

Ideology and redistribution through public spending

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October 14, 2016

Abstract

For a panel of OECD economies (1980-2013) we analyse the scope of government ideology to shape patterns of public expenditures. To address if public expenditures are used to channel redistributive outcomes, we adopt a flexible panel error correction model and proceed in two steps: Firstly, we analyse if ideological positions matter for the sizing of the public sector. Secondly, we address the actual impact of government ideology on two disjoint categories of public expenditure that are characterized by distinguished redistributive effects. Under both, left-wing and right-wing governments, public spending shows progressively redistributive effects which are indirectly channelled through their policy response to changing macroeconomic, fiscal and demographic fundamentals. While right-wing governments act progressively redistributive under favourable socio-economic conditions, their left-wing counterparts do so under unfavourable conditions. Comparing the two effects in terms of their explanatory content, we find that the latter is stronger than the former.

JEL classification: H53, H87, I18, D72, F13, F60, C22, C23

Key words: Redistribution; Public expenditure; Government ideology; Electoral cycles; OECD panel data

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*The author declares that he has no relevant or material financial interests that relate to the research described in this work.

†We thank the associate editor Jan-Egbert Sturm, two anonymous referees and the participants at the XXIII Encuentro de Economía Pública in Orense and the 18th INFER Conference in Reus for their valuable comments. We also gratefully acknowledge support by Yabibal M. Walle providing panel unit root and cointegration diagnostics. Bernd Theilen gratefully acknowledges financial support from the Spanish *Ministerio de Ciencia e Innovación* under project ECO2013-42884-P.

1 Introduction

A central aspect of political programmes of left-wing parties is the reduction of inequality in income distribution.¹ Historically, this objective has been primarily achieved through changes in the tax structure. However, since the early 1980s with the liberalization of goods and capital markets, most governments have reduced top marginal income and capital tax rates as a response to the globalization process.² A consequence of this process is that political parties have lost most of their influence on tax policies. Indeed, numerous recent studies have shown that party ideology has no significant influence on the progressiveness of tax systems (Volkerink and De Haan 1999, Galli 2002, Swank and Steinmo 2002, Cusack and Baramendi 2006). Instead, it has been argued that, nowadays, parties pursue welfare redistribution mainly by putting emphasis on distinguished spending policies that favour more than proportionally low income earners such as health care, unemployment, and social spending in general, and not through changes in the tax structure.³ Thus, in the mid-2000s, the average redistributive effect in OECD countries achieved through public social spending was already twice as large as that achieved through income taxation (OECD 2008, 2011; Wang et al. 2012, 2014).

From these findings we would expect that left-wing parties, which advocate more income redistribution in party manifestos than their right-wing counterparts, promote higher spending in public expenditure categories that primarily benefit low income earners. However, recent studies have shown only a muted effect of party ideology, for example, on social expenditure after the 1990s (Iversen 2001, Kittel and Obinger 2003, Potrafke 2009, Herwartz and Theilen 2014a). Furthermore, right-wing parties are, generally, more in favour of a reduced public sector and, therefore, aim to limit overall public expenditure (see e.g. Hibbs 1977, 1987, Cameron 1978, Alesina 1987, Cusack 1997, De Donder and Hindriks 2007, Pickering and Rockey 2011). This means that more social spending of left-wing parties only testifies their larger preference for social justice, if it does not come along with more spending in other expenditure categories where an increase of public spending has redistributive effects that go into the opposite direction.

The objective of our study is to analyse if party ideology has a distinguishable effect on redistributive justice. For this purpose we adopt a two-step approach. In the first step, we analyse the socio-economic and political determinants of public expenditure. In the second step, we analyse the impact of government ideology on redistributive spending by decomposing public expenditure in two disjoint categories: social spending and ‘non-social’ spending. Social spending comprises, among other categories, health care, old age, survivors, incapacity-related benefits, family programmes, active labour market pro-

¹See Bradley et al. (2003) for an overview of distribution and redistribution in modern societies and the (expected) decisive role of leftist governments.

²As pointed out by Peter et al. (2010), the GDP-weighted average top statutory marginal personal income tax rate in a sample of 189 countries has fallen from more than 60% at the beginning of the 1980s to less than 40% in 2005. Overall, progressiveness of tax schemes has also declined. A similar downward convergence of tax rates over this period can be observed for capital taxation. In 24 OECD countries the average central government corporate top statutory tax rate has decreased from 42% in 1980 to 25% in 2012 (Chengrui 2014).

³That such a redistributive public spending can effectively redistribute income has been shown, e.g., by Afonso et al. (2010).

grammes, unemployment benefits, and housing programmes. Social spending is equivalent to a progressive welfare redistribution, as more social spending more than proportionally benefits low income earners.⁴ ‘Non-social’ spending comprises, for example, expenditure on education, infrastructure, security and administration. Higher expenditures on these categories more than proportionally favour the middle and upper income classes. Hence, public spending on the ‘non-social’ spending categories is more regressive compared with social expenditure. The adopted two-step approach has two advantages. First, it reflects the political decision process that first determines the *size* of the total budget and, then, decides on its *distribution* on different spending categories (top-down budgeting). Secondly, it allows to separate ideologically motivated adjustments of the size of the public sector from ideologically motivated prioritization of specific spending programmes.

The framework adopted in this study allows to analyse three questions that have not been addressed previously in the literature:

- Q1:** Does ideology (and other political variables such as the timing of elections, the polarization of the party system or the number of coalition partners) influence progressively redistributive public spending?
- Q2:** Do parties react differently to social and economic changes?
- Q3:** Do these reactions have distinguished effects on social and ‘non-social’ public spending?

The first question emphasizes that differences in social expenditure between parties of different ideologies do not necessarily reflect differences in their wish to redistribute income when they are accompanied by similar differences in other spending categories. In such a case, they rather indicate divergent party positions regarding the total size of the public sector. With the first question (Q1) we analyse if government ideology and other political variables have a *direct* redistributive impact on distinguished spending categories. With the second question (Q2) we want to take account of the fact that party ideology does not necessarily impact directly on public spending. Rather it can impact *indirectly* through the channel of distinct reactions of parties to changes in the socio-economic environment. This is because parties might adjust public expenditure in different ways over the business cycle, and react differently to changes in the population structure, changes in the size of government deficits, or in the level of public debt. We respond to this question by analysing the interaction effects of party ideology with several socio-economic variables. With the third question (Q3) we explore if the before-mentioned indirect channel of party ideology on public expenditure works differently for social and ‘non-social’ expenditure. We respond to this question by comparing the interaction effects of party ideology with our socio-economic variables on social expenditure with those they have on ‘non-social’ expenditure.

Related studies have focused on specific spending categories or the determinants of the composition of public spending. These studies are mostly based on cross-sectional data and underscore the importance of differences in the political institutional settings

⁴For example, see Hicks and Swang (1992) for an overview on the literature regarding the link between party ideology, voter preferences and welfare spending.

(e.g., Persson and Tabellini 1999, Persson et al. 2007), income distribution (Meltzer and Richards 1981, Shelton 2007), or ethnical fractionalization (Alesina et al. 1999, Shelton 2007) to explain cross-country differences in public spending patterns.⁵ However, once such types of ‘country-specific factors’ are allowed for, the impact of different ideological positions of governments can be hardly distinguished in cross-sectional studies. Therefore, as the objective of this study is to identify the impact of changes in government composition on redistributive spending, we take especially account of country-specific time patterns of public spending composition.

Our analysis is based on data from 21 OECD economies over the period 1980-2013. As a particular merit, the considered panel dimension allows to figure out how ideology matters in government responses to macroeconomic, fiscal and demographic conditions that are subject to both cross-sectional and time variation. Noting that the considered time period covers several business cycles, the sample information is likely rich on information how governments holding diverse ideological positions cope with more or less favourable domestic socio-economic performance. Moreover, the framework of the adopted panel error correction model (ECM), or cointegration model, allows to distinguish between long-run and short-run determinants of public spending. While the former include economic and demographic trends (e.g., population ageing, globalization, government indebtedness), political factors exclusively belong to the second class of determinants. Long-run determinants of public spending are used to indicate stances of an oversized (positive equilibrium error) or undersized public sector (negative equilibrium error). Short-term adjustments of public spending in the ECM (partly) respond to deviations of the size of the public sector from its presumed equilibrium. Such indicators of an eventually oversized or undersized public sector might induce ideology dependent policy responses which can be incorporated into the empirical model by means of suitable interaction variables. To address the redistributive nature of public spending it is of interest, moreover, to distinguish adjustments of social and ‘non-social’ expenditures in response to violations of the equilibrium supposed to hold at the level of overall public spending. In the empirical analysis, we formalize respective ‘quasi ECMs’ where deviations from the fundamental size of the public sector govern expenditure adjustments in disjoint spending categories. The empirical model thereby copes with two particularly important features in the determination of public budgets: it distinguishes between long-run and short-run determinants of its total size, and it separates the short-run influences on budget size from those on budget composition.

With regard to the first question (Q1), our results indicate that ideological government positions, the polarization of the party system and the number of coalition partners have no distinguished direct influence on social and ‘non-social’ spending. However, electoral cycles observed for general public spending turn out to be redistributive as they are only present in social spending but not in ‘non-social’ spending. We take this result as evidence for the prevalence of distributional issues during election campaigns. Responding to the second question (Q2), we obtain that the influence of ideological government positions on public spending comes through the channel of distinct reactions of left-wing and right-

⁵Though some studies are based on panel data, the time series dimension of the data is not fully explored in the analysis. For example, Shelton (2007) builds five-year averages such that 31 annual observations per country are transformed into six observations per country.

wing coalitions to varying macroeconomic, fiscal and demographic conditions. Finally, for the third of our questions (Q3), we diagnose redistributive spending channelled through ideological policy responses to such changing conditions. Remarkably, while right-wing governments increase social spending and thereby act progressively redistributive under favourable socio-economic conditions, left-wing governments do so under unfavourable conditions. Comparing the two effects, our results indicate that the latter is stronger than the former.

The next section briefly discusses the related literature. Section 3 describes the data and the empirical model. In Section 4 we provide a discussion of our empirical results. Section 5 concludes. In the supplementary material to this article we are explicit on unit root and cointegration diagnostics, and further details on the estimation approach.

2 Income redistribution, public spending and ideology

Recent studies suggest that fiscal policy nowadays plays a more prominent role than tax policy to reduce inequality among individuals and households, since the average redistribution through public spending and transfers is already twice as large as that achieved through taxation (OECD 2008, 2011; Brandolini and Smeeding 2009; Atta-Darkua and Barnard 2010; Bastagli et al. 2012; Wang et al. 2012, 2014). For instance, the OECD documents that public services have reduced the Gini index in 17 OECD countries, on average, by 19% between 2000 and 2007 (OECD 2008, 2011). With regard to poverty rates the effect is even stronger. In OECD (2011) we find that - overall - public services in 27 OECD countries have reduced the poverty rate from 10% to 5%. The redistributive effect of spending on specific categories can be seen best with the example of public health care spending. The income-increasing effect of benefits from public health services is, on average, 35% for the first quintile of the income distribution, while it is only 7% for the top quintile (OECD, 2011).

These results indicate that public spending is indeed an effective instrument for income redistribution, and, therefore, we would expect to find that left-wing governments, which have traditionally advocated more income redistribution than their right-wing counterparts, promote higher spending in those categories that primarily benefit low income earners.⁶ However, while political effects on public spending and its components have been documented since Cameron (1978), its effects on the redistributive nature of government expenditures have not been analysed yet. The literature has distinguished mainly between the effects of ideology and electoral cycles, but has also considered other political factors such as the number of coalition partners, the fractionalization and polarization

⁶This work complements the literature on international comparisons of the influence of party ideology and other political variables on government spending and redistribution. Representing a related literature, recent studies have used individual data to analyse how aggregate spending and redistribution are related to voter preferences, as for example, the relationship between voters' preferences for redistribution and social capital (Yamamura 2012), the relationship between voters' preferences on government spending and direct democracy (Funk and Gathmann, 2013) or the link between the median voter's preference on redistribution and effective redistribution (Corneo and Neher, 2015).

of the government and the party system, or the type of the electoral system. In the remainder of this section we summarize the most important results of this literature.

2.1 Ideology

The influence of party ideology on public spending and the size of the public sector has been explained in the literature by means of the partisan approach which states that, as a response to heterogeneous voter preferences, politicians pursue policies that reflect the preferences of their partisans.⁷ It is argued that left-wing parties favour policies that redistribute income from the rich to the poor to attract votes from low income earners. This leads to larger social spending and public expenditure in general. Instead, right-wing parties emphasize the inefficiencies of the public sector and, therefore, promote policies that deregulate the public sector and reduce public expenditure. In line with these arguments Cameron (1978) and Cusack (1997) confirm a larger growth rate of public expenditure under left-wing governments than under their right-wing counterparts.

An influence of party ideology on distinct *components of public budgets* has also been extensively documented in the literature. Regarding social expenditure, Hicks and Swank (1992), Kittel and Obinger (2003), Bräuninger (2005), Potrafke (2009) and Herwartz and Theilen (2014a) find that left-wing parties spend more than right-wing parties on social issues. The more recent studies have shown, however, that the influence of party ideology has decreased over time which has been addressed to a general institutional change that took place in the early 1990s, and that can be explained by the creation of new supra-national institutions, and strengthened integration of goods and capital markets (Herwartz and Theilen 2014a). Similar tendencies have been shown, for example, for health care expenditure (Potrafke 2010, Herwartz and Theilen 2014b), pension expenditure (Tepe and Vanhuyse 2009), or education expenditure (Potrafke 2011, Jensen 2011).

The recent literature has also analysed the influence of party ideology on *the composition of public budgets*.⁸ Tsebelis and Chang (2004) find, on the one hand, that the larger is the difference in the ideological position of successive governments, the more significant are the changes in the structure of public budgets. On the other hand, widening the ‘ideological distance’ of government coalitions mutes potential changes of the structure of public budgets. Brender and Drazen (2013) focus on the effects of the replacement of party leaders on the composition of government spending. They obtain that leaders’ replacements have no significant short-run effect on expenditure composition. In the medium term (after three to four years), leadership changes involve larger changes of expenditure composition in developed countries. However, ideological motives for such changes in budget composition are not analysed in their paper. Finally, an important issue raised in the recent literature is the endogeneity of party ideology in the identification

⁷This should even be the case with self-interested politicians that pursue their own interest because of reputation (see Bowler et al. (2006) for respective empirical evidence).

⁸Neglecting ideological aspects, some authors also have studied the relationship between budget composition and socio-economic processes such as population ageing or globalization. Sanz and Velazquez (2007) find that ageing is one of the main driving forces of the growth of overall government spending but also for social welfare, health care and defence expenditure. Shelton (2007) highlights the contribution of trade openness to total expenditure growth. Dreher et al. (2008), Gemmell et al. (2008), and Shelton (2007) find that globalization has no significant influence on government budget composition.

of the influence of party ideology on economic outcomes. Petterson-Lidbom (2008) uses a regression discontinuity approach and finds a party ideology influence for Swedish local governments on local taxation and unemployment.⁹ Folke (2014) uses the same approach and data set to analyse the effect of small parties on immigration, environmental and tax policy, and obtains a strong effect on the first two policies but not on tax policy. Gerber and Hopkins (2011) analyse the impact of mayors' partisanship on policy outcomes for US cities. Using a regression discontinuity design, they find, for example, that Democratic mayors spend more on public safety than Republican or independent mayors.

2.2 Electoral cycles

It has been commonly recognized that before elections incumbent politicians raise public spending to increase their reelection probabilities. This kind of opportunistic behaviour is independent of ideological platforms, and leads to a politically motivated business cycle. Theoretically, this phenomenon has been explained by irrational backward-looking agents (Nordhaus 1975), or by rational agents with asymmetric information (e.g. Rogoff and Sibert 1988, Alesina et al. 1997, Persson and Tabellini 2000). In empirical studies, political business cycles have been documented for *total public expenditure* in developed economies (e.g. Alesina et al. 1997, Persson and Tabellini 2000), or for *expenditure categories* like social expenditure (Herwartz and Theilen 2014a), or health care expenditure (Potrafke 2010, Herwartz and Theilen 2014b).¹⁰

Effects of electoral cycles on the *composition of spending* have been explained by Rogoff (1990) and Drazen and Eslava (2010). They argue that shifts between categories of public expenditures allow incumbents to signal either their competence or their preferences to the electorate. Empirically, election motivated expenditure shifts have been documented by Katsimi and Sarantidis (2012). They find that (predetermined) elections shift public spending towards current expenditures at the cost of public investment, while they do not affect overall government expenditure. Brender and Drazen (2013) find that, compared with undeveloped countries, elections in developed countries are associated with larger shifts in the composition of public expenditure.¹¹

2.3 Other political variables

The literature has also highlighted a number of other political factors that influence public spending. Persson et al. (2007) show in a theoretical model that government spending increases with *the number of coalition partners*. Thus, overall government spending is larger under coalition governments than under single-party governments. Empirically this prediction is confirmed, e.g., by the same authors and by Perotti and Kontopoulos (2002). On the contrary, the veto player theory predicts that when the number of coalition

⁹This approach has been initially applied by Lee et al. (2004) to control for endogeneity of candidates' policy choices in the US House of Representatives.

¹⁰See also Brender and Drazen (2005) for a review of the literature on political budget cycles.

¹¹The effect of elections on the composition of public spending has also been analysed at the regional and local government level, where it is shown that in election years incumbents raise spending on 'more visible goods' like infrastructure. For a summary of this literature see Drazen and Eslava (2010).

partners (veto players) increases, changes of the status quo are less likely (Tsebelis 1995, Tsebelis and Chang 2004). From this prediction one would expect smaller changes in government expenditures with more coalition partners.

Azzimonti (2011) develops a political economy model showing that *the degree of polarization* of the party system affects political decision making in equilibrium. Incumbents finance overspending with distortionary taxes to avoid their replacement by the opposition. Azzimonti (2011) shows that the larger the conflict among parties (polarization) and the larger are, therefore, the losses of being replaced (as preferred policies will be more divergent), the larger is the overspending to avoid replacement. Therefore, public spending is expected to exhibit a positive relationship with the degree of polarization.

Finally, the literature has indicated that electoral rules (Persson et al. 2007), ethnic fragmentation (Alesina et al. 1999, Shelton 2007), and income inequality (Meltzer and Richard 1981, 1983, Shelton 2007) are important factors to explain cross-country differences in public spending. We refrain from including them as explanatory variables in this study, as they show only limited time variation. Hence, such factors are captured by the country-specific fixed effect in the framework of our study.

3 Data and empirical model

3.1 Data and variables

The analysed panel comprises annual data (1980-2013) for 21 OECD economies, namely Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (GER), Greece (GRC), Ireland (IRL), Italy (ITA), Japan (JPN), Luxembourg (LUX), the Netherlands (NLD), New Zealand (NZL), Norway (NOR), Portugal (PRT), Spain (ESP), Sweden (SWE), the United Kingdom (UK), and the United States (US).¹² Table 1 provides details on variables and data sources.

We divide public expenditure into two categories: public social expenditure and public ‘non-social’ expenditure. PE and SE is per capita public expenditure and public social expenditure, respectively, measured in logarithms of quotes in US dollar and US purchasing power parity implied prices with 2005 as the base year. Before taking the log transformation we determine the difference between total public expenditure and social expenditures. The log of this quantity, public non-social expenditure, is henceforth denoted NSE.¹³

Insert Table 1 about here.

Raw quotes for the determination of SE are from the Social Expenditure Database (SOCX) and comprise all cash expenditures (including lump-sum payments) on old-age pension and other services and payments to elderly people (‘old age’), benefits for spouse

¹²The country and sample period selection is due to data availability. SE data is available in the SOCX data base from 1980. However, for OECD members that joined after this year the data is incomplete and therefore, we have not included these countries in the analysis. Island and Switzerland have not been included because of missing data for some of our variables.

¹³Notice that even if by definition public expenditure = public social expenditure + public non-social expenditure, we have $PE \neq SE + NSE$, since these variables are measured in natural logarithms.

or dependents of deceased persons ('survivors'), cash payments due to complete or partial inability to participate gainfully in the labour market ('incapacity-related benefits'), all public expenditure on health ('health'), expenditure related to the costs of raising children or supporting other dependants ('family'), all social expenditures (other than education) that aim at the improvement of the beneficiaries' prospect to find gainful employment, or to otherwise increase their earnings capacity ('active labour market programs'), cash expenditure to people compensating for unemployment ('unemployment'), rent subsidies and other benefits to the individual to help with housing costs ('housing'), and payments to people that are not included in the other categories, for example, to immigrants, refugees or indigenous people ('other social policy areas').¹⁴ Thus, NSE as its main components covers expenditures on education, transport and communication, defence, subsidies to the industry and the agricultural sector, and government expenditure in general. It turns out that for some countries and time periods annual growth rates for at least one of the three alternative expenditure categories (SE, NSE, PE) exceed 20% in absolute terms. To guard against potentially adverse effects of outlying observations on OLS/GLS estimation, we removed these observations from the sample.¹⁵ As a consequence, and owing to nonavailability of a few quotes on PE (JPN (until 1993), NZL (until 1985) and PRT (until 1989)), the panel is unbalanced.

To characterize the long-run trends in PE, we rely on explanatory variables that are common to explain cross-country and time variations of PE or its components, namely, per capita gross domestic product (GDP), the unemployment rate (UE) and the dependency ratio (DR) (e.g., Hicks and Swank 1992, Sanz and Velazquez 2007, Shelton 2007, Herwartz and Theilen 2014a). GDP is measured in logarithms of quotes in US dollar and US purchasing power parity implied prices with 2005 as the base year. UE is the number of unemployed persons as a ratio of the total labor force. DR is the population share aged less than 15 or older than 65.

Short-run dynamics of PE, SE and NSE are explained by three types of variables: Economic, demographic and political covariates. As economic variables, apart from GDP and UE, we use the volume of trade (TRADE), the current account balance (NX), the general government surplus (SURP), a dummy variable that indicates excessive debt (DEBT90), and a dummy for the period after the financial crisis in 2007 (D07). The variables TRADE and NX are used to account for the degree of openness of the economy and the current account balance, respectively. TRADE is the sum of exports and imports, and measures the total volume of trade, while NX is their difference and, therefore, indicates the benefits from trade. Both variables are measured as shares of GDP. Cameron (1978), or more recently, Shelton (2007) argue that trade openness is positively related to government size. This is explained by an increased demand for public insurance against external risks faced by firms and households (Rodrik 1998, Iversen 2001). Herwartz and

¹⁴For more details see Adema et al. (2011).

¹⁵Excessive growth rates of at least one expenditure category show up for AUT/1990, BEL/1990, GER/1990-91, GER/1995-96, DNK/1990, ESP/1982, FIN/1990, GRC/1982-83, GRC/1990, IRL/1985, IRL/2010-11, ITA/1990, JPN/1998, NZL/2010, SWE/1990 and SWE/1995. Notice, that, e.g., in case of the observations for 1990 this is motivated by the fact that in EWI (2015) two different data sets have been merged: IMF (1980-1989) and EUROSTAT (1990-2013). Core empirical results documented in this paper remain robust under more conservative trimming or when analysing the full data set.

Theilen (2014a), however, find that increased trade openness and export surpluses go along with less public spending on social issues. This is explained by the fact that with an increased trade dependency and more international competition, governments have intended to attract foreign investments (and to retain domestic investments) by reducing corporate taxation and other tax and social security payments of firms which has created pressures to downsize the public sector (Bénassy-Quéré et al. 2007, Chengrui 2014). Government surplus (SURP) is considered as an important determinant of public spending, since many governments in developed economies have become increasingly indebted over the last three decades. This has imposed constraints on the maintenance and the expansion of public expenditures, as continuous budget deficits and increased accumulated debt have deteriorated the financing conditions on international capital markets (yields of long-term government bonds). Consequently, we expect a positive relationship between SURP, measured in percentage of GDP, and public spending. In the same vein, with DEBT90 we identify particular states of excessive debt. As a benchmark, we consider the 90% of GDP debt value which has been indicated as a ‘critical debt level’ for economic growth by Reinhard and Rogoff (2010a,b).¹⁶ Accordingly, $DEBT90 = 1$ if the DEBT to GDP ratio is larger than 90%, and $DEBT90 = 0$ otherwise. A time dummy for the period after 2007 allows for structural shifts in public spending that came along with the great recession starting with the Lehman default in 2008.

Regarding the explanatory demographic variables for short-run dynamics of SE and NSE, we use the population share of the young aged under 15 (P15), and the population share of the elderly aged more than 65 (P65) separately, as changes in these variables are expected to have distinguished impacts on SE and NSE. For example, while an increase in P15 should mainly impact on NSE which includes education expenditure, an increase in P65, in the absence of policy responses, will substantially raise SE, since this public spending category includes pensions and health care expenditures.

While the inclusion of political explanatory variables has already been justified by the discussion in the previous section, here we are more precise on measurement issues. We use government ideology (IDEO), a dummy variable that indicates election years (ELEC), an indicator for the polarization of the party system (POLA), and the number of government coalition partners (NCP).

The variable IDEO is the (unweighted) mean of the ideological position of parties in government.¹⁷ Party ideology is measured on a -5 to 5 scale, where positive (negative) values indicate rightist (leftist) ideological positions. The data for the ideological positioning of single parties are the average of the evaluations of several experts of the position of a party in terms of its ‘overall ideological stance’. Notice, that these mean evaluations for single parties are time invariant in our sample period. Therefore, changes in government ideology in our data stem exclusively from changes in government composition and

¹⁶Alternatively, we have considered 80% and 100% benchmarks which yield qualitatively identical results.

¹⁷An alternative would be to take a weighted average of the ideological positions of government parties where the weights are based on their share of seats in parliament. However, such a measure has the disadvantage that it does not reflect the real strength of coalition partners because of their veto power. As the budget allocation on major spending categories is an important aspect of coalition bargaining and formation, we consider an unconditional average to be more adequate for the purposes of this study.

not from changes in the evaluations of experts. As experts have international experience in the evaluation of parties and follow guidelines in their comparisons, we consider that party’s ideological stance is comparable across countries.¹⁸ Finally, notice that the ideological position of a party is not identical to its positioning regarding economic issues as the database includes a specific experts’ valuation of this question with different scores.

The date of elections is measured as in Franzese (2000) as

$$ELEC = \frac{(M - 1) + d/D}{12},$$

where M and d indicate the month and day of election, respectively, and D is the number of days in the month of election. In years without elections $ELEC = 0$.¹⁹ The polarization of the party system with J parties is measured as

$$POLA = \sum_{j=1}^J \sum_{l=1}^J v_j^2 v_l |IDEO_j - IDEO_l|,$$

where v_j and v_l are the shares of seats in parliament of parties j and l , respectively.²⁰

3.2 Descriptive statistics

Table 2 documents descriptive statistics for variables in levels and first differences. The average annual growth rate of real GDP amounts to 1.6% which is very close to the mean growth rate of public expenditures (1.7%). Distinguishing unconditional growth rates for the two disjoint expenditure categories SE and NSE, the former (latter) are markedly in excess (below) average GDP growth. On average, NZL and LUX have seen the smallest and largest growth rates of public expenditures, respectively. While GRC shows the weakest growth of real GDP on average (0.5%), it is also characterized by highest average growth rates of NSE categories (2.9%). With respect to demographic trends the descriptive statistics confirm that all considered OECD economies are ageing, since mean changes of the share of the elderly (the young) generation are positive (negative) for all economies. On average, the population share of the elderly has annually increased by 0.148 percentage points, while the share of the young population has annually decreased by -0.178 percentage points. At the side of political variables, the overall average of coalition ideology is close to zero (0.5). On average, the governments of SWE and JPN have been most leftist (-0.41) and most rightist (2.3), respectively. The data show sizeable between and within variation.

Insert Table 2 about here.

¹⁸Notice, for example, that in the CHESS (2010) data base one finds only small variations in the evaluation of parties from different experts.

¹⁹As an alternative, we have used a measure that gives weight one to an election where the weight is distributed proportionally according to the weighting scheme proposed by Franzese (2000) over the election year and the year preceding the election (i.e., an election the 31st of Januar in 2001 yields $ELEC_{2001} = 1/12$ and $ELEC_{2000} = 11/12$). It turns out that with this weighting scheme the effects of $ELEC$ are diagnosed somewhat weaker while the core results of our analysis are qualitatively and quantitatively unaffected.

²⁰For properties of this polarization index, see Esteban and Ray (1994).

3.3 The two-step approach: A policy augmented error correction model

To analyse if party ideology has a distinguishable effect on redistributive justice we adopt a two-step approach. In the first step, we model the determination of total public expenditure (PE) as a *long-run equilibrium relationship* between PE and socio-economic and political variables. In the second step, we analyse the determinants of *short-run fluctuations* of PE and its components, SE and NSE, where our main interest lies in the political determinants of short-run fluctuations, and reactions to deviations from the long-run equilibrium path of PE. The adopted two-step approach has the advantages that it reflects the political decision process that first determines the *size* of the total budget and, then, decides on its *distribution* on different spending categories (top-down budgeting). Furthermore, it allows to separate ideologically motivated adjustments of the size of the public sector from ideologically motivated prioritization of specific spending programs.

Let $i, i = 1, \dots, N$, and $t, t = 1, \dots, T$, indicate cross-section members and time instances, respectively. PE is supposed to exhibit a stable equilibrium relation with variables describing long-term inflows and outflows of financial resources at the governmental level. In specific, we assume that, aside from deterministic components, the long-term level of PE is described by a linear combination of GDP, the unemployment rate (UE) and the dependency ratio (DR). Apart from established economic determinants of long-run patterns of PE (GDP, UE, DR), the presumed cointegrating relation includes a linear trend and a dummy variable that takes values of unity for the periods 2008 to 2013.²¹ The inclusion of a linear trend supports the discrimination among stochastic and deterministic trends in PE. The dummy variable accounts for potentially adverse effects of the Lehmann default and the ensuing period of financial and sovereign debt turmoil. In light of these considerations, the long-run equilibrium relationship for PE is

$$PE_{it} = \beta_{i1}GDP_{it} + \beta_{i2}DR_{it} + \beta_{i3}UE_{it} + \beta_{i4}t + \beta_{i5}D07 + ec_{it}, \quad (1)$$

where ec_{it} indicates the equilibrium errors.

Once we have identified the long-run determinants of total public expenditure (and, thus, of its components), we proceed to model the short-run determinants of PE and its components, SE and NSE, as equation error correction mechanisms. For alternative spending categories $\Psi \in \{PE, SE, NSE\}$ these read

$$\Delta\Psi_{it} = \nu_i + \delta_i t + \alpha_i ec_{it-1} + \phi_i \Delta\Psi_{it-1} + \mathbf{z}'_{it} \boldsymbol{\gamma} + u_{it}, \quad (2)$$

where Δ denotes the first difference operator, e.g., $\Delta PE_{it} = PE_{it} - PE_{it-1}$. In (2), ν_i , δ_i , and ϕ_i are fixed effects, linear trend parameters, and autoregressive parameters, respectively. Of particular interest is how political, macroeconomic, fiscal or demographic influences collected in \mathbf{z}_{it} affect the adjustments of expenditure categories at the panel level. The variables entering \mathbf{z}_{it} are ΔGDP_{it-1} , ΔUE_{it-1} , $\Delta P15_{it-1}$, $\Delta P65_{it-1}$, ΔNX_{it-1} ,

²¹Test results for panel integration and cointegration are in the supplementary material. The long-term relation to describe PE is supposed to link PE, GDP, UE and DR. In economic terms we are not aware of any further equilibrium relationship linking these variables in the long term. Hence, the assumption of a unit cointegrating rank is reasonable.

$\Delta TRADE_{it-1}$, $SURP_{it-1}$, $DEBT90_{it-1}$, $D07_{it}$, $IDEO_{it}$, $ELEC_{it}$, $POLA_{it}$, NCP_{it} and interactions with government ideology that will be discussed in more detail below. In the spirit of error-correction mechanisms, the model formalizes how log changes of expenditure categories adjust to predetermined information (ec_{it-1}) on an eventually over- or undersized public sector. As a particular merit of the dynamic model in (2), it is worth to mention that we (mostly) refrain from imposing poolability restrictions. In particular, dynamic effects (error correction and autoregressive patterns) are likely country specific. As outlined in Pesaran and Smith (1995), falsely imposing cross sectionally uniform parameters in such cases is likely to induce severe estimation biases for all model parameters in (2).

In the case that $\Psi = PE$, the model in (2) and (1) largely conforms with a standard error correction (cointegration) model except for the fact that the adjustment patterns in (2) allow for impacts of covariates in z_{it} . A common ECM specification obtains if $\gamma = 0$. Stability of the system of the nonstationary level variables holds if $-2 < \alpha_i < 0$. Similar to the specification of the long-term relation in (1), a further important characteristic of the model in (2) is that, except for the variables in z_{it} , all parameters are country-specific. We restrict the imposition of panel homogeneity assumptions on those effects that correspond to the research questions raised in Section 1 (Q1 to Q3). Hence, these questions are subjected to empirical testing in a rather flexible panel model framework. By implication, it is unlikely that the estimated effects of variables in z_{it} are biased as a consequence of an eventually restrictive ECM panel regression design.²²

As mentioned before, modelling PE dynamics by means of (1) and (2) fits into common cointegration approaches if $\Psi = PE$. Noticing that public expenditures can be separated into social and ‘non-social’ expenditures, it is interesting to investigate if these expenditure aggregates contribute proportionally to the equilibrating dynamics of PE. For this purpose, we specify two ‘quasi ECMs’ where the left-hand side adjustment process ΔPE_{it} is replaced either by ΔSE_{it} or ΔNSE_{it} . For both alternative specifications, the right-hand-side model variables are identical to those in (2), except for the specification of autoregressive dynamics. Within the set of explanatory variables in (2), ΔPE_{it-1} is replaced either by ΔSE_{it-1} or ΔNSE_{it-1} .

3.4 Modelling political influence

The augmentation of the basic error correction mechanism with covariates z_{it} allows to quantify how short-run adjustments of spending categories respond to exogenous variables that describe the political context in which spending decisions are taken. Political variables included in z_{it} are the coalition ideology, information on the electoral cycle, the polarization of the party system, and the number of parties that participate in the government coalition.²³ In addition, it is likely that spending decisions taken by the gov-

²²Deterministic terms included in (1) and (2) are not jointly identified. We consider general deterministic patterns which can be estimated in two steps (OLS applied to (1) and panel GLS applied to (2)) to filter out ‘observable’ heterogeneity in a flexible, data driven manner.

²³To test whether changes in government ideology (IDEO) themselves are independent from changes in the economic environment we have performed regressions of the form: $z_t = c_0 + w_t c_1 + u_t$, where u_t is an error term, $z_t = IDEO_t - IDEO_{t-1}$ is the change of government ideology in an election year

ernment respond to domestic macroeconomic, fiscal and demographic developments. In this respect, it is noticeable that left- and right-wing governments might differ in their adoption of policy measures in response to socio-economic conditions. For instance, after particularly strong accelerations of the unemployment rate, right-wing governments might be more tempted to reduce unemployment benefits than their left-wing counterparts. In addition, policy responses to changes in economic conditions are likely asymmetric. For instance, after particularly strong decelerations of the unemployment rate, one may hardly expect any policy response that results in adjustments of public spending. To allow for asymmetric policy responses to changing socio-economic performance, we include interaction effects of coalition ideology with short-run fluctuations of economic performance or of demographic states. Introducing these interaction variables, let $S \in \{\Delta\text{GDP}, \Delta\text{UE}, \Delta\text{P15}, \Delta\text{P65}, \Delta\text{NX}, \Delta\text{TRADE}, \text{SURP}, \text{EC}\}$, denote a particular performance measure, and $I(\cdot)$ an indicator variable. Formalizing interaction with coalition ideology, $IDEO$, we define the following interaction measures

$$\begin{aligned} S_{it}^+ &= IDEO_{it}(S_{it-1} - \bar{S}_i)I(S_{it-1} - \bar{S}_i > 0) \text{ and} \\ S_{it}^- &= -IDEO_{it}(S_{it-1} - \bar{S}_i)I(S_{it-1} - \bar{S}_i < 0), \end{aligned} \quad (3)$$

where \bar{S}_i is used to indicate the cross-section-specific average of the performance indicator S_{it} . According to the definitions in (3), predetermined country-specific and time-specific states (S_{it-1}) are contrasted against the unconditional country-specific level in order to extract states that might deserve particular policy reactions. For instance, one might argue that a positive change of the unemployment rate deserves less political attention if this change is close to the country-specific unconditional performance. Moreover, the definition in (3) allows for asymmetry, as we distinguish extraordinarily large and small realizations of S_{it} in the construction of interaction variables. The latter are multiplied with minus unity to facilitate the interpretation of this effect, noticing that the interaction variable $IDEO_{it}$ is centered and, hence, takes positive (right-wing government) and negative values (left-wing government). In addition to these state-specific interaction effects, we further include interactions of coalition ideology with dummy variables (DEBT90, D07) in \mathbf{z}_{it} .

3.5 Estimation

We follow a two-step approach for the implementation of ECMs. In the first step, country-specific long-run relations for PE are determined by means of static OLS regressions. We refrain from documenting single-country estimates or respective inferential diagnostics in light of potential small sample ($T = 34$) biases. Rather, estimation results are provided at the so-called mean group level (Pesaran and Smith 1995). In a second step, residuals from static regressions are used to establish OLS and GLS estimation of the panel of single equation ECMs. While most provided model diagnostics are common, we also provide

and w_t is a (contemporaneous or lagged) indicator of economic performance (growth rates of: GDP, UE, TRADE, NX, SURP). We find that changes in none of our economic indicators are predictors of changes in government ideology (the results are in the supplementary material). Finally, notice that 76% of the elections are regular elections such that endogeneity in the timing of elections should be no issue.

a specific diagnostic of the models explanatory content that is traced back to single covariates. For a given covariate x_{itk} this statistic measures the percentage contribution of its partial R^2 to the partial R^2 summed over all covariates included in the model. Although the model in (2) appears to be flawed by country specific parameters, $\nu_i, \delta_i, \alpha_i$ and $\phi_i, i = 1, \dots, N$, we achieve a parsimonious representation by specifying all dummy parameters with reference to the US benchmark economy, and apply general-to-specific model selection to detect significant deviations from the benchmark. Further comments on the estimation strategy, descriptive statistics and diagnostic evidence on nonstationarity and cointegration are provided in the supplementary material. The supplementary material also comprises estimation results contrasting the policy augmented panel ECM with standard panel ECM models, and further estimates of country specific parameters of the model in 2. In light of diagnosed panel cointegration the adopted panel ECM is flexible and fully in line stylized long- and short run characteristics of public expenditure categories.

4 The determinants of redistribution through social spending

4.1 Long-run evolution of public expenditure

While our model in (1) allows for country-specific long-run equilibrium relationships of PE, as a consequence of multicollinearity, it might occur that country-specific regressions of stochastically trending level variables do not uncover well distinguished marginal effects to the employed trending variables (GDP, UN, DR and the linear trend). Therefore, we comment on the marginal effects of these variables only at the mean-group level. Table 3 displays mean-group estimates of the long-run parameters with the corresponding t -ratios. We find that a one percent increase in GDP increases PE by almost 0.5%. Furthermore, a deterministic trend increases PE by around 0.4% per year, which, however, at the mean-group level lacks significance. We also find that a one percentage point increase in the unemployment rate increases PE by one percent, and that a 0.2 percentage point increase in the dependency rate (which corresponds to a bit more than the maximum yearly increase observed in our data) decreases PE by around 0.34%. While this result is surprising at the first sight, we must take into account that the constant process of population ageing observed in advanced economies over the last decades cannot be disentangled from the trend variable such that both effects should be interpreted together. Finally, a particular important effect can be diagnosed for the level of public expenditures during the (ongoing) financial and sovereign debt crises. The coefficient of the time dummy variable $D07$ is significant and implies that, ceteris paribus, public expenditures are, on average, about 8.5% higher during the crisis period. This considerable shift is perhaps best understood against the background of measures undertaken to stabilize the banking/financial sector in several major economies.

Insert Table 3 about here.

Since all time series entering the static OLS regressions are integrated of order one, mean-group diagnostics support the existence of a stable long-run relation. In light of results in Phillips and Moon (1999) one can argue that (at the panel level) MG estimates and t -ratios are suitably immunized against effects of single equation spurious regressions. In summary, the flexible (i.e., country-specific) model representation in (1) allows to figure out important similarities in the international shape of public expenditures.

4.2 The role of macroeconomic and fiscal performance and demography in adjusting public expenditures

Table 4 documents parameter estimates and diagnostics assessing the impact of macroeconomic, fiscal and demographic conditions on growth patterns of the distinguished expenditure categories. Noticing that the empirical models also comprise interaction effects of state variables and the ideological position of the government, the estimation results in the upper panel *Economic effects* of Table 4 are representative for a ‘central’ ideological position ($IDEO_{it} = 0$ and, thus, interactions cancel out). Hence, to assess the overall impact of macroeconomic, fiscal and demographic conditions on growth of public spending, it is important to take eventual interaction effects with the ideology measure into account.²⁴

For several variables included in z_{it} we find marginal impacts on short-run adjustment patterns of PE that accord with a-priori economic reasoning under the condition of a ‘central’, ideological position of the government ($IDEO_{it} = 0$). As macroeconomic performance indicators, GDP growth and changes of the unemployment rate invoke upward adjustments of PE which, however, lack significance. Indicating the importance of demographic patterns, lagged positive changes of the population shares of both the young ($\Delta P15$) and the elderly ($\Delta P65$) induce significant upward adjustments of public spending. Hence, demographic changes are not only important in explaining long-run trends but also short-run adjustments of public spending. Ceteris paribus, lagged upward adjustments of external positions (ΔNX) go along with insignificantly reduced growth of PE. The estimated effects of budget surpluses and states of excessive debt (exceeding 90% of GDP) on growth of PE are both significant. As it could be expected, PE growth shrinks (increases) in response to lagged deficits (surpluses). States of particularly high government debt invoke downward adjustments of PE. Interestingly, significance of the parameter attached to the dummy variable $D07$ shows that growth rates of PE have adjusted upwards in the context of the (ongoing) financial and government debt crises. Joint with results describing the long-run (level) effect of this variable, this indicates that fiscal measures undertaken to stabilize the financial sector and to stimulate the economy have required repeated upward expenditure adjustments.

Insert Table 4 about here.

Apart from parameter estimates and indicators of statistical significance, the results in Table 4 are also informative on the ‘economic’ significance of the employed covariates,

²⁴Estimating the panel models without including interaction effects in z_{it} obtains results that are quantitatively similar to those reported in the upper panel of Table 4.

i.e., their marginal contribution to the overall explanatory content of the model. As it turns out, among the variables in z_{it} that contribute most to the sum over variable specific partial R^2 statistics are lags of budget surplus (5.66%), the crisis indicator (2.61%), and excess levels of public debt (2.29%).

Separating expenditure categories SE and NSE, shows that both categories respond to all conditioning variables in z_{it} in a comparable manner (and magnitude) as discussed for PE growth. Two out of nine marginal effects estimated for growth in SE and NSE differ, however, significantly, as can be seen in the rightmost column of Table 4 (labelled ‘ $\Delta SE - \Delta NSE$ ’). Firstly, ceteris paribus, social expenditure increases significantly after an increase of the population share of the elderly ($\Delta P65$), while the respective growth rate for NSE is insignificantly negative. The stronger impact of changes in P65 on SE reflects that particular expenditure types included in SE (e.g., ‘health care’ or ‘old age’) are more important for ageing economies. Secondly, during the financial and sovereign debt crisis ($D07$) growth of NSE is significantly in excess of SE growth. This result indicates that in the sequel of economic downturn, the stabilization of the financial sector has seen higher allocations of financial means in NSE rather than SE categories.

4.3 Political determinants of redistributive spending

We respond to the first of our research questions (Q1) by means of analysing the marginal impacts of political variables on adjustments of public expenditure categories. Respective regression results are documented in the second panel of Table 4 (*Political effects*). On average, irrespective of the considered spending category, we find that the level of polarization of the political party system, and the ideological position of the government do not exert marginal influences on growth of public spending. Related cross-section studies focusing on developed economies also find that legislative polarization has no statistically significant effect on fiscal outcomes (Volkerink and De Haan 2001, Elgie and McMenamin 2008). Furthermore, Persson et al. (2007) have shown that the polarization of the party system is closely related to electoral rules which are captured in our study by country-specific fixed effects. Therefore, cross-country differences in the polarization of the party system are not fully captured by POLA which also explains the insignificance of this variable. For a full assessment of the impact of ideological positions on government spending, the coefficient estimate in the second panel of Table 4 is of limited value, however, given that the empirical models comprise interactions among state variables and ideology which are displayed in the third and fourth panel of Table 4. Hence, the effect of ideology on public spending patterns will be further discussed below.

With regard to growth of total public spending, electoral cycles are prevalent with 10% significance. Before elections, public expenditures see, on average, additional growth of 0.6%. As it turns out, electoral cycles have more and significant explanatory content for SE growth (1.42% of aggregated partial R^2) in comparison with NSE growth (0.26%). Hence, the effect of electoral cycles is redistributive, and might reflect that income redistribution is an important issue in political campaigns during election periods.

Finally, the influence of the number of government coalition partners on PE growth is significantly negative. While the explanatory content (0.67%) of this effect is rather small, it is noteworthy that it is well in line with theoretical arguments put forth by

Tsebilis (1995, 2002). *Ceteris paribus*, the number of veto players (coalition partners) exerts a stabilizing, i.e. negative, effect on the PE growth. For both considered categories of public spending, however, the significance of veto-player effects vanishes.

4.4 Party response to macroeconomic, fiscal and demographic changes

The preceding discussion has highlighted that macroeconomic, fiscal and demographic patterns are important to explain transitory adjustments of public budgets. In addition, the ideological position of the government appeared inessential in shaping growth rates of public expenditure and its categories. Emphasizing interaction effects, henceforth, we analyse if left-wing or right-wing governments differ in their policy response to macroeconomic, fiscal and demographic changes. We respond to the second of our research questions (Q2) by analysing the results in the first two columns (ΔPE) of the third panel of Table 4 (*Economic interaction effects*) that documents estimated effects of governmental ideology interacted with socio-economic and political variables.

As indicated by the significance of numerous parameter estimates, the ideological position of coalitions is of core importance to understand policy responses to macroeconomic, fiscal and demographic changes. Moreover, the asymmetric policy response that is implied by the specification of interaction variables, is fully supported by the data. For instance, above (below) average changes of GDP, UE and P65 invoke significantly (insignificantly) distinct policy responses of left-wing and right-wing governments.

We find that left-wing governments raise PE more than their right-wing counterparts after periods of above average changes of GDP, UE or P65. This indicates that, in recent periods, ideologically motivated adjustments in the size of the public sector (e.g., Cameron 1978, Alesina 1987, Hibbs 1977, Cusack 1997) depend on the underlying socio-economic conditions. The parameter estimates for the external position (NX^+ and NX^- interacted with ideology) imply that left-wing (right-wing) governments show highest (smallest) growth rates of public expenditures in situations where current balance changes are above and below their country-specific average. To explain this finding from the perspective of right-wing governments, we have that both excess export growth and excess import growth invoke upward adjustment of public expenditures. These implications might be rationalized by presuming that right-wing governments either condition the growth of the public sector on successful economic performance on international markets (in case of an improvement of the current account), or on perceived needs to improve the competitiveness of domestic firms (in case of a deterioration of the current account).

Interacting governmental ideology with fiscal variables or the indicators of the financial crises (SURP, DEBT90, D07) lacks distinctive policy responses on growth of PE. Given the result for governments with a ‘central’ ideological position ($IDEO_{it} = 0$), insignificance of interaction patterns suggests that, in periods of fiscal stress or debt crises, the scope of ideologically motivated spending programs or budget consolidation is limited.

Positive deviations from the equilibrium between PE and its long-term determinants might be seen to indicate an oversized public sector. In the framework of the adopted ECM such deviations are expected to invoke stabilizing, i.e., downward adjustments of public expenditures. Interacting lagged periods of overspending with ideological positions,

shows that policy responses of right-wing governments spur the adjustment towards equilibrium significantly which is in line with the results from Cameron (1978) and Cussack (1997), for example. Remarkably, among all interaction terms this effect shows highest marginal explanatory content (2.14% of the aggregated sum of partial R^2). Moreover, it is worthwhile noticing that a public sector sized below its perceived equilibrium does not invoke ideologically distinguished policy responses.

Finally, the interaction of ideological positions with other political variables is found to be positively significant for polarization (with 10% significance), negatively significant for election years and insignificant for the number of partners in coalition. All these effects, however, contribute only marginally to the explanation of PE growth (in total 0.68% of the aggregated sum of the partial R^2).

4.5 Redistributive effects of ideological government positions

The preceding discussions allow, in particular, two conclusions with regard to the effect of ideological government positions. Firstly, coalition ideology lacks a direct impact on short-term adjustments of PE and its categories (SE and NSE). Secondly, the ideological position of coalitions is important to explain growth patterns of public expenditure under varying macroeconomic, fiscal or demographic conditions. From these findings it is of immediate interest to analyse if redistributive effects of ideological government positions are also channelled through varying macroeconomic, fiscal or demographic situations, i.e., our third research question (Q3). The rightmost column ($\Delta SE - \Delta NSE$) in the third panel (*Economic interaction effects*) of Table 4 provides parameter differentials and respective t -ratios for interaction effects quantified for SE vs. NSE growth. Out of 21 parameter differentials six are nonzero (three with 5% and three with 10% significance), indicating redistributive effects of government ideology.

In the first place, above average changes of GDP growth invoke distinguished policy responses of left-wing and right-wing governments on SE and NSE growth. While above average GDP growth is not important for adjustments of SE, this effect is channelled through distinguished responses of NSE growth to GDP growth. Estimation results imply that, as opposed to their left-wing counterparts, right-wing governments mute NSE growth after favourable economic performance. For above average changes of GDP growth (ΔGPD^+) policy responses on SE and NSE from left-wing and right-wing governments differ with 5% significance.

Secondly, after large reductions of the young generation's share in total population ($\Delta P15^-$) left-wing governments tend to increase social spending, while right-wing governments foster expenditures in the categories of NSE. To explain this result, it appears that coping with such unfavourable demographic trends, left-wing governments might opt for more spending in, e.g., family programs, while their right-wing counterparts might put more focus on improved education. Although the difference between estimated parameters of interaction effects is significant in statistical terms, it is important to notice that the described effect has only limited content to explain the growth of expenditure categories (respective contributions to the overall sum of partial degrees of explanation are at most 0.22%).

In the third place, while coping with large upward changes of the population share of

the elderly lacks redistributive characteristics, below average changes of this population share ($\Delta PE65^-$) invoke ideology dependent adjustments of SE versus NSE growth. As can be expected, this effect comes mainly from distinguished government responses to such changes in SE, where spending programs targeted to the elderly are particularly important.²⁵

Fourthly, responding to changes of the external position, the ideological position of the government matters for adjustments of SE and NSE spending. Our estimation results indicate that after a deterioration of the current account balance (ΔNX^-), right-wing governments increase spending in NSE and mute the growth of SE. Hence, the policy reaction might be explained by the notion that marked negative changes of the external position are perceived as an indication of weak competitiveness of domestic firms on international markets. To this perception right-wing governments react more strongly than their left-wing counterparts, to foster competitiveness on international markets. Apparently, policy instruments that are in line with this objective (e.g., improvements of infrastructure, enhancement of productivity by means of better education) are among NSE spending categories. Similarly, the muting of SE might contribute to an enhancement of international competitiveness (e.g., reductions of contributions of firms to social security systems).

In the fifth place, we find that the above mentioned strong response of right-wing governments to an oversized public sector (i.e., large positive deviations of PE from its long-term determinants (EC^+)) is channelled through adjustments of NSE growth. To explain this result, we notice that budget cuts are likely less subjected to social conflict, if respective policy measures fall into NSE instead of SE spending categories.

Finally, the above mentioned positive effect of polarization ($POLA$) on the growth of public spending under right-wing governments is mainly due to policy measures financed by means of NSE categories. This is not surprising, since, on the one hand, these spending categories are more heterogeneous and, therefore, spending on them allows a better matching when voter preferences (and party systems) are highly polarized. On the other hand, NSE categories are closer to the core interests of right-wing partisans.

4.6 A global perspective on the redistribute effects of ideological government positions

The preceding discussions have unravelled important marginal effects of ideological government positions on distinguished spending in SE and NSE categories. While we referred to some particular economic and demographic scenarios to reflect favourable or unfavourable macroeconomic and demographic performance, yet, a joint assessment of these often simultaneous developments is warranted. To provide a global assessment on redistribute effects of ideological government positions, we a-priori consider the following states to (jointly) indicate favourable socio-economic performance: ΔGDP^+ , ΔUE^- , $\Delta P15^+$, $\Delta P65^-$, ΔNX^+ , $\Delta TRADE^+$ and $SURP^+$. At the opposite, ΔGDP^- , ΔUE^+ , $\Delta P15^-$, $\Delta P65^+$, ΔNX^- , $\Delta TRADE^-$, $SURP^-$ and $DEBT90$ are (jointly) considered un-

²⁵Notice also that $\Delta PE65^- \times IDEO$ has a significantly positive impact for SE, while for NSE the marginal effect of the interaction does not show statistical significance.

favourable. Moreover, we consider positive (EC^+) and negative (EC^-) violations of the equilibrium among PE and its long-run determinants. Noticing that the former might signal an oversized public sector, EC^+ is classified among the unfavourable performance criteria. Hence, a negative impact direction (see, e.g., the effect of EC^+ on ΔSE documented in Table 5) implies that in comparison with left-wing coalitions, right-wing coalitions reduce public spending in a way that the adjustment towards the long-run equilibrium is faster.²⁶ With these distinctions at hand, Table 5 documents the state dependent directions of expenditure growth triggered by the ideological position of the government (coalition).

Insert Table 5 about here.

Interestingly, once it is accounted for states of favourable and unfavourable conditions, the documented effects of government ideology appear to point into a dominating direction. Although not all single effects are significant (see Table 4), it is worth to assess their joint (i.e. aggregate) contribution to the explanatory content of the policy augmented ECM. Marginal explanatory contents of single effects aggregated according to impact directions are shown in the bottom lines of Table 5. Apart from highlight significance of single parameter estimates, we also provide F -statistics on joint significance of these directional impacts (see bottom lines of Table 5).

Conditional on favourable socio-economic performance, the directional patterns and aggregates of partial R^2 statistics displayed in Table 5 exhibit a striking asymmetry. By implication, favourable socio-economic performance can be considered as a prerequisite for right-wing governments to raise SE (see column 1 in Table 5). In the same time, these governments tend to reduce, *ceteris paribus*, spending in NSE categories in response to favourable socio-economic performance (see column 3 in Table 5). In terms of explanatory content, it turns out that the second effect is of particular importance, while the first effect is significant according to the respective F -test. In summary, under favourable economic conditions, right-wing policies have more progressively redistributive effects than left-wing policies. Under unfavourable states of socio-economic performance, right-wing coalitions are more willing to reduce SE, while in the same time NSE categories receive more attention in comparison with their left-wing counterparts (see columns 2 and 4, respectively, in Table 5). Both effects share a comparable overall contribution to the explanatory content of the empirical models. Joint parameter significance, however, might be interpreted in a way to put emphasis on right-wing government's willingness to reduce SE (p -value of almost zero) rather than to spur NSE (p -value of .032). Moreover, in comparison with conditioning on favourable socio-economic conditions, unfavourable conditions offer markedly more explanatory content of the empirical models. Similarly, three (two) out of four F -statistics are significant conditional on the consideration of unfavorable (favourable) socio-economic conditions. In summary, under unfavourable economic conditions left-wing governments act more progressively redistributive than right-wing governments. Comparing the opposing effects diagnosed after conditioning on socio-economic performance, the progressively redistributive effect of left-wing policies (under unfavourable

²⁶To facilitate the model interpretation the effect of EC is multiplied by minus unity, since the EC parameter α_i in (2) is required to be negative for model stability.

socio-economic performance) is diagnosed stronger than its right-wing induced counterpart (favourable socio-economic performance) in terms of explanatory content provided by the panel ECM models.

5 Conclusions

Ongoing processes of liberalization of international goods and capital markets, typically summarized under the notion of globalization, affect the opportunities to redistribute income and welfare according to the ideological positions of the political parties in government. In the last decades, taxation as a classical means of redistribution has lost effectiveness. Against this background, public spending has come into the focus of political parties as a means to realize distributional outcomes which are in line with their partisan interests. For a panel of 21 OECD economies and the time period 1980-2013 we adopt flexible panel error correction models to analyse if party ideology contributes actively to the sizing of the public sector and, more importantly, if party ideology shapes redistributive outcomes that result from the distinction of ‘social’ versus ‘non-social’ expenditures.

Apart from diagnosing significant electoral cycles of public spending, our results largely confirm recent evidence that - unconditionally - ideological positions of political parties hardly explain the growth of the public sector. In light of particular demographic trends, and stances of fiscal or macroeconomic performance, however, the expansion or consolidation of the public sector reflects ideological positions. In addition, as left-wing and right-wing governments differ in their prioritization of expansion versus consolidation of ‘social’ and ‘non-social’ expenditure categories, public spending turns out to be redistributive. Spending patterns of both left-wing and right-wing governments are progressively redistributive. While left-wing governments act redistributive in response to disadvantageous demographic trends, and unfavourable stances of fiscal or macroeconomic performance, right-wing governments do so in response to more favourable conditions.

With regard to macroeconomic and fiscal conditions, the diagnosed response patterns could imply a sequel of regressive and progressive distribution outcomes over the business cycle. Jointly with states of welfare distribution, the states of the business cycle are important determinants of electoral outcomes. As an issue for future research one might address if ideology matters for distributional outcomes in the long term. For such an analysis, the joint endogeneity of political and business cycles deserves particular consideration. Spatial disaggregation opens a further direction for future research. In such a framework, it is of interest in how far the interplay of central state government ideology with patterns of competition of local and regional parties further bound the scope of ideologically motivated redistributive spending at the level of districts or federal states. Finally, refining public spending categories in the vein of Shelton (2007) and Brender and Drazen (2013) might allow to unravel further differences in public spending categories that ground in motives of government ideology.

References

- Abbas SMA., Belhocine N., ElGanainy AA., Horton MA. 2010. A historical public debt database. *IMF Working Paper* WP/10/245. Washington, DC.
- Adema W., Fron P., Ladaique M. 2011. Is the European Welfare State Really More Expensive?: Indicators on Social Spending, 1980-2012; and a Manual to the OECD Social Expenditure Database (SOCX). OECD Social, Employment and Migration Working Papers, No. 124. Paris: OECD.
- Afonso A., Schuknecht L., Tanzi V. 2010. Income distribution determinants and public spending efficiency. *Journal of Economic Inequality* **8**: 367-389.
- Alesina A. 1987. Macroeconomic policy in a two-party system as a repeated game. *Quarterly journal of Economics* **102**: 651-678.
- Alesina A. Baqir R., Easterly W. 1999. Public goods and ethnic divisions. *Quarterly Journal of Economics* **114**: 1214-1284.
- Alesina A., Roubini N., Cohen GD. 1997. *Political Cycles and the Macroeconomy*. Cambridge: The MIT Press.
- Atta-Darkua V., Barnard A. 2010. Distributional Effects of Direct Taxes and Social Transfers (Cash Benefits). In: Atkinson A., Malier B. (Eds.) *Income and Living Conditions in Europe*. Brussels: European Union.
- Azzimonti M. 2011. Barriers to investment in polarized societies. *American Economic Review* **101**: 2182-2204.
- Bakker R., de Vries C., Edwards E., Hooghe L., Jolly S., Marks G., Polk J., Rovny J., Steenbergen M. and Vachudova M. 2012. Measuring Party Positions in Europe: the Chapel Hill Expert Survey Trend File, 1999-2010. *Party Politics* **21**: 143-152.
- Bastagli F., Coady D., Gupta S. 2012. Income inequality and fiscal policy. *IMF Staff Discussion Note*. SDN/12/08.
- Bénassy-Quéré A., Goyalraja N., Trannoy A. 2007. Tax and public input competition. *Economic Policy* **50**: 385-430.
- Benoit K., Laver M. 2006. *Party Policy in Modern Democracies*. New York: Routledge.
- Bowler S., Donovan T., Karp JA. 2006. Why politicians like electoral institutions: self-interest, values, or ideology? *The Journal of Politics* **68**: 434-446.
- Bradley D., Huber E., Moller S., Nielsen F., Stephens JD. 2003. Distribution and redistribution in postindustrial democracies. *World Politics* **55**: 193-228.
- Brandolini A., Smeeding T. 2009. Income Inequality in Richer and OECD Countries. In: Salverda W., Nolan B., Smeeding . (Eds.) *The Oxford Handbook of Economic Inequality*. Oxford: Oxford University Press.

- Bräuninger T. 2005. A partisan model of government expenditure. *Public Choice* **125**: 409-429.
- Brender A., Drazen A. 2005. Political budget cycles in new versus established democracies. *Journal of Monetary Economics* **52**: 1271-1295.
- Brender A., Drazen A. 2013. Elections, leaders, and the composition of government spending. *Journal of Public Economics* **97**: 18-31.
- Cameron DR. 1978. The expansion of the public economy: a comparative analysis. *The American Political Science Review* **72**: 1243-1261.
- Castles FG., Mair P. 1984. Left-Right Political Scales: Some Expert Judgments. *European Journal of Political Research* **12**: 73-88.
- Chengrui X. 2014. *The international corporate competition: how do countries interact with each other*. PhD Dissertation. University of Oklahoma.
- CHESS 2010. Chapel Hill expert survey series (CHESS). Accessible at: <http://chesdata.eu/>
- Corneo G., Neher F. 2015. Democratic redistribution and the rule of majority. *European Journal of Political Economy* **40**: 96-109.
- Cusack TR. 1997. Partisan politics and public finance: changes in public spending in the industrialized democracies, 1955-1989. *Public Choice* **91**: 375-395.
- Cusack TR., Beramendi P. 2006. Taxing Work. *European Journal of Political Research* **45**: 43-73.
- De Donder P., Hindriks J. 2007. Equilibrium social insurance with policy-motivated parties. *European Journal of Political Economy* **23**: 624-640.
- Döring H., Manow P. 2011. *ParlGov Database*. Retrieved March 2, 2013. Accessible at: <http://parlgov.org/stable/index.html>
- Drazen A., Eslava M. 2010. Electoral manipulation via voter-friendly spending: theory and evidence. *Journal of Development Economics* **92**: 39-52.
- Dreher A., Sturm J-E., Ursprung HW. 2008. The impact of globalization on the composition of government expenditure: evidence from panel data. *Public Choice* **134**: 263-292.
- Elgie R., McMenamin I. 2008. Political fragmentation, fiscal deficits and political institutionalism. *Public Choice* **136**: 255-267.
- Esteban J-M., Ray D. 1994. On the measurement of polarization. *Econometrica* **62**: 819-851.
- EUROSTAT. 2015. Eurostat Database. Retrieved March 25, 2015. Accessible at: <http://ec.europa.eu/eurostat/data/database>

- EWI. 2015. Recent public expenditure items worldwide 1980-2013. Retrieved March 19, 2015. Accessible at: <http://www.economicswebinstitute.org/ecdata.htm>
- Folke O. 2014. Shades of brown and green: party effects in proportional election systems. *Journal of the European Economic Association* **12**: 1361-1395.
- Franzese R. 2000. Electoral and partisan manipulation of public debt in developed democracies, 1956-1990. In: Strauch R., von Hagen J. (Eds.). *Institutions, Politics and Fiscal Policy*. Dordrecht: Kluwer Academic Press.
- Funk P., Gathmann C. 2013. Voter preferences, direct democracy and government spending. *European Journal of Political Economy* **32**: 300-319.
- Galli E. 2002. Tax progressivity and economic and political determinants: an empirical analysis for the OECD countries. Pavia: University of Pavia.
- Gemmell N., Kneller R., Sanz I. 2008. Foreign investment, international trade and the size and structure of public expenditures. *European Journal of Political Economy* **24**: 151-71.
- Gerber ER., Hopkins DJ. 2011. When mayors matter: estimating the impact of mayoral partisanship on city policy. *American Journal of Political Science* **55**: 326-339.
- Herwartz H., Theilen B. 2014a. Partisan influence on social spending under market integration, fiscal pressure and institutional change. *European Journal of Political Economy* **34**: 409-424.
- Herwartz H., Theilen B. 2014b. Health care and ideology: A reconsideration of political determinants of public healthcare funding in the OECD. *Health Economics*, **23**: 225-240.
- Hibbs Jr. DA. 1977. Political parties and macroeconomic policy. *American Political Science Review* **71**: 1467-1487.
- Hibbs Jr. DA. 1987. *The Political Economy of Industrial Democracies*. Cambridge: Harvard University Press.
- Hicks AM., Swank DH. 1992. Politics, institutions, and welfare spending in industrialized democracies, 1960-1982. *American Political Science Review* **86**: 658-74.
- Huber J., Inglehart R. 2995. Expert Interpretations of Party Space and Party Locations in 42 Societies. *Party Politics* **1**: 73-111.
- IMF. 2012. *Historical Public Debt Database*. Retrieved March 14, 2013. Accessible at: <http://www.imf.org/external/pubs/cat/longres.cfm?sk=24332.0>
- Iversen T. 2001. The dynamics of the welfare state expansion: trade openness, de-industrialization, and partisan politics. In: Pierson P. (Ed.). *The New Politics of the Welfare State* (pp. 45-79). Oxford: Oxford University Press.

- Jensen C. 2011. Capitalist systems, de-industrialization, and the politics of public education. *Comparative Political Studies* **44**: 412-435.
- Katsimi M., Sarantidis V. 2012. Do elections affect the composition of fiscal policy in developed, established democracies? *Public Choice* **151**: 325-362.
- Kittel B., Obinger H. 2003. Political parties, institutions, and the dynamics of social expenditure in times of austerity. *Journal of European Public Policy* **10**: 20-45.
- Lee DS., Moretti E., Butler M. 2004. Do voters affect or elect policies? Evidence from the U.S. House. *Quarterly Journal of Economics* **119**: 807-859.
- Meltzer A., Richard S. 1981. A rational theory of the size of government. *Journal of Political Economy* **89**: 914-27.
- Meltzer A., Richard S. 1983. Tests of a rational theory of the size of government. *Public Choice* **41**: 403-418.
- Nordhaus WD. 1975. The political business cycle. *Review of Economic Studies* **42**: 169-90.
- OECD. 2008. *Growing unequal? Income distribution and poverty in OECD countries*. Paris: OECD.
- OECD. 2011. *Divided we stand: Why inequality keeps rising*. Paris: OECD.
- OECD. 2015a. *Health Database*. Retrieved April 7, 2015. Accessible at: http://stats.oecd.org/Index.aspx?DatasetCode=HEALTH_STAT
- OECD. 2015b. *The Social Expenditure Database*. Retrieved April 2, 2015. Accessible at: http://stats.oecd.org/viewhtml.aspx?datasetcode=SOEX_AGG&lang=en
- OECD. 2015c. *Main Economic Indicators Database*. Retrieved March 19, 2015. Accessible at: http://stats.oecd.org/index.aspx?DatasetCode=SNA_TABLE12
- Perroti R., Kontopoulos Y. 2002. Fragmented fiscal policy. *Journal of Public Economics* **86**: 191-222.
- Persson T., Tabellini G. 2000. *Political Economics. Explaining Economic Policy*. Cambridge: The MIT Press.
- Persson T., Roland, G. Tabellini G. 2007. Electoral rules and government spending in parliamentary democracies. *Quarterly Journal of Political Science* **2**: 155-188.
- Persson T., Tabellini G. 1999. The size and scope of government: comparative government with rational politicians. *European Economic review* **43**: 699-735.
- Pesaran H., Smith R. 1995. Estimating long run relations from dynamic heterogeneous panels. *Journal of Econometrics* **68**: 79-113.

- Peter KS., Buttrick S., Duncan D. 2010. Global reform of personal income taxation, 1981-2005: evidence from 189 countries. *National Tax Journal* **63**: 447-478.
- Petterson-Lidbom P. 2008. Do parties matter for economic outcomes? A regression discontinuity approach. *Journal of the European Economic Association* **6**: 1037-1056.
- Phillips PCB., Moon HR. 1999. Linear regression limit theory for nonstationary panel data. *Econometrica* **67**: 1057-1011.
- Pickering A., Rockey J. 2011. Ideology and the growth of government. *The Review of Economics and Statistics* **93**: 907-919.
- Potrafke N. 2009. Did globalization restrict partisan politics? An empirical evaluation of social expenditure in a panel of OECD countries. *Public Choice* **140**: 105-124.
- Potrafke N. 2010. The growth of public health expenditure in OECD countries: do government ideology and electoral motives matter? *Journal of Health Economics* **29**: 797-810.
- Potrafke N. 2011. Does government ideology influence budget composition? Empirical evidence from OECD countries. *Economics of Governance* **12**: 101-34.
- Reinhart CM., Rogoff KS. 2010a. Growth in a time of debt. *American Economic Review: Papers & Proceedings* **100**: 573-78.
- Reinhart CM., Rogoff KS. 2010b. Growth in a time of debt. *National Bureau of Economic Research Working Paper* 15639. Accessible at: <http://www.nber.org/papers/w15639>
- Rodrik D. 1998. Why do more open economies have bigger governments? *Journal of Political Economy* **106**: 997-1032.
- Rogoff K. 1990. Equilibrium political budget cycles. *American Economic Review* **80**: 21-36.
- Rogoff K., Sibert A. 1988. Elections and macroeconomic policy cycles. *Review of Economic Studies* **55**: 1-16.
- Sanz I., Velazquez FJ. 2007. The role of ageing in the growth of government and social welfare spending. *European Journal of Political Economy* **23**: 917-931.
- Shelton CA. 2007. The size and composition of government expenditure. *Journal of Public Economics* **91**: 2230-2260.
- Swank D., Steinmo S. 2002. The new political economy of taxation in advanced capitalist democracies. *American Journal of Political Science* **46**: 642-655
- Tepe M., Vanhuyse, P. 2009. Are ageing OECD welfare states on the path to gerontocracy? Evidence from 18 democracies, 1980-2002. *Journal of Public Policy* **29**: 1-28.

- Tsebelis G. 1995. Decision making in political systems: veto players in presidentialism, parliamentarism, multicameralism and multipartyism. *British Journal of Political Science* **25**: 289-325.
- Tsebelis G. 2002. *Veto Players: How Political Institutions Work*. Princeton: Princeton University Press.
- Tsebelis G., Chang ECC. 2004. Veto players and the structure of the budget in advanced industrialized countries. *European Journal of Political Research* **43**: 449-476.
- Volkerink B., De Haan JD. 1999. Political and Institutional Determinants of the Tax Mix: An Empirical Investigation for OECD countries. Groningen: University of Groningen.
- Volkerink B., De Haan JD. 2001. Fragmented government effects on fiscal policy: New evidence. *Public Choice* **109**: 221-242.
- Wang C., Caminada K., Goudswaard K. 2012. The redistributive effect of social transfer programs and taxes: A decomposition across countries. *International Social Security Review* **65**: 27-48.
- Wang C., Caminada K., Goudswaard K. 2014. Income redistribution in 20 countries over time. *International Journal of Social Welfare* **23**: 262-275.
- World Bank. 2015. *World Bank Development Indicators*. Retrieved March 21, 2015. Accessible at: <http://databank.worldbank.org/data/home.aspx>
- Yamamura E. 2012. Social capital, household income, and preferences for income redistribution. *European Journal of Political Economy* **28**: 498-511.

Variable	Definition	Measurement	Source
PE	Public Expenditure	Per capita in US dollar and US purchasing power parity in natural logarithms	EWI (2015), EUROSTAT (2015) for values after 2010, OECD (2015c) for AUS, CAN, JPN, NZL, US
SE	Social Expenditure	Per capita in US dollar and US purchasing power parity in natural logarithms	OECD (2015b), Social Expenditure Database
NSE	'Non-social' expenditure	Per capita in US dollar and US purchasing power parity in natural logarithms (NSE = PE - SE)	Own calculations
GDP	Gross Domestic Product	Per capita in US dollar and US purchasing power parity in natural logarithms	OECD (2015a), Health Database
UE	Unemployment rate	Share of unemployed over total labor force	OECD (2015a), Health Database
P15	Ratio of young (< 15) over total population	OECD (2015a), Health Database	Health Database
P65	Ratio of elder (> 65) over total population	OECD (2015a), Health Database	Health Database
DR	Dependency rate	Ratio of young (< 15) and elder (> 65) over total population (DR = P15+P65)	OECD (2015a), Health Database
NX	Net exports	Percentage of GDP	World Bank (2015), World Development Indicators
TRADE	Sum of exports and imports	Percentage of GDP	World Bank (2015), World Development Indicators
SURP	General government surplus	Percentage of GDP	OECD (2015c), Main Economic Indicators Database
DEBT90	Dummy for excessive government debt	One if gross general government debt is above 90% of GDP, zero else	Abbas et al. (2010), IMF (2012), Historical Public Debt Database, OECD (2015c), Main Economic Indicators Database.
D07	Time dummy	One after institutional break in 2007, zero else	Own calculation
EC	Error correction term (Equilibrium error)	Residual of country-specific static regression	Own calculation (see equation (1))

Table 1: Data definitions and sources.

Variable	Definition	Measurement	Source
IDEO	(Unweighted) mean ideology position of the coalition in government	Between -5 (extreme left) and 5 (extreme right positions)	Döring and Manow (2001), Parliament and Government Composition Database (ParGov); Rescaled from the 0–10 scale mean value in left/right dimension with data from Castles and Mair (1983), Huber and Inglehart (1995), Benoit and Laver (2006) and CHESS (2010) with details in Bakker et al. (2012)
ELEC	Election date	Date of election as time share over year in election years, zero in years without elections	Own calculation
POLA	Party polarization index		Own calculations based on data from Döring and Manow (2001), Parliament and Government Composition Database (ParGov) and data (for the US) from Benoit and Laver (2006)
NCP	Number of coalition partners	Integer number	Döring and Manow (2001), Parliament and Government Composition Database (ParGov)

Table 1: Continued. Data definitions and sources.

Var	Min			Max			Mean			Var			σ_{betw}			σ_{with}		
	Min	Max	Mean	σ_{betw}	σ_{with}	Var	Min	Max	Mean	σ_{betw}	σ_{with}	Var	Min	Max	Mean	σ_{betw}	σ_{with}	
PE	9.10	PRT	9.90	LUX	9.49	0.25	0.30	Δ PE	0.002	NZL	0.027	LUX	0.017	0.006	0.038			
SE	7.98	PRT	9.25	LUX	8.67	0.34	0.45	Δ SE	0.015	NLD	0.045	PRT	0.027	0.008	0.033			
NSE	8.40	ESP	9.25	NOR	8.85	0.24	0.29	Δ NSE	-0.020	NZL	0.029	GRC	0.007	0.012	0.051			
GDP	9.80	PRT	10.8	LUX	10.2	0.22	0.30	Δ GDP	0.005	GRC	0.031	IRL	0.016	0.005	0.024			
UE	2.69	LUX	17.1	ESP	7.51	3.17	4.07	Δ UE	-0.071	DNK	0.638	GRC	0.112	0.157	1.108			
DR	31.57	CAN	35.7	IRL	33.5	1.18	1.71	Δ DR	-0.203	IRL	0.164	JPN	-0.032	0.073	0.259			
P65	11.18	IRL	17.5	SWE	14.6	1.86	2.57	Δ P65	0.006	LUX	0.485	JPN	0.148	0.102	0.186			
P15	15.15	GER	24.4	IRL	18.9	2.18	2.99	Δ P15	-0.330	PRT	-0.055	LUX	-0.178	0.084	0.222			
NX	-8.52	GRC	22.8	LUX	2.07	6.37	7.11	Δ NX	-0.125	UK	1.042	IRL	0.178	0.279	1.497			
TRADE	22.55	US	239.2	LUX	73.9	48.5	50.8	Δ TRADE	-0.405	NOR	6.134	LUX	0.996	1.367	5.395			
SURP	-7.77	GRC	8.20	NOR	-2.68	3.39	4.88	DEBT90	0.000	--	0.857	BEL	0.180	0.275	0.384			
IDEO	-0.409	SWE	2.283	JPN	0.503	0.594	1.556	ELEC	0.07	FIN	0.26	NZL	0.16	0.06	0.30			
POLA	0.23	BEL	1.11	US	0.50	0.18	0.19	NCP	1.000	--	4.706	BEL	2.144	1.085	1.271			

Table 2: Descriptive statistics. The panel covers the time period 1980-2013 and consists of 21 economies, Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (GER), Greece (GRC), Ireland (IRL), Italy (ITA), Japan (JPN), Luxembourg (LUX), the Netherlands (NLD), New Zealand (NZL), Norway (NOR), Portugal (PRT), Spain (ESP), Sweden (SWE), the United Kingdom (UK), and the United States (US). With regard to NCP, CAN, ESP and US have the minimum mean of 1. With regard to DEBT90, 10 economies have not experienced levels of debt in excess of 90% of GDP (AUS, AUT, GER, DNK, FIN, NLD, NOR, NZL, LUX and SWE).

	GDP	UE	DR	c	<i>t</i>	<i>D07</i>
MG	0.467* (1.80)	0.999** (2.48)	-1.689* (-1.84)	5.133** (2.47)	0.386 (0.88)	0.085*** (4.68)

Table 3: Mean group estimates of cointegration parameters (MG *t*-ratios in parantheses). UE and DR are in percent, i.e. scaled between 0 and 1. Coefficients of the linear trend have been multiplied with 100. ‘*’ ‘**’ and ‘***’ indicate *t*-ratios (parameter estimates) that are significant at the 10%, 5%, and 1% level, respectively. For notes on the panel composition see Table 2.

	Δ PE		Δ SE		Δ NSE		' Δ SE- Δ NSE'
	$\hat{\phi}$	\overline{R}^2	$\hat{\phi}$	\overline{R}^2	$\hat{\phi}$	\overline{R}^2	$\hat{\phi}_{\Delta SE} - \hat{\phi}_{\Delta NSE}$
	Economic effects						
Δ GDP	0.071 (0.92)	1.03	0.062 (0.88)	0.15	0.243** (2.04)	1.77	-0.181 (-1.30)
Δ UE	0.159 (1.05)	0.34	0.196 (1.46)	0.01	0.597*** (2.58)	2.62	-0.401 (-1.50)
Δ P15	1.141* (1.71)	0.10	1.422** (2.34)	0.87	1.433 (1.28)	0.02	-0.011 (-0.01)
Δ P65	2.138*** (2.73)	0.85	3.137*** (4.12)	4.61	-0.717 (-0.59)	0.35	3.854*** (2.69)
Δ NX	-0.137 (-1.60)	0.77	-0.225*** (-2.68)	1.98	-0.357*** (-2.64)	2.20	0.132 (0.83)
Δ TRADE	-0.031 (-1.26)	0.40	-0.053*** (-2.60)	0.99	-0.056 (-1.44)	1.40	0.004 (0.09)
SURP	0.231*** (6.00)	5.66	0.249*** (7.51)	9.63	0.354*** (6.05)	11.3	-0.105 (-1.56)
DEBT90	-0.018*** (-3.82)	2.29	-0.009** (-2.36)	0.40	-0.015** (-2.33)	1.83	0.006 (0.78)
D07	0.015*** (3.86)	2.62	0.012*** (3.41)	1.56	0.026*** (4.19)	2.72	-0.014** (-1.99)
	Political effects (coefficients multiplied with 100)						
IDEO	-0.113 (-0.36)	0.063	-0.211 (-0.67)	0.392	-0.629 (-1.25)	1.413	0.418 (0.71)
ELEC	0.568* (1.69)	0.522	0.648** (2.11)	1.422	0.632 (1.13)	0.261	0.016 (0.03)
POLA	-0.004 (-0.01)	0.007	0.118 (0.17)	0.017	0.517 (0.49)	0.173	-0.399 (-0.31)
NCP	-0.337** (-2.54)	0.671	-0.054 (-0.42)	0.340	-0.150 (-0.78)	0.009	0.096 (0.42)

Table 4: Estimation results for socio-economic and political variables (t -ratios in parentheses). Conditioning variables listed in the upper panel are predetermined, i.e. lagged by one year. ‘*’ ‘**’ and ‘***’ indicate parameter estimates that are significant at the 10%, 5%, and 1% level, respectively. The column ‘ \overline{R}^2 ’, documents in percentage points the contribution of fixed effects, linear trends, error correction and autoregressive dynamics (aggregated over all economies) to the partial degrees of explanation summed over all employed explanatory variables. Further estimation results for this regression model (fixed effects, trends, autoregressive and error correction parameters are documented in the supplementary material (lower panel of supplement Table 1 and Table 2).

	Δ PE		Δ SE		Δ NSE		' Δ SE- Δ NSE'
	$\hat{\phi}$	\bar{R}^2	$\hat{\phi}$	\bar{R}^2	$\hat{\phi}$	\bar{R}^2	$\hat{\phi}_{\Delta SE} - \hat{\phi}_{\Delta NSE}$
Economic interaction effects $S \times IDEO$							
$\Delta GDP^+ \times IDEO$	-0.170** (-2.16)	0.671	0.003 (0.04)	0.022	-0.296** (-2.29)	1.393	0.300** (1.98)
$\Delta GDP^- \times IDEO$	0.097 (1.38)	0.424	0.135** (1.98)	0.878	0.101 (0.88)	0.425	0.034 (0.25)
$\Delta UE^+ \times IDEO$	-0.338** (-2.41)	0.637	-0.440*** (-3.31)	2.410	-0.192 (-0.88)	0.177	-0.247 (-0.96)
$\Delta UE^- \times IDEO$	0.108 (0.82)	0.026	-0.025 (-0.19)	0.291	0.088 (0.40)	0.122	-0.113 (-0.44)
$\Delta P15^+ \times IDEO$	-0.614 (-0.93)	0.133	-0.492 (-0.80)	0.013	-0.466 (-0.42)	0.058	-0.026 (-0.02)
$\Delta P15^- \times IDEO$	-0.170 (-0.21)	0.207	-1.123 (-1.45)	0.144	1.835 (1.41)	0.223	-2.958* (-1.95)
$\Delta P65^+ \times IDEO$	-2.395** (-2.57)	0.264	-1.534 (-1.55)	0.252	-2.458 (-1.57)	0.141	0.924 (0.50)
$\Delta P65^- \times IDEO$	1.117 (1.28)	0.715	3.185*** (3.13)	2.761	-0.126 (-0.08)	0.081	3.310* (1.80)
$\Delta NX^+ \times IDEO$	0.181* (1.94)	0.815	0.086 (0.88)	0.540	-0.005 (-0.03)	0.033	0.091 (0.53)
$\Delta NX^- \times IDEO$	0.153* (1.72)	1.560	-0.141 (-1.35)	0.063	0.245 (1.55)	1.608	-0.385** (-2.04)
$\Delta TRADE^+ \times IDEO$	-0.027 (-0.86)	0.041	0.003 (0.09)	0.011	-0.006 (-0.12)	0.004	0.009 (0.15)
$\Delta TRADE^- \times IDEO$	-0.002 (-0.08)	0.001	-0.022 (-0.78)	0.154	-0.028 (-0.61)	0.093	0.006 (0.11)
$SURP^+ \times IDEO$	0.000 (-0.01)	0.030	0.040 (1.08)	0.225	-0.005 (-0.09)	0.001	0.044 (0.67)
$SURP^- \times IDEO$	0.064 (1.50)	0.073	0.060 (1.53)	0.251	0.150** (2.19)	1.852	-0.090 (-1.14)
$DEBT90 \times IDEO$	0.002 (0.87)	0.564	-0.004* (-1.92)	0.583	-0.001 (-0.15)	0.204	-0.003 (-0.79)
$D07 \times IDEO$	-0.002 (-1.50)	0.360	0.000 (-0.01)	0.011	-0.002 (-0.52)	0.134	0.002 (0.43)
$EC^+ \times IDEO$	-0.154*** (-3.95)	2.140	0.038 (1.28)	0.555	-0.134** (-2.02)	0.942	0.173** (2.37)
$EC^- \times IDEO$	-0.038 (-1.00)	0.804	-0.016 (-0.49)	0.058	0.081 (1.38)	0.865	-0.097 (-1.45)
Political interaction effects $S \times IDEO$ (coefficients multiplied with 100)							
$ELEC \times IDEO$	-0.408** (-2.31)	0.367	-0.432** (-2.25)	1.171	-0.395 (-1.31)	0.159	-0.037 (-0.11)
$POLA \times IDEO$	0.432* (1.72)	0.306	-0.008 (-0.03)	0.069	0.969** (2.23)	1.693	-0.977* (-1.90)
$NCP \times IDEO$	0.041 (0.58)	0.024	0.131* (1.92)	0.763	0.130 (1.09)	0.351	0.001 (0.01)
number of observations	610		607		575		
degrees of freedom	544		540		515		

Table 4: Continued. Estimation results for socio-economic and political variables.

Δ SE				Δ NSE			
fav. EDP		unfav. EDP		fav. EDP		unfav. EDP	
Δ GDP ⁺	+	Δ GDP ⁻	+**	Δ GDP ⁺	-**	Δ GDP ⁻	+
Δ UE ⁻	-	Δ UE ⁺	-***	Δ UE ⁻	+	Δ UE ⁺	-
Δ P15 ⁺	-	Δ P15 ⁻	-	Δ P15 ⁺	-	Δ P15 ⁻	+
Δ P65 ⁻	+***	Δ P65 ⁺	-	Δ P65 ⁻	-	Δ P65 ⁺	-
Δ TRADE ⁺	+	Δ TRADE ⁻	-	Δ TRADE ⁺	-	Δ TRADE ⁻	-
Δ NX ⁺	+	Δ NX ⁻	-	Δ NX ⁺	-	Δ NX ⁻	+
SURP ⁺	+	SURP ⁻	+	SURP ⁺	-	SURP ⁻	+**
-EC ⁻	+	DEBT90	-*	-EC ⁻	-	DEBT90	-
-EC ⁺	-	-EC ⁺	-	-EC ⁺	-	-EC ⁺	+**
pos. \bar{R}^2	0.87	pos. \bar{R}^2	1.13	pos. \bar{R}^2	0.12	pos. \bar{R}^2	5.03
neg. \bar{R}^2	0.30	neg. \bar{R}^2	4.15	neg. \bar{R}^2	2.43	neg. \bar{R}^2	0.61
pos. F	2.37 (.029)	pos. F	3.17 (.043)	pos. F	.163 (.687)	pos. F	2.46 (.032)
neg. F	.352 (.703)	neg. F	3.93 (.000)	neg. F	.990 (.438)	neg. F	.861 (.487)

Table 5: Summary for IDEO interacted with socio-economic and political variables for right-wing vs. left-wing governments. ‘fav. EDP’ and ‘unfav. EDP’, are short for favourable and unfavourable economic and demographic performance, respectively. ‘+’, and ‘-’ indicate that right-wing governments spend more (and reduce less) than their left-wing counterparts in SE and NSE categories. ‘*’ ‘**’ and ‘***’ indicate single parameter estimates that are significant at the 10%, 5%, and 1% level, respectively. ‘pos.’ (‘neg.’) \bar{R}^2 indicates the total contribution to the partial degree of explanation of positive (negative) impacts of the explanatory variables. ‘pos.’ (‘neg.’) F is the F -statistic on joint insignificance of sign specific effects with p -values in parentheses.