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Working Paper

Leaders' impact on public spending priorities: The case of the German Laender

MAGKS Joint Discussion Paper Series in Economics, No. 09-2012

Provided in Cooperation with:

Faculty of Business Administration and Economics, University of Marburg

Suggested Citation: Hayo, Bernd; Neumeier, Florian (2012) : Leaders' impact on public spending priorities: The case of the German Laender, MAGKS Joint Discussion Paper Series in Economics, No. 09-2012, Philipps-University Marburg, Faculty of Business Administration and Economics, Marburg

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MAGKS



**Joint Discussion Paper
Series in Economics**

by the Universities of
**Aachen · Gießen · Göttingen
Kassel · Marburg · Siegen**

ISSN 1867-3678

No. 09-2012

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This paper can be downloaded from
<https://www.uni-marburg.de/fb02/makro/forschung/magkspapers>

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Leaders' Impact on Public Spending Priorities: The Case of the German Laender*

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This version: 8 February 2012

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* Thanks to Edith Neuenkirch, Matthias Neuenkirch, Britta Niehof, and Matthias Uhl for their helpful comments on earlier versions of the paper. The usual disclaimer applies.

Leaders' Impact on Public Spending Priorities: The Case of the German Laender*

Abstract

We examine determinants of the composition of public expenditure in the German Laender (states) over the period 1993–2008, as the Laender exhibit a high degree of institutional and political homogeneity and are endowed with extensive fiscal competences. Our prime contribution is an investigation into how political leaders' socioeconomic background influences public spending priorities. Applying sociological theory, we link preferences for the composition of public spending to social status. In contrast to approaches relying on political budget cycles or partisan theory, we find strong and theory-consistent evidence that prime ministers tend to favour fiscal policies supporting the social class in which they are socialised. Governments led by prime ministers from a poor socioeconomic background spend significantly more on social security, education, health, infrastructure, and public safety.

JEL: E62, H75, H76

Keywords: Leadership, socioeconomic status, social rivalry, public expenditure composition.

1. Introduction

Starting about 20 years ago with the seminal work by Rogoff (1990), economists have become increasingly interested in explaining variation in the composition of public expenditure. This strand of research owes its importance due to the fact that changes in government spending priorities appear to affect economic growth (e.g., Barro, 1990; Devarajan et al., 1996), social welfare (Rogoff, 1990), and social inequality, i.e., the distribution of valuable resources among different groups in the society.

Most research in this field comes from political economists and a great deal of this involves applications of *political budget cycle* (PBC) theory. PBC scholars suggest that changes in the apportionment of the public budget are linked to the legislative cycle. Rogoff (1990) assumes that voters lack information about government *competence* in efficiently administering the provision of public goods and concludes that increased public spending on *highly visible* items is employed as a signalling device prior to elections. Drazen and Eslava (2005, 2010) model an electorate which cannot observe the *preferences* of the incumbent regarding the composition of public expenditure and thus expect a pre-electoral rise in *targetable* expenditure categories, i.e., categories which directly support certain groups of voters, generating so-called pork-barrel cycles.¹ Typically, researchers try to find evidence for PBC in spending on infrastructure projects and social security transfers, since these items are commonly regarded as both highly visible and targetable. However, the outcome of these studies is inconclusive; some studies confirm the predictions of the theoretical models, whereas others find pre-electoral decreases in spending on these items.²

While PBC scholars analyse budgetary changes within one legislative period, variations in the budget across different governments are commonly attributed to *partisan ideology*. There are only few studies investigating partisan effects on the composition of the budget and their results are, again, mixed (see, e.g., Kittel and Obinger, 2003; Veiga and Veiga, 2007; Potrafke, 2009). When it comes to public expenditure composition, leftist governments are usually supposed to spend more on items supporting the working class, especially social security, education, and health, than their right-wing counterparts (Galli and Rossi, 2002).

¹ See Vergne (2009) for a more detailed comparison of both models and their conclusions.

² Regarding spending on infrastructure, Blais and Nadeau (1992) find evidence for pre-electoral increases in spending on the construction of roads in Canadian provinces, Schuknecht (2000) finds the same in a sample of 24 developing countries, as does Khemani (2004) for Indian states. Drazen and Eslava (2005, 2010) report that spending on diverse infrastructure items increases prior to elections in Colombian municipalities; Veiga and Veiga (2007) discover comparable results for Portuguese municipalities. Contradictory results are presented by Block (2002), who finds a negative impact of upcoming elections on spending on infrastructure in a sample of 69 developing countries, as does Vergne (2009) in a sample of 42 developing countries. Regarding spending on social security transfers, Blais and Nadeau (1992) note a significant increase in social transfer payments prior to elections, whereas Drazen and Eslava (2005, 2010) find a significant decrease.

PBC and partisan theory view politicians as either *purely opportunistic* or solely driven by *partisan ideology*. The approach put forward in this paper derives from arguments developed in sociology. Our hypothesis is that incumbents' preferences for, and decisions about, the composition of public expenditure are influenced by their socioeconomic status, i.e., an individual's relative standing in society. We expect that the composition of public expenditure exhibits a social rivalry motive: governments led by political leaders characterised by low family status tend to conduct policies supporting a levelling of status-related social inequalities. This implies increasing expenditure on items such as social security, education, and health care, as these are prominent dimensions of social deprivation. Our novel approach contributes to a growing literature linking government performance to individual characteristics of incumbent political leaders (e.g., Jones and Olken, 2005; Dreher et al., 2009; Hayo and Neumeier, 2011).

We apply our theoretical prediction to the states of the Federal Republic of Germany—the *Laender* (Bundesländer)—and their leaders, the *prime ministers* (Ministerpräsidenten), for the period 1993–2008. The *Laender* are characterised by a high degree of institutional and political homogeneity and are endowed with extensive fiscal competences. Previous research on the German *Laender* finds no evidence for either economically significant opportunistic or partisan cycles in public spending priorities.³

The remainder of this paper is organised as follows. We next take a brief look at the fiscal competences of the German *Laender*. In Section 3, we describe the concept of social status and introduce an empirical indicator. Our research hypotheses are stated in Section 4, where we motivate the link between status and public spending priorities. Section 5 outlines our empirical approach. The results of our empirical analysis are presented, along with robustness checks, in Section 6. Section 7 concludes.

2. Fiscal Competences of the German *Laender*

The German federal system consists of three governmental levels: the federal, the state, and the local.⁴ The German Basic Law (Grundgesetz) assigns legislative power to the state governments as long as no opposing constitutional rule exists (Article 30 Grundgesetz). In particular, the German state governments are almost exclusively responsible for state

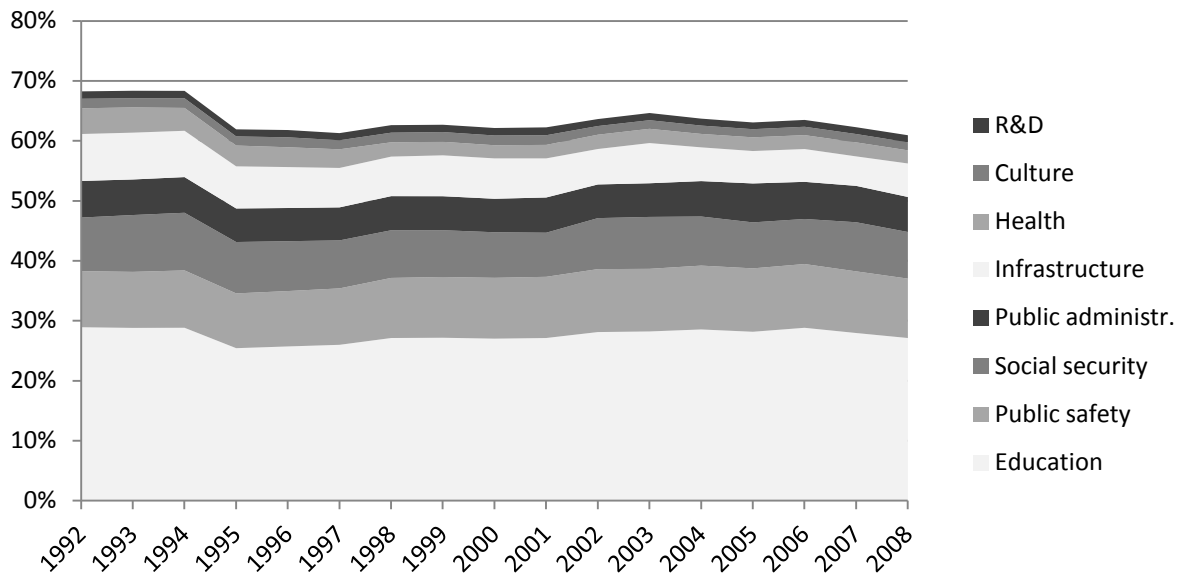
³ The most comprehensive analysis so far is that of Galli and Rossi (2002), who search for opportunistic and partisan cycles in West German states in five different expenditure categories: public administration, education, health, social security, and road construction. They do find pre-electoral increases in spending on administration and health, but the economic effects are rather small. With respect to partisan cycles, they state that 'the party variable generally does not play a systematic role in spending decisions' (Galli and Rossi, 2002: 298).

⁴ A more detailed overview of German fiscal federalism is provided by Seitz (2000) and Jochimsen and Nuscheler (2011).

administration, education, and public safety. However, in some policy areas, constitutional articles assign certain competences to the federal and local level as well. With respect to social security, cultural affairs, health care, public research and development, and infrastructure, for example, competences of the federal, state, and local levels overlap. There are 16 Laender, three of which are so-called city states (Berlin, Bremen, and Hamburg).⁵ As city states combine competences assigned to the state and the local level, they are not fully comparable to the non-city states and therefore are excluded from the subsequent analysis.

Figure 1 illustrates the average share of total spending in the 13 Laender on each of eight policy fields. These expenditure components are the most important ones and make up about two-thirds of the total budget.⁶

Figure 1: Average composition of public expenditure within the German Laender.



The greatest part of the states' budgets is devoted to education, making up, on average, more than 25% of total state spending, followed by spending on public safety with a share of approximately 10%.

All three governmental levels are run on a parliamentary system, with several different parties competing for political power (proportional representation). During our sample period, at the state level single-party governments occur as well as coalition governments, majority governments, and minority governments. Each state government is either led by the Christian

⁵ These are Baden-Wuerttemberg, Bavaria, Berlin, Brandenburg, Bremen, Hamburg, Hesse, Lower Saxony, Mecklenburg-Vorpomerania, North Rhine Westphalia, Rhineland-Palatinate, Saarland, Schleswig-Holstein, Saxony, Saxony-Anhalt, and Thuringia.

⁶ The remaining third is mainly spent on transfers to local governments, transfers paid to other states within the German fiscal equalization scheme, public debt service, and a great number of other expenditure items which account only for a small proportion of the public budget. A detailed breakdown of each expenditure category, as well as descriptive statistics, is provided in the Appendix, Tables A1 and A2.

Democratic Party (CDU) or the Social Democratic Party (SPD), which are located right and left of the political centre, respectively.

One may wonder whether the head of government in a parliamentary system can influence fiscal policy. In the case of the German Laender, prime ministers affect policy choices via at least two channels: they (i) appoint cabinet ministers and (ii) have guideline competences (Richtlinienkompetenz), that is, the authority to issue directives to cabinet ministers. Thus, German prime ministers can ensure that all government members are backing their preferred policy.

3. On Status, Identity, and Social Rivalry

As outlined in the introduction, there is no clear evidence in the extant empirical literature that changes in public spending priorities are linked to legislative cycles or government ideology. In this paper, we highlight the influence of incumbent political leaders' social status on fiscal policy preferences as an explanation of variations in public expenditure composition. A growing literature in economics is concerned with the question of whether political leaders exert an influence on economic performance. Recent studies reveal that factors related to political leaders' socioeconomic background appear to explain variations in economic performance, especially when it comes to economic growth (Besley et al., 2009), changes in institutional frameworks (Dreher et al., 2009) and constitutions (Hayo and Voigt, 2011), as well as fiscal policy (Mikosch, 2009).⁷ However, as argued by Hayo and Neumeier (2011), most of these studies employ variables characterising political leaders in an *ad hoc* fashion, failing to provide a theoretical link between the socioeconomic background of heads of government and their government's performance.

Applying sociological and psychological research suggests that preferences for the composition of public spending may be influenced by what is called socioeconomic status. In the remainder of this section, we explain (i) how status is defined and (ii) why people's preferences with respect to the composition of public expenditure are status dependent. In the next section, we put forward an argument for why we expect political leaders to conduct policies that support the status rank from which they come.

⁷ Individual socioeconomic characteristics are also used as explanatory variables for committee decisions. Göhlmann and Vaubel (2007), for instance, investigate the impact of the educational and occupational backgrounds of 391 central bankers from 10 European countries on inflation outcomes and find significant effects.

3.1 Status Definition and its Measurement

According to social stratification theory, societies should be viewed as hierarchical formations, meaning that individuals and groups can be ranked according to their endowment with valued goods, attributes, and privileges (e.g., Treiman, 1977; Bourdieu, 1986; Ganzeboom et al., 1992). Hence, the term ‘status’ describes an individual’s relative standing compared to that of other members of society. More precisely, it refers to the functional importance of certain social positions (Davis and Moore, 1945). Occupation is commonly regarded as the most important indicator of an individual’s standing in society (Treiman, 1977; Ganzeboom et al., 1992).

The functional importance of occupations is indicated by factors such as the required level of formal education, income, and the associated prestige (Treiman, 1977; Bourdieu, 1986; Bourdieu and Wacquant, 1992). Existence of a stratification scheme—i.e., the ranking of people—implies an unequal distribution of these ‘goods’ among members of society. A frequently applied indicator of status is the International Socio-Economic Index of Occupational Status (ISEI) introduced by Ganzeboom et al. (1992). This index combines information on the average level of required formal education and average income in different occupations to create a continuous measure of status, which we standardise so that it ranges from 0 to 1.

The discrimination of different occupations for the construction of the ISEI is based on the International Standard Classification of Occupations (ISCO-68) of the International Labour Organization (ILO, 1969). ISEI scores are regularly included in prominent German population surveys, such as the Socio-Economic Panel (SOEP) and the General Social Survey (ALLBUS).

3.2 Status, Group Identity, and Social Rivalry

Sociologists, as well as psychologists, claim that the way people feel, think, and act is rooted in their *identity*, and that identity, in turn, is determined by status (e.g., Berger and Luckmann, 1966; Mead, 1967). The importance of the identity concept for economic applications is emphasised by Akerlof and Kranton (2000, 2010). Basing their argument in social psychological research, they operationalise identity as a set of socially defined role prescriptions that intrinsically motivate behaviour. A delineation of the process of identity construction may shed some light on the motives and preferences of political actors.

Identity construction begins in infancy and continues throughout the life course with the *internalisation* of behavioural patterns (Berger and Luckmann, 1966). For each social context,

a set of socially constituted prescriptions defines which practices are appropriate for whom. A child, born and raised in a certain social environment, is supposed to incorporate the codes of practice prescribed by ‘significant others’—i.e., influential actors and rolemodels such as parents, members of peer groups, and communities with which a person is affiliated—as this facilitates participation in social interactions (Berger and Luckmann, 1966; Mead, 1967). Internalising means that these codes become pre-reflexive, i.e., they function below the threshold of consciousness. To put it differently, individuals and groups with which the individual is affiliated contribute to the construction of identity by inscribing their formal and informal codes of conduct into the individual’s cognition.

Identity construction presupposes *identification* or *self-categorisation*, that is, the capability of taking others’ points of view and feeling empathy for their opinions (Mead, 1967; Tajfel and Turner, 1986). Identification is a precondition for internalisation: being able to behave in accordance with socially constituted prescriptions requires understanding in which contexts these prescriptions are appropriate and meaningful; this is learned by taking on the viewpoints of counterparts (Mead, 1967). As these prescriptions are usually defined for classes of people sharing certain characteristics or attributes, identity is shaped by perceived membership in social groups and communities with which a person identifies (Tajfel and Turner, 1986; Brown, 2000; Stets and Burke, 2000). Or, as Akerlof and Kranton (2000: 720) put it: ‘identity is bound to social categories; and individuals identify with people in some categories and differentiate themselves from those in others’. Hence, *personal identity* reflects *group identity*. Along with codes of practice, people internalise the social environment’s notion of their ‘selves’, i.e., personal identity is a conglomerate of public images (Mead, 1967). In status-consciousness societies, status discrepancies serve as the foundation for categorisation, as they provide an effective tool for labelling people (e.g., Treiman, 1977; Sørensen, 2000; Goldthorpe, 2002). Depending on their status, individuals are assigned to classes (e.g., the upper class or lower class), which inevitably affects their life conditions and self-images—i.e., people usually perceive themselves to be of a particular rank and thereby identify with a specific social class (Bourdieu, 1977, 1984). Therefore, status provides the basis for the construction of individual identity.

Identity is a contrastive principle (Hogg and Abrams, 1988), as identification with one category and dissociation from another are two sides of the same coin. An important insight from social psychology is that the identification with social groups and the internalisation of

group identity leads to in-group favouritism (Tajfel and Turner, 1986; Brown, 2000).⁸ In contrast to the typical assumption in microeconomics, individuals are also concerned about the well-being and reputation of the groups or social categories they identify with, since their self-esteem is derived from affiliation with these social groups (Brown, 2000; Stets and Burke, 2000).

Resentment may arise between classes due to numerous facets of social inequality, and group-identity-related codes of conduct are commonly assumed to be a reflection of the mutual life conditions and collective experiences of class members. Generally speaking, sociological and psychological research suggests that people of high standing seek distinction from low ranks in order to enhance and secure their privileged and prestigious position, whereas people of low standing strive for status advancement and a levelling of status-related differences between classes.⁹ However, the concept of identity suggests that it is not solely personal standing that an individual cares about, but also the standing of the groups with which he or she identifies. Elias (1969) argues that the development of manners, forms of speech, dress codes, etc. from the medieval age until the present day has been driven by upper classes striving to emphasise their privileged position. Bourdieu (1984) outlines that taste—which economists usually take as given in the form of exogenous preferences—and consumption patterns are very effective instruments of social discrimination. Specifically, upper classes are characterised by a lifestyle which is marked—according to their self-concept—by an aesthetic sense, an affinity for artistic or avant-garde culture, and exquisite taste, whereas the ‘petty bourgeois’ tend toward what is regarded as popular, or commercial, taste and culture.

These examples suggest that social groups compete for prestigious and privileged positions in society. To confirm their standing and identity, people create and reproduce symbolic boundaries between classes by establishing class-specific attitudes or engaging in certain rank-typical activities. Due to these symbolic boundaries and their manifestations in everyday life, the borders between ranks are not very permeable. Although these social structures are beyond the control of an ordinary citizen (Elias, 1969; Bourdieu, 1984), a person in a high political office may be able to initiate adjustments in class differences.

⁸ Experimental studies reveal that this pattern occurs even when people are randomly assigned to groups or categories. See Chen and Li (2009) and Akerlof and Kranton (2010) for a survey of experimental studies.

⁹ The idea that status discrepancies may influence decision-making by providing incentives has been applied to economics in several forms. However, in these applications it is usually only personal status with which individuals are supposed to be concerned. See Fershtman et al. (1996) for a summary.

4. Prime Ministers' Socioeconomic Backgrounds and Public Spending Priorities

Based on the preceding argument, we expect that prime ministers socialised in a low-status environment will seek to even out status-related discrepancies between people of low and high ranking. Sociologists draw an important distinction between *primary socialisation*, i.e., 'the first socialisation an individual undergoes in childhood' (Berger and Luckmann, 1966: 130), and *secondary socialisation*, which takes place after adolescence. Primary socialisation is regarded as 'the most important one for an individual, and ... the basic structure of all secondary socialization has to resemble that of primary socialization' (Berger and Luckmann, 1966: 131). Following this line of reasoning, we believe prime ministers' *parental status* to be of particular importance to the process of identity construction, for the family is the most important agent of primary socialisation (Mead, 1967). Reflecting these considerations, we expect a prime minister's own occupational status to be important only when it deviates from that of his or her parents and the prime minister are thus concerned with his or her *status advancement*.¹⁰

The manipulation of the composition of public expenditure is a potentially effective way to change social stratification, as it allows influencing the allocation of resources between groups of people. Although income and education are prime indicators of personal status, stratification research documents that the extent of status-related social inequalities is much broader. Questions thus arise as to (i) the main dimensions of status-related social inequality and (ii) which spending items facilitate levelling these inequalities?

Status, social security, and education. We expect that governments led by prime ministers from poor socioeconomic backgrounds spend (relatively) more on public education and social security. The main indicators of status discrepancies, education and income, are inversely related to vulnerability to undesirable life events such as financial distress and unemployment (McLeod and Kessler, 1990). Hence, low-status people are much more likely to rely on the social safety net and be beneficiaries of public welfare services. Accordingly, there is empirical evidence derived from survey data which indicates the existence of a social rivalry motive in redistributive politics. Corneo and Grüner (2002) and Alesina and La Ferrara (2005) demonstrate that individual preferences for redistribution are negatively connected to personal income and education. Supporting the importance of the socialising environment, Alesina and Giuliano (2009) show that it is not only current personal income and education that matter for redistribution preferences, but also family income during childhood and father's education.

¹⁰ The variable *parental status* is defined as the occupational status score of the head of household in which the prime minister was socialised. *Status advancement* is defined as the difference between the maximum status score a prime minister achieved prior to pursuing a political career and parental status.

In the field of tax-financed schools and universities compete with institutions financed primarily by tuition fees and other forms of private contributions. Less spending on education may worsen the quality of publicly-funded educational institutions and thereby widen the discrepancies between status ranks, as rich people have much easier access to private education. By increasing spending on education, incumbents may enhance the educational participation of the lower class.¹¹ German educational expansion (Bildungsexpansion) during the last four decades is commonly regarded as a good example of this (Hradil, 1999; Geißler, 2002).

Status and public safety. Studies in criminology show that a person's socioeconomic status is inversely related to the prevalence of victimisation and fear of crime (e.g., Will, 1995).¹² Clemente and Kleiman (1977: 523) attribute this finding to status-related income differences, since higher income enables high-status people to provide themselves a safe environment: 'people with greater financial resources are better able to protect themselves from harm and, therefore, have less fear of being victimized. And, of course, individuals in the higher income brackets can afford to live in safe neighborhoods'. Based on the argument that preferences and attitudes reflect mutual experiences of class members, we should thus expect that prime ministers from poor socioeconomic backgrounds will tend to spend more on public safety and legal protection.

Status and health. In Germany, a publicly-provided health care system competes with private health services, which are generally accessible only to higher-income households. Due to remarkable differences in quality, health care experts call this a 'two-tier' medical system: high status persons are much better provided for than those of low standing (e.g., Mielck, 2005; Bauer et al., 2007). To improve the living conditions of the lower class, we expect prime ministers who identify with low-status people to spend more on public health care.

Status and public infrastructure. Insufficient provision of public infrastructure in general and public transport systems in particular is frequently seen as the most significant barrier to social inclusion, for mobility is a necessary condition for participating in social activities (e.g., Church et al., 2000; Cass et al., 2005; Gray et al., 2006). Usually, people from poor socioeconomic backgrounds are more dependent on public transportation. Due to the high

¹¹ An occurrence in Hesse in 2010 attracted a great deal of media attention. The former prime minister Roland Koch—whose father was a lawyer, as is Koch—announced that the Hessian government will cut funding to public universities (which currently charge no tuition) by 30 million Euros for each following year. Roland Koch justified this decision by referring to the tough budgetary situation. However, only a few weeks later, the Hessian government agreed to donate about 25 million Euros to a private university, which charges tuition of 12,000 Euros per year.

¹² Note that the studies listed rely on data solely from developed countries. Thus, this relationship may be driven by the experience of countries with strong legal institutions in which high-income households do not fear dispossession.

cost of cars, low-income households have to rely on public transportation (e.g., LeRoy and Sonstelie, 1983; Glaeser et al., 2008). Hence, low-status people would benefit overproportionally from spending on public infrastructure and we hypothesise that low-status prime ministers will place relatively more importance on this budget component.

Status and culture. Following Bourdieu (1984, 1986), cultural activity is an important attribute of class distinction. Museums, art exhibitions, and theatres are more frequently visited by people from the upper class; these forms of cultural engagement mark an aesthetic lifestyle. According to Bourdieu (1984, 1986), access to most of these exclusive cultural practices requires a high endowment with so-called cultural capital, that is, formal and informal education, as well as an aesthetic sense acquired during socialisation. People from lower classes are usually prone to participate in so-called popular cultural activities, e.g., watching movies, attending pop concerts, etc. As our data on public expenditure composition do not allow differentiating between these two types of cultural programmes, we are not able to form expectations about how prime ministers' socioeconomic background will influence their spending on culture.

Note that we do not expect to find a positive impact of prime ministers' family status on any specific spending category, since none of these categories is likely to promote the consolidation and reproduction of boundaries between classes. However, expecting higher shares for some budget components implies lower shares for others.

5. Model and Data¹³

To empirically test our hypotheses about the structure of public budgets, we employ panel data from 1992–2008 for the German non-city states. We estimate the following panel data model for each spending category separately:¹⁴

$$y_{i,t} = \alpha_i + \beta' \text{economic variables}_{i,t} + \gamma' \text{sociodemographic variables}_{i,t} \\ + \delta' \text{political variables}_{i,t} + \varepsilon' \text{leader variables}_{i,t} + \mu_t + \rho y_{i,t-1} + \eta_{i,t}$$

α_i is a state-specific intercept, μ_t a time-varying parameter that is constant across states, and $\eta_{i,t}$ is an i.i.d. error term. $y_{i,t}$ denotes spending on a certain item as a share of total spending (in percentage points). Taking into account that the preceding discussion suggests that politicians manipulate the composition of public expenditure in order to support certain groups of voters, we base our empirical analysis on a functional classification of expenditure items (Vergne, 2009). Altogether, we consider eight different items: public administration, public safety,

¹³ Data sources are described in the Appendix.

¹⁴ The time constraint is due to a lack of publicly-available data for public expenditure composition prior to 1992.

education, research and development, culture, social security, health care, and infrastructure. Each specification contains the first lag of the dependent variable in order to account for persistency and gradual budget adjustments.

As *economic variables* we include the debt-to-GDP ratio so as to control for the budgetary situation, the output gap¹⁵ and unemployment rate as regional business cycle indicators, and the share of net transfers received through the German fiscal equalisation scheme (Länderfinanzausgleich) to total expenditure.¹⁶

The *sociodemographic variables* contain several proxies for the demand for public services, specifically real GDP per head (in 1,000 Euro) in each state, capturing the (average) economic condition of the electorate, as well as the share of the population aged less than 25 years and the share of the population older than 65, since these two groups of voters benefit overproportionately from the provision of some public services (e.g., education and health).

Among the *political variables* is an election period dummy, which allows testing for the existence of Rogoff (1990) type and Drazen and Eslava (2005, 2010) type PBCs. Following Drazen and Eslava (2005, 2010) and Vergne (2009), we control for the timing of elections such that the election period dummy takes the value 1 in the year before the election takes place, if the election is held in the first half of the year; if the election is held in the second half of the year, the dummy takes the value 1 in the election year. Other political variables considered in our model measure constraints on the prime minister's power, as these could affect his or her influence on spending priorities. We include the share of votes the governing party received at the last elections as well as dummies for coalition governments and minority governments to control for political dispersion. We also add a dummy indicating whether the minister of finance is from the same party as the prime minister, following Jochimsen and Nuscheler (2011). This is to account for the fact that ministers of finance have significant authority with respect to preparation of the public budget. Finally, we include a dummy for SPD-led governments in order to account for partisan ideology effects.

As *leader characteristics*, we employ German prime ministers' age and years in office, capturing his or her experience, a dummy for prime ministers who govern a state in which they did not formerly reside, which could affect their reputation among the electorate, and a dummy for prime ministers who have been members in employees' associations, since this sort of membership may indicate emotional proximity to certain groups of voters. Moreover, we add a dummy for years in which a new prime minister comes to power, capturing possible

¹⁵ The output gap is calculated by regressing the real GDP on a trend variable and a squared trend variable.

¹⁶ The German fiscal equalisation scheme (Länderfinanzausgleich) harmonises revenues across the German Laender, which may affect incentive to engage in sound fiscal policy. See Seitz (2000) for a detailed description.

transition effects. Our variables of main interest are prime ministers' parental status and status advancement, as defined in Section 3. We expect that prime ministers characterised by low parental status and status advancement, respectively, conduct policies which may enhance the levelling of status-related inequalities. Thus, we should observe that the tenures of prime ministers from poor socioeconomic backgrounds are connected with a higher share of spending on public safety, education, social security, health, and infrastructure, whereas prime ministers of high status should decrease spending on these items. Table 1 summarises our research hypotheses.

Table 1: Theoretically expected influence of parental status and status advancement across the main spending categories.

	Public admin.	Public safety	Education	R&D	Culture	Social security	Health	Infra-structure
<i>Parental status</i>	0	—	—	0	0	—	—	—
<i>Status advancement.</i>	0	—	—	0	0	—	—	—

We estimate the above equation using a two-way fixed effects approach. In our core specification, we rely on the least squares dummy variable (LSDV) estimator. Although the lagged dependent variable is correlated with the error term, which causes the least squares estimator to be biased, reflecting the specific structure of our panel, we prefer the LSDV estimator to a GMM approach (Arellano and Bond, 1991). As Judson and Owen (1997) show, the LSDV estimator can be appropriate in 'long' panels even in a dynamic framework, since the bias that occurs becomes negligible for growing T . On the contrary, GMM estimators typically reveal poor small-sample properties when N is small (Kiviet, 1995). Given that in our sample the number of periods exceeds the number of cross-sections, we apply GMM as a robustness check only.

6. Results

6.1 Main Specification

Table 2 shows the empirical results for each specification of our empirical model. To save space, we report only the coefficients of the explanatory variables. The lower part of the table provides Wald statistics for tests of joint significance for each group of variables and the variables depicting a prime minister's socioeconomic background in particular. Three findings stand out as particularly relevant in light of the theoretical discussion in the first part of the paper.

First, we find that the composition of public expenditure is not systematically affected by government ideology. The dummy for SPD-led governments reveals a significant impact only in case of spending on public infrastructure. Moreover, this effect is rather small: in the long run, SPD prime ministers increase the share of spending on infrastructure by 1 percentage point (pp). These results are consistent with previous studies by Galli and Rossi (2002) and Schneider (2010).

Second, we find no sign of any pre-electoral manipulation of public expenditure composition. The dummy variable for pre-election periods has no significant impact on the share of total expenditure devoted to any item. Hence, there appears to be no evidence for Rogoff (1990) or Drazen and Eslava (2005, 2010) type political budget cycles within the German Laender.¹⁷

Third, leader characteristics, especially socioeconomic background, play an important and statistically significant role in explaining the composition of public spending. Our results suggest that state governments led by prime ministers from poor socioeconomic backgrounds—that is, low parental status and status advancement—spend more on public safety, education, research and development, social security, health, and infrastructure, confirming the conjectures made in Section 3. Hence, statistically, the composition of public expenditure within the German Laender is significantly affected by the class or rank of their prime ministers.

These effects are not only highly significant, but also economically substantial. If we compare prime ministers whose parents are tradesmen (average ISEI score about 0.35) to those whose parents held academic professions (average ISEI score about 0.85), our results reveal that the difference with respect to the share of spending devoted to education, for example, is about 3.25 pp in the short run and about 10 pp in the long run. In the case of spending on public safety, those with an academic parental background spend 1.6 pp less in the short run and 2.5 pp less in the long run; in case of infrastructure spending, the difference is 2.25 pp in the short run and about 3.75 pp in the long run. In each model, the influence of prime ministers' status advancement is only slightly different and the difference from parental status is never statistically significant.¹⁸

¹⁷ Note that this conclusion also holds when we exclude time fixed effects or the dummy for prime minister transitions from our regressions.

¹⁸ Results of the linear restriction tests are available on request.

Table 2: Determinants of public expenditure composition—Main specification.

Variables	Public admin.	Public safety	Education	R&D	Culture	Social sec.	Health	Infrastructure
Y(-1)	0.490 **	0.370 **	0.369 **	0.343 **	0.427 **	0.606 **	0.458 **	0.392 **
Economic variables								
Debt-to-GDP	-0.029	-0.028	-0.212 *	-0.027 **	-0.002	0.011	-0.002	-0.028
Output gap	0.046 *	0.011	0.032	-0.016	0.003	-0.017	0.009	-0.050
Unemployment	0.151 *	0.091	0.525 **	0.009	0.003	-0.423 *	0.084	0.090
Net transfers	-0.001	-0.016	-0.001	0.017	-0.002	-0.049	-0.148 **	-0.107
Political variables								
SPD	0.161	-0.102	0.159	-0.056	-0.026	-0.157	0.031	0.612 *
Coalition	-0.302	-0.291 *	-0.706	0.008	-0.046	0.317	-0.312 *	0.110
Minority government	-0.939 *	-0.620	-2.014	-0.403	-0.057	2.727 **	0.325	0.481
Vote share	-0.026	-0.034 **	-0.027	-0.009 *	-0.008	-0.013	-0.009	-0.024
MoF from same party	-0.618 **	-0.416	-2.699 *	0.063	-0.210	-0.741 *	-0.631 **	-2.343 **
Election period	0.054	0.119	0.068	0.028	0.036	-0.093	0.109	0.010
Sociodem. variables								
Pop. share < 25	-0.426	-0.913 **	-1.351	-0.002	-0.004	-1.898 **	-0.057	0.217
Pop. share > 65	-0.095	-0.336	-0.994	0.008	-0.034	-1.074 *	0.184	0.157
Real GDP per capita	-0.396 **	-0.399 **	-0.963 **	0.047	0.001	-0.788 **	-0.289	-0.221
Leader variables								
PM transition	0.035	0.090	-0.252	0.007	-0.032	-0.244	0.199	-0.126
Outside PM	0.290	0.324	1.401 **	0.171 *	-0.036	-0.871	0.628 **	0.160
Union member	-0.169	-0.458 **	-1.116 **	-0.085 *	-0.054	-0.224	-0.297 **	-0.419
Age	-0.027 *	-0.015	-0.027	-0.006	0.002	0.041	0.026	-0.066 **
Years in office	0.039 **	0.037	0.048	0.013 *	0.004	-0.009	-0.022	0.042
Parental status	0.560	-3.268 **	-6.477 **	-1.195 **	-0.372	-1.527	-2.007 *	-4.519 **
Status advancement	0.265	-2.887 **	-6.404 **	-1.275 **	-0.330	-0.976	-2.653 *	-3.638 **
Joint sig. economic variables	$\chi^2(4) = 10.2^*$	$\chi^2(4) = 9.6^*$	$\chi^2(4) = 19.0^{**}$	$\chi^2(4) = 8.5$	$\chi^2(4) = 2.2$	$\chi^2(4) = 8.7$	$\chi^2(4) = 30.0^{**}$	$\chi^2(4) = 34.7^{**}$
Joint sig. political variables	$\chi^2(6) = 30.8^{**}$	$\chi^2(6) = 21.7^{**}$	$\chi^2(6) = 17.2^{**}$	$\chi^2(6) = 27.1^{**}$	$\chi^2(6) = 43.0^{**}$	$\chi^2(6) = 63.2^{**}$	$\chi^2(6) = 23.9^{**}$	$\chi^2(6) = 34.7^{**}$
Joint sig. sociodem. variables	$\chi^2(3) = 12.1^{**}$	$\chi^2(3) = 42.4^{**}$	$\chi^2(3) = 16.9^{**}$	$\chi^2(3) = 4.5$	$\chi^2(3) = 0.5$	$\chi^2(3) = 39.1^{**}$	$\chi^2(3) = 4.7$	$\chi^2(3) = 5.0$
Joint sig. leader variables	$\chi^2(7) = 29.6^{**}$	$\chi^2(7) = 119.7^{**}$	$\chi^2(7) = 51.7^{**}$	$\chi^2(7) = 30.3^{**}$	$\chi^2(7) = 14.3^*$	$\chi^2(7) = 36.6^{**}$	$\chi^2(7) = 51.8^{**}$	$\chi^2(7) = 232.9^{**}$
Joint sig. status variables	$\chi^2(2) = 4.4$	$\chi^2(2) = 19.0^{**}$	$\chi^2(2) = 9.6^{**}$	$\chi^2(2) = 12.4^{**}$	$\chi^2(2) = 2.4$	$\chi^2(2) = 10.4^{**}$	$\chi^2(2) = 8.1^*$	$\chi^2(2) = 19.0^{**}$
R ²	0.54	0.77	0.58	0.46	0.36	0.74	0.74	0.39
Observations	208	208	208	208	208	208	208	208
Parameters	50	50	50	50	50	50	50	50

Notes: Results are based on least squares dummy variable (LSDV) estimation. All models include cross-section and time fixed effects. Panel robust standard errors are used. * and ** indicate significance at the 5% and 1% level, respectively.

Several other leader characteristics are also significant. Prime ministers who are members of employees' associations spend significantly less on public safety, education, research and development, and health. Only in the case of spending on education do we find economically relevant results: prime ministers who are union members spend on average about 1.1 pp less on education; the long run multiplier is 1.75 pp. Given the fact that nowadays unions usually represent the middle class—i.e., well-trained employees with secure jobs—and provide own educational opportunities, such as training courses and scholarships, this result seems plausible. Tenures of prime ministers who come from outside the state they govern (dummy *outside PM*) are associated with higher spending on education, R&D, and health, which can be labelled as visible and targetable items. Arguably, outside prime ministers need to conduct 'popular' policies in order to improve their reputation.

Although we do not find evidence for partisan or budget cycles, the tests of joint significance indicate that the political environment generally exerts an impact on public expenditure priorities: weak governments (coalition governments and minority governments) spend, on average, less on public administration, public safety, and health, but more on social security.

6.2 Robustness Checks

To discover whether our results are robust and gain further insight, we modify our initial specifications in several ways.

First, we re-estimate the above equation using the GMM approach put forward by Arellano and Bond (1991) in order to account for the correlation between the lagged endogenous variable and the error term (see Appendix, Table A3). We apply one-step GMM estimation using up to five valid lags of the dependent variable as instruments for the lagged endogenous variable.¹⁹ Consistent with the findings from simulation studies (Kievit, 1995; Judson and Owen, 1997), in most cases the autoregressive coefficient becomes a little larger, whereas the coefficients of the other explanatory variables slightly decrease. As our variables of main interest remain significant and the long-run multipliers are basically the same, our conclusions do not change.

Second, we test whether our results vary across the West and East German Länder, since the latter are substantially different with regard to economic conditions from their West German counterparts. For this reason, we estimate separate coefficients for our variables of main

¹⁹ Simulation studies show that the number of lags in dynamic GMM models is subject to a tradeoff: a higher number of lags increases both estimation efficiency and the finite sample bias (Judson and Owen, 1997). Hence, we restrict the number of instruments to five. Note that with respect to our main variables of interest, we find no significant changes when varying the number of lags over a range of 1 to 10 lags.

interest, namely, the election period dummy and the leader variables.²⁰ Table A4 in the Appendix shows some evidence for political cycles in public expenditure composition, but the patterns differ between West and East German Laender. In West Germany, we observe pre-electoral hikes in spending on research and development and public health care, whereas in East Germany spending on public safety increases prior to elections.²¹ However, given that spending on public safety (R&D/health) is on average about 10% (1%/3%) of total public expenditure, the budget cycle effects appear to be rather small.

Concerning leader characteristics, we find robust effects of status in both subpanels. Prime ministers' parental status and status advancement exert a negative impact on the share of public spending devoted to public safety, education, R&D, health, and infrastructure in both West and East Germany. An interesting finding is that in nearly all models, the coefficients of the status variables are relatively larger (in absolute terms) in East Germany. Our interpretation is that due to the East German socialist history, class struggles and social rivalry motives are more pronounced.²²

Finally, we tested whether our results are robust to the inclusion of additional control variables. We controlled for population density, population growth, total public spending in relation to GDP, and the partisan ideology of the federal government. However, the size and significance of our variables of main interest remain unaffected.²³

7. Conclusion

This paper aims at explaining the determinants of the composition of public expenditure. We focus on the German Laender, for they are characterised by homogenous institutional frameworks and political landscapes and, at the same time, are endowed with far-reaching fiscal competences. Special attention is paid to the influence of incumbent prime minister characteristics, particularly socioeconomic status, as peoples' attitudes and preferences exhibit aspects of in-group favouritism and social rivalry. Sociological research regards status—which is strongly determined by education and income—as the main tool of stratification and the basis for identity construction. Empirically testing the influence social status, we examine

²⁰ We do so by defining two dummy variables: D_1 takes the value 1 for West German states and 0 for East German states, D_2 the other way around. Then, we let both dummies interact with the election period dummy and the leader variables.

²¹ Galli and Rossi (2002) also find significant pre-electoral increases in public spending on health in West German states before elections.

²² However, tests for linear restrictions reveal that only the differences between West and East Germany with respect to spending on public safety and health are statistically significant.

²³ All additional results are available on request.

whether German prime ministers manipulate public spending priorities in a way to support the status groups from which they come.

In support of our theoretical framework, we find that German state governments led by prime ministers from poor socioeconomic backgrounds conduct policies aimed at evening out status-related differences between people. Particularly, tenures of prime ministers with low family status are connected with more public spending on education, social security, public safety, infrastructure, and health care, which are the main dimensions of social deprivation. This finding is robust to the estimation technique and the inclusion of various additional controls. It appears that the social rivalry motive is more pronounced in East Germany than in West Germany, which may derive from its socialist history.

In recent years, economists have begun placing more emphasis on the effects leaders have on economic outcomes. Typically, leader variables considered in empirical studies do not derive from well-developed theoretical frameworks and, perhaps not surprisingly, the resulting empirical evidence is mixed. However, as we show in this paper, which was based on a well-defined theoretical framework, future research would do well to pay more attention to leader characteristics and their influence on economic performance. In this respect, the application of sociological and psychological research can provide valuable insights into the transmission channels linking leaders' characteristics and their economic policy stance.

Given that we consider eight different expenditure categories, we also provide one of the most exhaustive tests on the impact of political budget cycles on public spending priorities. Overall, our results suggest that PBC do not have an important impact on public expenditure priorities. Our most interesting finding in this respect is that there appear to be different patterns of political budget cycles across West and East Germany, the reasons for which are not quite clear. Thus, discovering the conditions under which PBC matter could be another interesting topic for future research.

Appendix

Data Sources

Economic Variables

Data on public expenditure composition, real GDP, and unemployment rate are taken from the Federal Statistical Office (Statistisches Bundesamt). Data on public debt and transfers between the Laender deriving from the fiscal equalisation system are provided by the Federal Ministry of Finance.

Political Variables

Data on election dates, vote shares, and government composition are taken from the homepages of the German Laender and the State Returning Officers (Landeswahlleiter), as is historical information on the party affiliation of the ministers of finance.

Sociodemographic Variables

Data on the share of population aged less than 25 years and older than 65 years, respectively, as well as real GDP per head are provided by the Federal Statistical Office (Statistisches Bundesamt).

Leader Variables

All variables regarding the incumbent prime ministers are from the data set introduced by Hayo and Neumeier (2011).

The variable *parental status* measures the occupational status score of prime ministers' parents using the ISEI scores. In cases where both parents were working or when a parent held more than one occupation, the highest ISEI score is employed. If a prime minister was entirely raised by one parent only, only the status score of that parent is taken into account.

The variable *status advancement* measures the difference between the ISEI score corresponding to the occupation a prime minister held prior to embarking on a political career (defined as first membership in a party executive committee or ministry) and *parental status*. In cases where prime ministers previously engaged in more than one occupation, the occupation with the highest ISEI score was chosen.

Breakdown of Public Expenditure, Descriptive Statistics, and Robustness Checks

Table A1: Detailed breakdown for each expenditure category.

Spending item	Main components
Public administration	Political leadership, internal administration, financial management
Public safety	Police, legal protection, courts, public prosecutors, prisons
Education	Public schools and universities, vocational schools, scholarships
R&D	Grants to public research and development institutes
Culture	Theatres, operas, concerts, zoos, museums
Social security	Labour market support, social housing, youth and family welfare
Health	Hospitals, health centres, public health authorities, sports
Infrastructure	Public transportation, urban development, public energy and water plants

Table A2: Descriptive statistics for public spending on several items as share of total public spending.

Spending item	Obs.	Mean	Std. dev.	Minimum	Maximum
Public administration	221	6.77	1.64	4.31	12.10
Public safety	221	10.27	1.39	6.96	14.79
Education	221	27.72	4.09	19.36	44.19
R&D	221	1.40	0.69	0.53	4.29
Culture	221	1.83	0.85	0.38	4.66
Social security	221	11.28	5.11	2.03	25.41
Health	221	3.44	2.26	1.12	18.35
Infrastructure	221	8.53	4.86	2.29	21.58

Table A3: Determinants of public expenditure composition—GMM estimation.

Variables	Public admin.	Public safety	Education	R&D	Culture	Social sec.	Health	Infrastructure
Y(-1)	0.528 **	0.490 **	0.434 **	0.341 **	0.482 **	0.556 **	0.456 **	0.396 **
Economic variables								
Debt-to-GDP	-0.024	-0.016	-0.184	-0.027 **	0.000	0.018	-0.002	-0.028
Output gap	0.042 *	0.006	0.027	-0.016	0.003	-0.011	0.010	-0.050
Unemployment	0.142	0.085	0.496 **	0.009	-0.001	-0.475 **	0.083	0.092
Net transfers	0.001	-0.018	0.008	0.017	-0.004	-0.067	-0.149 **	-0.107
Political variables								
SPD	0.150	-0.105	0.150	-0.056	-0.032	-0.210	0.029	0.610 *
Coalition	-0.290	-0.245	-0.648	0.008	-0.039	0.258	-0.314 *	0.112
Minority government	-0.929 *	-0.562	-1.745	-0.403	-0.027	2.668 **	0.321	0.477
Vote share	-0.026	-0.031 **	-0.026	-0.009 *	-0.007	-0.019	-0.010	-0.024
MoF from same party	-0.589 *	-0.389	-2.556 *	0.063	-0.194	-0.656	-0.627 **	-2.340 **
Election period	0.058	0.130	0.060	0.028	0.038	-0.091	0.109	0.011
Sociodem. variables								
Pop. share < 25	-0.415	-0.781 **	-1.317 *	-0.002	-0.019	-2.013 **	-0.058	0.216
Pop. share > 65	-0.110	-0.310	-1.020	0.008	-0.048	-1.172 *	0.183	0.157
Real GDP per capita	-0.372 **	-0.329 **	-0.888 **	0.047	-0.001	-0.877 **	-0.290	-0.218
Leader variables								
PM transition	0.035	0.051	-0.290	0.008	-0.031	-0.216	0.200	-0.126
Outside PM	0.292	0.335 *	1.196 **	0.171 *	-0.024	-0.981	0.632 **	0.168
Union member	-0.165	-0.440 **	-1.082 **	-0.085 *	-0.046	-0.240	-0.298 **	-0.419
Age	-0.028 *	-0.017	-0.027	-0.006	0.002	0.046	0.026	-0.066 **
Years in office	0.039 **	0.039 *	0.047	0.014 *	0.003	-0.010	-0.022	0.042
Parental status	0.513	-3.039 **	-5.837 **	-1.198 **	-0.376	-1.740	-2.018 *	-4.523 **
Status advancement	0.231	-2.707 **	-5.710 **	-1.277 **	-0.320	-1.223	-2.665 *	-3.646 **
Joint sig. economic variables	$\chi^2(4) = 5.9$	$\chi^2(4) = 13.1^*$	$\chi^2(4) = 20.0^{**}$	$\chi^2(4) = 9.0$	$\chi^2(4) = 3.1$	$\chi^2(4) = 11.6^*$	$\chi^2(4) = 29.3^{**}$	$\chi^2(4) = 32.2^{**}$
Joint sig. political variables	$\chi^2(6) = 29.4^{**}$	$\chi^2(6) = 28.7^{**}$	$\chi^2(6) = 15.2^*$	$\chi^2(6) = 26.7^{**}$	$\chi^2(6) = 39.7^{**}$	$\chi^2(6) = 75.0^{**}$	$\chi^2(6) = 26.1^{**}$	$\chi^2(6) = 33.9^{**}$
Joint sig. sociodem. variables	$\chi^2(3) = 10.5^*$	$\chi^2(3) = 20.8^{**}$	$\chi^2(3) = 14.5^{**}$	$\chi^2(3) = 4.9$	$\chi^2(3) = 0.6$	$\chi^2(3) = 35.6^{**}$	$\chi^2(3) = 4.2$	$\chi^2(3) = 4.1$
Joint sig. leader variables	$\chi^2(7) = 32.3^{**}$	$\chi^2(7) = 56.7^{**}$	$\chi^2(7) = 27.4^{**}$	$\chi^2(7) = 30.8^{**}$	$\chi^2(7) = 14.6^*$	$\chi^2(7) = 28.2^{**}$	$\chi^2(7) = 31.8^{**}$	$\chi^2(7) = 222.2^{**}$
Joint sig. status variables	$\chi^2(2) = 5.3$	$\chi^2(2) = 16.3^{**}$	$\chi^2(2) = 7.7^*$	$\chi^2(2) = 12.2^{**}$	$\chi^2(2) = 2.9$	$\chi^2(2) = 8.6^*$	$\chi^2(2) = 7.4^*$	$\chi^2(2) = 19.1^{**}$
R ²	0.54	0.76	0.58	0.46	0.35	0.74	0.74	0.39
Observations	208	208	208	208	208	208	208	208
Parameters	50	50	50	50	50	50	50	50
Sargan test	$\chi^2(79) = 67.7$	$\chi^2(79) = 84.4$	$\chi^2(79) = 57.8$	$\chi^2(79) = 80.9$	$\chi^2(79) = 90.7$	$\chi^2(79) = 78.1$	$\chi^2(79) = 57.9$	$\chi^2(79) = 76.2$

Notes: Results are based on GMM estimation. Lags 2–6 of the dependent variable are used as instruments. All models include cross-section and time fixed effects. Panel robust standard errors are used. * and ** indicate significance at the 5% and 1% level, respectively.

Table A4: Determinants of public expenditure composition—comparing West and East German states.

Variables		Public admin.	Public safety	Education	R&D	Culture	Social sec.	Health	Infrastructure
Election period	West	0.145	0.075	0.084	0.063 *	0.023	-0.148	0.280 *	0.009
	East	-0.022	0.237 *	0.486	-0.033	0.061	0.004	-0.071	0.117
PM transition	West	0.213	0.292	0.645 *	0.014	0.036	-0.008	0.170	0.152
	East	-0.342	0.004	-0.994 *	0.025	0.013	-0.172	0.487 *	-0.413
Outside PM	West	-0.290	0.876 *	1.922 *	0.184 *	-0.112	1.290 **	0.473	0.170
	East	0.602 *	0.280	2.796 **	0.156	-0.265 **	-2.471 **	1.052	0.366
Union member	West	-0.249	-0.544 **	-1.748 **	-0.056	-0.109 **	-0.225	-0.418 **	-0.447
	East	—	—	—	—	—	—	—	—
Age	West	-0.054 **	-0.036 **	-0.172 **	-0.007	-0.021 **	0.008	-0.022	-0.111 **
	East	-0.040 *	0.022	0.108 *	-0.007	0.019 **	0.097 **	0.077 **	-0.036
Years in office	West	0.046 *	0.073 **	0.202 **	0.014 *	0.018 **	0.021	-0.003	0.080 *
	East	0.035	-0.010	-0.220 *	0.021	-0.005	-0.015	-0.113 *	-0.002
Parental status	West	0.292	-3.103 **	-6.996 **	-0.908 **	-0.361	-3.836 **	-2.244 *	-3.173 **
	East	1.256	-4.915 **	-11.236 **	-1.996 **	0.583	-1.727	-4.916 **	-8.575 *
Status advancement	West	0.632	-3.271 **	-7.555 **	-1.049 **	-0.305	-2.849 *	-1.734	-2.471
	East	0.808	-4.124 **	-10.436 **	-2.020 **	0.990	-2.140	-6.846 **	-7.390
Joint sig. status variables West		$\chi^2(2) = 1.0$	$\chi^2(2) = 10.0^{**}$	$\chi^2(2) = 10.8^{**}$	$\chi^2(2) = 18.0^{**}$	$\chi^2(2) = 3.0$	$\chi^2(2) = 12.1^{**}$	$\chi^2(2) = 18.5^{**}$	$\chi^2(2) = 12.7^{**}$
Joint sig. status variables East		$\chi^2(2) = 7.5^*$	$\chi^2(2) = 113.1^{**}$	$\chi^2(2) = 18.1^{**}$	$\chi^2(2) = 12.1^{**}$	$\chi^2(2) = 20.7^{**}$	$\chi^2(2) = 0.4$	$\chi^2(2) = 17.7^{**}$	$\chi^2(2) = 40.8^{**}$
R ²		0.56	0.79	0.65	0.48	0.41	0.75	0.78	0.41
Observations		208	208	208	208	208	208	208	208
Parameters		58	58	58	58	58	58	58	58

Notes: Results are based on a least squares dummy variable (LSDV) estimation. Coefficients of the other variables are suppressed in order to save space. All models include cross-section and time fixed effects. Panel robust standard errors are used. * and ** indicate significance at the 5% and 1% level, respectively.

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