06*** | 1.30*** |
| | *(3.25)* | *(0.35)* | *(2.73)* | *(0.04)* |
| City-State Dummy (i) | | -0.61 | | -1.02*** |
| | | *(0.86)* | | *(0.17)* |
| LDV | | | 0.49*** | |
| | | | *(0.13)* | |
| Eta | | | | 0.88*** |
| | | | | *(0.02)* |
| Constant | -147.35*** | -19.88*** | -113.81*** | -10.27*** |
| | *(51.12)* | *(5.55)* | *(39.91)* | *(0.62)* |
| Observations | 192 | 192 | 176 | 176 |
| R-squared | 0.52 | 0.69 | 0.99 | 0.91 |

* significant at 10%; ** 5%; *** 1%, Standard errors in parentheses, (i) indicates estimation as 'time invariant' in the FEVD specification.

**Table 2:** Coefficients of party shares in government for different estimators

| | Budgetary share of tertiary education spending | | | |
|---|---|---|---|---|
| | FE | RE | BKS | FEVD AR(1), PCSE |
| CDU | 0.35* | 0.61*** | 0.32* | 0.29* |
| | *(0.20)* | *(0.19)* | *(0.19)* | *(0.17)* |
| FDP | -0.37 | 0.35 | 0.60 | 0.76* |
| | *(0.66)* | *(0.61)* | *(0.48)* | *(0.43)* |
| SPD | -0.18 | -0.46*** | -0.26 | -0.29* |
| | *(0.19)* | *(0.17)* | *(0.17)* | *(0.16)* |
| PDS | -1.24 | -1.57* | -1.08* | -1.23 |
| | *(0.91)* | *(0.90)* | *(0.61)* | *(0.74)* |
| Greens | -1.46** | -1.20* | -1.14** | -0.36 |
| | *(0.65)* | *(0.67)* | *(0.55)* | *(0.58)* |

* significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors in parentheses; presented party coefficients have been estimated in individual, fully specified models along the lines presented in Table 1.

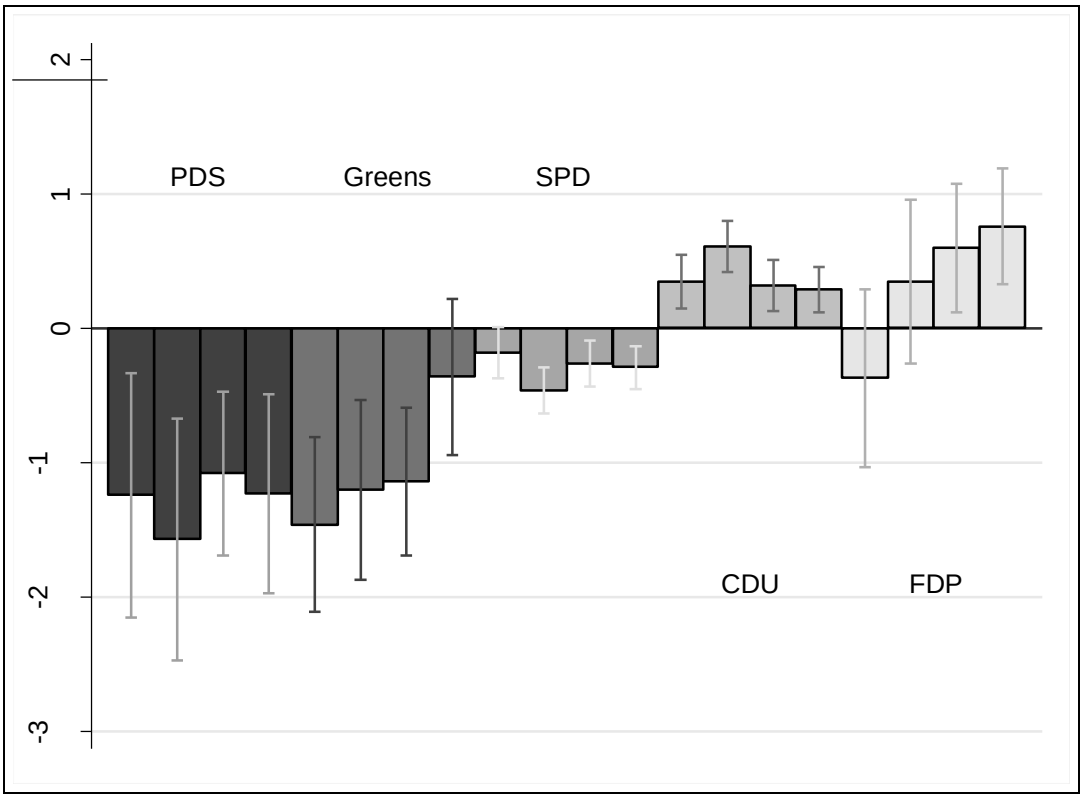


**Figure 1:** Effect of partisan cabinet shares on the budgetary share spent on tertiary education

**Note:** Effect size and standard errors shown for each of the four model specifications (FE, RE, BKS, FEVD)

**Notes**

[1] Obviously, classical partisan theory assumes class based voting, an assumption that is challenged in the increasingly differentiated literature on the determinants of individual voting behaviour (for an overview see Evans, 2000). But while other factors seem to have gained relevance in recent decades, belonging to a social class remains a relevant predictor for individual party preferences, not the least in Germany (e.g. Elff and Rossteutscher, 2011; Van der Brug, 2010, Pappi and Shikano, 2002).

[2] We refer to the share of the so-called "Grundmittel" category which captures the expenditure on universities, university hospitals, advanced technical colleges, art schools and the German Research Foundation less any income of these institutions (Bund-Länder Kommission 2006: 7; Wolf. 2006: 20).

[3] We refrain from a conceptual distinction between the CDU and the Bavarian CSU both because of their programmatic similarities and their close alliance (cf. Lijphardt 1999: 69 pp.) but also because CSU party shares occur in only one of the sixteen investigated units (Oberndorfer and Steiner 2006).

[4] We are grateful for a comment by Jon Lauglo who argued that such a demand variable interferes with the political process the partisan variables are intended to capture. While this might be true, not controlling for short-term demand fluctuations entails the risk that governmental priorities for higher education spending simply follow functional needs and we possibly overstate the importance of partisan differences. In order to provide for a more conservative test of partisan influences, we thus decided to keep this control.

[5] Both, economic wealth – measured as the GDP per capita – as well as population size violate the assumption of a normal distribution and are thus transformed by their natural logarithm.

[6] We thank Aline Schniewind for providing access to the socio-economic data as well as Prof. Markus Freitag and Prof. Adrian Vatter for granting access to the data on government composition (Freitag and Vatter 2008). Further we appreciate the support of the German Federal Statistical Office in providing and handling the budgetary data.

[7] For estimation, the xtfevd ado (version 2.00) by Thomas Plümper has been used. A current debate questions the advantages of FEVD in large samples, however, recognizes the advantage "in smaller samples where the large sample concept of consistency does not dominate […] a trade-off between bias and efficiency in which FEVD often appears to be better than either FE or HT [Hausman Taylor]" (Breusch et al. 2010: 3).

[8] Due to the Prais-Winston transformation, we loose the 16 states in 1992 and the number of cases available for estimation is reduced to 176 in this specification.

[9] Multicolinearity is a problem as party competition largely equals a zero-sum game: a large share of the success of one major party can be often explained by the losses of other major parties and vice versa.

[10] Detailed robustness results are available from the authors upon request.