Original Article

Rail subsidisation in the European Union: An issue beyond left and right?

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Abstract Despite the considerable amount of public subsidies granted by the member states of the European Union (EU) to their national railway industries, the determinants of State aid to this particular sector are still largely unexplored from a cross-country perspective. Using official subsidy data for a sample of 25 EU countries over the period 1998–2008, this article poses the classic do-parties-matter question in comparative political economy to examine whether the political allocation of railway subsidies is completely determined by sector-specific conditions or whether it leaves room for governments' partisan preferences. Controlling for other potential politico-economic determinants (sector size, public/private ownership, intermodal competition and so on), a multiple regression analysis indicates that government ideology in fact helps explain the considerable differences between countries with respect to rail subsidisation. Contrary to the expectations of traditional partisan theory, countries governed by left-wing (bourgeois) parties showed significantly lower (higher) subsidy levels. The article goes deeper into this regression result and discusses a number of explanations as to how this unexpected empirical finding can be explained.
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Introduction

With the exception of Cyprus and Malta, which 'have no railway operators' (European Commission (EC), 2012a, p. 6), there is no member state of the European

Union (EU) that does not financially subsidise its national railway industry. On the basis of an investigation of firm-level data for six major train operating companies in Austria, Denmark, France, Germany, Great Britain and Spain in the financial year 2006, a report by the US National Railroad Passenger Corporation (AMTRAK) in this context notes that '[a]lthough some European train operating companies may report a "profit", this profit is generated through a large amount of public funding provided by the European countries' (AMTRAK, 2008, p. 5). Even with the best of intentions, and although policymakers may have good reasons for subsidising this industry (for example, public service considerations, environmental protection, railway noise mitigation), economists might argue that many of these public cash injections are actually harmful because of having incentive effects (soft budget constraints) and possibly causing a kind of subsidy 'mentality' or 'addiction' (Otáhal and Pospíšil, 2009).

Although the economic perspective of examining the effects of subsidies on the efficiency of railway undertakings is indeed an interesting one (see, for example, Oum and Yu, 1994; Friederiszick *et al*, 2003), this study takes a political science perspective and explores whether the governmental subsidisation of the national railway industries in 25 EU member countries over the period 1998–2008 was influenced by partisan motives. Although this potential explanatory factor belongs to the 'usual suspects' analysed in comparative studies of industrial subsidies as a tool of economic policy (see, for example, Obinger and Zohlnhöfer, 2007; Zahariadis, 2008, 2010; Keman, 2010), so far there has not been a cross-country study that investigates the issue of whether government ideology and other politico-economic factors matter for the allocation of railway subsidies.

This void is surprising given that these subsidies are a major component of the total subsidies granted by EU member states to their national economies. For example, in 2008 railway subsidies amounted to €51.9 billion in the EU-27, whereas total State aid (minus railways) amounted to €73.9 billion (see EC, 2011). Considering the 2008 sum of the total State aid *plus* railway subsidies, in relative terms the latter account for almost half (41.3 per cent) of the total subsidies granted by EU member states; *vis-à-vis* 39.2 per cent to manufacturing, 8.5 per cent agriculture, 2.5 per cent non-railway transport, 2.4 per cent coal, 1.1 per cent financial services and 5.0 per cent other economic sectors. Moreover, as will be seen below, some countries inject considerably more public money into their national railway sectors than others – suggesting a classic question of comparative political economy: namely, whether the cross-national differences, to some extent, can be explained by differences in the partisan composition of government.

The remainder of this article is organised as follows. The next section introduces the data source of the dependent variable. Subsequently, hypotheses are formulated regarding the issue of how partisan politics may influence the political allocation of railway subsidies. There are, for instance, plausible arguments that lead to the expectation that rail subsidisation is an issue beyond left and right – implying that the

use of this specific policy tool is not influenced by partisan considerations. The section after that presents the empirical findings from a multiple regression analysis. It turns out that rail subsidisation is not a purely technical issue in the sense of being completely determined by sector-specific conditions. Rather, the regression results suggest that there is room for governments' partisan preferences. Controlling for other potential determinants (sector size, public/private ownership, intermodal competition and so on), government partisanship in fact contributes to the explanation of the considerable cross-country variation. Contrary to the expectations of traditional partisan theory, countries governed by left-wing (bourgeois) parties showed significantly lower (higher) subsidy levels. After discussing possible explanations for this unexpected result, the article concludes with an overview of issues that demand further research.

Empirical Background: Cross-National Differences in Subsidy Injections

This study is based on a subsidy data set provided by the EC as part of its 'State Aid Scoreboard'. The Commission's data set includes data on 'subsidies to the railway sector in million EUR' for 15 West European countries from 1998 onwards, and for 10 East European countries that are marked with an asterisk (*) in Table 1. Eight of the East European countries joined the EU in 2004: Czech Republic (subsidy data available from 2003 onwards), Estonia (2003–), Hungary (2003–), Lithuania (2004–), Latvia (2003–), Poland (2003–), Slovenia (2003–) and Slovak Republic (2004–). In 2007, Bulgaria and Romania became EU member states (for both subsidy data available from 2006 onwards). The latest version of the Commission's data set ends at the end of 2011 (see EC, 2011). As there are many missing values in the years 2009–2011, our investigation period ends at the end of 2008.

As Table 1 shows, there are considerable differences in subsidy levels between countries. For a number of different indicators displayed in Columns (1)–(6), we calculated averages for the whole investigation period 1998–2008. Given the data limitations mentioned above, for the 10 East European countries these averages could only be based on a smaller number of years (that is, 3–6 years). In absolute terms (Column 1), subsidy levels ranged from €6 million in Lithuania, which can be grouped together with Estonia (€13 million), Latvia (€25 million) and Portugal (€47 million) into a 'relatively-low-subsidy' country cluster, to €4.8 billion in the United Kingdom, €6.4 billion in Italy, €8.5 billion in France and €9.3 billion in Germany.

Bivariate correlations between the subsidy levels displayed in Column (1) and population size as well as geographical size (area in km^2) show that subsidy levels are significantly higher in more populous ($\rho = 0.647$***) and geographically larger countries ($\rho = 0.392$**).[1] At the same time, more populous and geographically larger countries exhibit a significantly larger rail network (length of lines in use) as

Table 1: Subsidies to the railway sector (EU-25, mean values 1998–2008)

	Mio. €	*€ per capita*	*Percentage of GDP*	*Percentage of GVA land transport*	*Percentage of total central government expenditure*	*In €1000 per line km*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Luxembourg	292	642	1.17	38.49	3.80	1064
The Netherlands	2446	152	0.56	24.77	1.94	868
Belgium	2449	236	0.92	38.89	3.00	702
Italy	6425	111	0.52	16.44	1.77	392
United Kingdom	4798	80	0.27	15.07	0.71	289
Denmark	780	145	0.43	18.83	1.16	288
France	8457	140	0.56	25.67	2.25	286
Germany	9332	113	0.44	28.12	3.14	263
Ireland	481	118	0.38	30.48	1.19	250
Greece	446	41	0.29	22.05	0.81	184
Slovenia*	187	93	0.71	24.44	2.19	152
Austria	750	92	0.34	11.95	1.15	131
Sweden	1095	122	0.38	15.77	1.21	99
Finland	458	88	0.32	11.84	1.21	78
Spain	1138	27	0.17	6.57	0.87	77
Hungary*	576	57	0.92	21.39	1.92	73
Slovakia*	232	43	0.75	14.55	2.41	64
Czech Republic*	289	28	0.36	6.65	0.83	30
Bulgaria*	95	12	0.45	9.04	1.09	23
Romania*	189	9	0.29	2.43	0.47	18
Portugal	47	5	0.04	1.92	0.09	17
Estonia*	13	10	0.15	3.03	0.42	14
Poland*	231	6	0.10	2.93	0.35	12
Latvia*	25	11	0.18	3.90	0.64	11
Lithuania*	6	2	0.03	0.42	0.11	3
Mean EU-25	1649	95	0.43	15.83	1.39	216
Mean EU-15 West	2626	141	0.45	20.46	1.62	333
Mean EU-10 East	184	27	0.39	8.88	1.04	40

Notes: Own calculations based on EU State Aid Scoreboard data. GVA = gross value added land transport (Eurostat/OECD data; disaggregated GVA data for rail transport not available). Countries ranked according to Column (6). Mio. € = in million EUR.

measured in kms: ρ is 0.842*** and 0.830***, respectively. Moreover the length of the railway network, in turn, is highly correlated with other indicators capturing sector size such as, for instance, the number of employees in the railway sector ($\rho = 0.867$***) and the number of locomotives ($\rho = 0.885$***; in both the cases $N = 24$ countries as data for United Kingdom is not available). The data on employees and locomotives is taken from the World Bank's Railways Database, the International Union of Railways' (UIC) Statistics Database and the UNECE

Transport Division Database (UNECE stands for United Nations Economic Commission for Europe). The figures suggest that larger railway systems tend to be more costly to operate than smaller ones and, therefore, tend to have a higher demand for subsidies.

Controlling for sector size in terms of network length by considering subsidy levels in EUR per line km (see Column 6), we get another country ranking. In this perspective, Belgium, the Netherlands and Luxembourg are the 'big spenders'. Each km of their railway network is publicly subsidised by €702 000, €868 000 and €1 064 000, respectively. By contrast, with the exception of Slovenia (ranked 11 out of 25), East European countries can be found in the lower half of the subsidies per line km ranking. Statistically, the clear East–West divide is reflected in the huge differences between the mean values of the groups of East and West European countries displayed at the bottom of Table 1. Moreover, there is a significant negative correlation between the dummy variable EAST (1 = East European country) and subsidies per line km (log): point biserial correlation coefficient (pbis) is −0.706***.

Furthermore, it is noteworthy that, comparing their 2008 values with the countries' initial values (that is, the first year for which subsidy data is available), only two states experienced subsidy reductions: Greece and Spain reduced subsidies per line km between 1998 and 2008 by 24.7 per cent and 34.1 per cent, respectively. By contrast, the other 23 states increased their subsidy expenditures. These increases were not driven by price increases as the EC's figures are inflation-adjusted. That there is no clear downward trend throughout our country sample stands in contrast to the development of industrial subsidies where a remarkable cutback can be observed in the EU and OECD world from the early 1980s to the mid-2000s (Obinger and Zohlnhöfer, 2007; Zahariadis, 2008; Keman, 2010). A simple but plausible explanation for this interesting difference is that – unlike in the area of industrial subsidies – the EU State aid regime or other supranational institutions (for example, the World Trade Organisation) do not exert pressure on our sample countries to reduce subsidy payments to the railway industry – rather, the opposite is true.

Of course, the EC can prohibit a particular railway State aid. More precisely, the Commission can declare State aid 'which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods […], in so far as it affects trade between Member States' as being 'incompatible with the internal market' (see Article 107 of the Treaty on the Functioning of the EU). Yet, public subsidies to the railway sector are justified and regarded as desirable if they promote the liberalisation of the rail transport sector, the shift of traffic to the (relatively) climate-friendly way of rail transport (regarded as a 'clean mode of transport'), the reduction of noise pollution and the technical harmonisation of European rail networks (see EC, 2008, for a detailed description of the derogation criteria). Owing to rail transport's classification as a 'service of general interest', railway subsidies are furthermore justified '… if they represent reimbursement for the discharge of certain obligations inherent in the concept of a public service' (Article 93 of the Treaty on

the Functioning of the EU). These payments for so-called 'public service obligations' (for example, public support to rail transport in remote regions) do not, however, have to be reported by the member states to the Commission and are not included in its State Aid Scoreboard.[2]

It should now be clear that the EU State aid regime leaves wide scope for national governments to justify their financial support to the railway industry. As all countries included in our analysis are subject to the sketched State aid rules, in what follows we do not further discuss this legal factor of influence (most similar systems design; Przeworski and Teune, 1970). Instead, we now turn to our main research question, namely, whether the factor 'partisan politics' contributes to the explanation of the substantial cross-country differences.

Partisan Politics and Rail Subsidisation: Hypotheses

From the perspective of partisan theory in political economy (for surveys, see Hibbs, 1992; Schmidt, 1996, 2010), an obvious question is whether political parties make a difference regarding the allocation of subsidies to industrial enterprises, railway undertakings and other sectors of the economy. In the literature on the political economy of public subsidies it is often hypothesised that left-wing parties are more in favour of using the interventionist policy instrument of subsidisation than right-wing parties (Blais, 1986; Zahariadis, 2002; Obinger and Zohlnhöfer, 2007). Left-wing parties are supposed to consider state interventions (for example, in the form of subsidies, regulations and public entrepreneurship) as essential for safeguarding the functioning of the economy and society as a whole. This especially holds true for areas of the economy regarded as providing 'public services' such as, for example, the railway sector. By contrast, right-wing parties are often assumed to prefer a lower level of state interference in the economy and to favour market solutions in the field of economic policymaking (Obinger and Zohlnhöfer, 2007, p. 199). If the depicted ideological differences hold, then the partisan composition of government should affect the allocation of railway subsidies as formulated in our first partisan hypothesis: Holding other politico-economic factors constant, the level of railway subsidies is higher (lower) in countries with strong left-wing (right-wing) parties in government (Hypothesis 1).

Furthermore, it has to be taken into account that since the 1970s Green parties entered the political systems of several European countries (Müller-Rommel and Poguntke, 2002). Important policy objectives of Green parties are environmental protection and the reduction of environmentally harmful emissions (see, for example, European Green Party, 2006). In this regard, rail transport is a relatively environment friendly mode of transport. In 2009, 0.6 per cent of total carbon dioxide emissions from transport in the EU-27 were produced by railways (excluding indirect emissions from electricity consumption) *vis-à-vis* 71.7 per cent road transport, 14.6 per cent

navigation, 12.3 per cent civil aviation and 0.8 per cent other transport (EC, 2012b, p. 129). It can be expected, therefore, that Green parties favour subsidies to the railway sector in order to give a competitive advantage to passenger and freight transport via rail. Hence, our second partisan hypothesis is as follows: Holding other politico-economic factors constant, the level of railway subsidies is higher in countries with strong Green parties in government (Hypothesis 2).

The first two hypotheses stress expected differences between different party families which possibly have an effect on the political allocation of subsidies. Yet, it might be argued that rail subsidisation is a rather unlikely case for finding any partisan effects at all. As explained above, this sector belongs to the so-called 'services of general interest' in the EU. It can be expected that many citizens are (potential) rail passengers who have an interest in a well-functioning railway system (Perkins, 2005, p. 9). Granting subsidies in the form of state support to infrastructure projects (for example, new high-speed rail lines, building new and restoring old railway stations) or the improvement of service quality (new railway lines, new rolling stock, faster rail connections and so on) may be used by governments of whatever partisan alignment to demonstrate that they are doing something good for this specific sector and the economy as a whole (for example, facilitating mobility, creating new jobs and promoting economic growth). Therefore, why should governments of whatever political 'colour' – provided that they have the necessary financial resources – not have an interest in meeting their citizens' demand by publicly supporting the railway industry? All this leads to our third partisan hypothesis: Holding other politico-economic factors constant, there is no systematic relationship between the partisan composition of government and the extent of rail subsidisation. The conjecture that the public money injected into the rail industry does not have a partisan colour is the null hypothesis (Hypothesis 0) against which the partisan-difference Hypotheses 1 and 2 are tested.

Empirical Strategy

To empirically test the partisan hypotheses formulated above, we use two alternative approaches of operationalising the strength of political parties in government. First, a set of variables measuring the cabinet seat share (as a percentage of total cabinet posts) of different ideological 'families' of parties is constructed. Like in Armingeon *et al* (2012), social-democratic, socialist, (post-)communist and Green parties are classified as left-wing parties. Moreover, we take a separate look at the cabinet seat share of Green parties in order to test Hypothesis 2. Following Obinger and Zohlnhöfer (2007), liberal, conservative and (non-Christian democratic) centre parties are coded as right-wing parties; and the latter together with Christian democratic parties are classified as 'bourgeois' parties.

As a second, alternative indicator, we use a government ideology index developed by Schmidt (1996) which is also used in Zahariadis (2010) and many other comparative public policy studies. The Schmidt index runs from 1 to 5, measuring the strength of political parties in government in a certain country and year on a left–right scale. The coding is as follows: 1 = hegemony of 'bourgeois' parties as defined above (that is, no cabinet members from social-democratic and other left-wing parties); 2 = dominance of bourgeois parties (cabinet seat share of left-wing parties less than 33.3 per cent); 3 = balance of power between left-wing and bourgeois parties (both camps exhibit a cabinet seat share between 33.3 per cent and 66.6 per cent); 4 = dominance of social–democratic and other left parties (leftist cabinet seat share greater than 66.6 per cent but less than 100 per cent); 5 = hegemony of social-democratic and other left parties (leftist cabinet-seat share 100 per cent). The data to calculate the aforementioned partisan variables was kindly provided by Schmidt (2013). In this data set, the cabinet seat share of different party families (as a percentage of total cabinet posts) is reported per year, weighted by the number of days a national government was in office in the respective year.

Table 2 below presents the results of a cross-sectional ordinary least squares (OLS) regression analysis with the level of subsidies per line km (country averages for whole investigation period) as the dependent variable (in logarithmic form because of right-skewed distribution). All regression models exhibit no problematic level of multicollinearity (see the low variance inflation factor (VIF) values). Moreover, with the exception of Model (4) in Table 3, in all models the Breusch–Pagan/Cook–Weisberg test indicates no heteroscedasticity so that White heteroscedasticity-robust standard errors were not adopted. Some may argue that using such cross-sectional research design is outdated. Clearly, one drawback is that it includes only a relatively small number of observations ($N = 25$ countries). Consequently, only a limited number of explanatory variables can be simultaneously regressed in order to leave a sufficient number of degrees of freedom. However, our research question is to explain the *cross-national* differences in subsidy expenditures.

To be sure, switching to a time-series cross-sectional (TSCS) design would increase the number of observations. Given the limitations in the time-series dimension of the dependent variable in the case of the East European countries (see above), we would get an unbalanced panel data set with 217 observations. Note, however, that complete time-series subsidy data for the period 1998–2008 is only available for a reduced sample of 15 West European countries (N of observations = 165 = 11 years × 15 countries). Moreover, note that panel-data unit-root tests indicate that this time series is non-stationary. Consequently, including subsidy *levels* as the dependent variable in a TSCS regression would be inappropriate as it may produce inflated t-values, inflated R^2 and spurious regression results (Kittel and Winner, 2005; Plümper *et al*, 2005; Wilson and Butler, 2007). Against this background and following other recent comparative studies analysing different types of public spending (for example, Obinger and Zohlnhöfer, 2007; Castles, 2007a;

Table 2: Regression results: Determinants of subsidy levels

	Short-term partisan influence				*Medium-term partisan influence*				*Long-term partisan influence*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
Eastern Europe	–2.374***	–2.350***	–2.325***	–2.228***	–2.184***	–2.447***	–2.349***	–2.222***	–1.975***	–2.480***	–2.327***
	[5.51]	[5.00]	[5.31]	[4.87]	[5.60]	[5.05]	[5.57]	[4.86]	[6.02]	[5.56]	[6.06]
Road passengers	–0.109	–0.088	–0.101	–0.071	–0.122*	–0.097	–0.117	–0.072	–0.164**	–0.123	–0.158**
	[1.43]	[1.10]	[1.30]	[0.90]	[1.74]	[1.21]	[1.54]	[0.91]	[2.74]	[1.55]	[2.17]
Bourgeois government	0.017*	—	—	—	0.035**	—	—	—	0.049***	—	—
	[1.85]				[2.79]				[4.56]		
Leftist government	—	–0.008	—	—	—	–0.017	—	—	—	–0.025*	—
		[0.90]				[1.13]				[1.83]	
Government ideology index	—	—	–0.376	—	—	—	–0.681*	—	—	—	–0.951***
			[1.52]				[2.03]				[2.98]
Green parties	—	—	—	–0.009	—	—	—	0.004	—	—	—
				[0.15]				[0.04]			
Constant	21.68***	20.93**	22.82***	19.04**	21.89***	22.17***	25.14***	19.07**	24.91***	24.75***	29.61***
	[3.06]	[2.74]	[3.04]	[2.55]	[3.38]	[2.86]	[3.36]	[2.55]	[4.57]	[3.25]	[4.11]
Adjusted R^2	0.54	0.49	0.52	0.47	0.61	0.50	0.55	0.47	0.73	0.54	0.62
F-statistics	10.59***	8.71***	9.81***	8.15***	13.75***	9.06***	11.09***	8.13***	23.15***	10.56***	14.54***
VIF-values	⩽1.11	⩽1.15	⩽1.09	⩽1.01	⩽1.07	⩽1.28	⩽1.11	⩽1.01	⩽1.16	⩽1.24	⩽1.19
N	25	25	25	25	25	25	25	25	25	25	25

Notes: Dependent variable: Railway subsidies per line km (log mean 1998–2008). The measurement of short-term (Models 1–4), mid-term (5–8) and long-term (9–11) partisan influence is explained in the text. Unstandardised coefficients of OLS regressions. Absolute value of *t*-statistics in brackets. Levels of statistical significance: *10 per cent, **5 per cent, ***1 per cent.

Table 3: Regression results: Determinants of subsidy levels (alternative specifications)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Eastern Europe	−1.725***	−1.955***	−1.665***	—	−1.828***	−1.716***	−1.630***	−1.735***
	[4.14]	[5.82]	[3.83]		[5.64]	[4.57]	[4.28]	[5.01]
Road passengers	−0.163**	−0.168**	−0.154**	—	−0.145**	−0.160**	−0.111	−0.165***
	[2.72]	[2.73]	[2.54]		[2.48]	[2.70]	[1.67]	[2.86]
Bourgeois government	0.049***	0.049***	0.049***	—	0.041***	0.050***	0.051***	0.053***
	[4.56]	[4.44]	[4.61]		[3.69]	[4.70]	[4.90]	[4.99]
Road freight	0.011	—	—	—	—	—	—	—
	[0.97]							
Public ownership	—	−0.127	—	—	—	—	—	—
		[0.50]						
Public debt	—	—	0.007	—	—	—	—	—
			[1.08]					
Past subsidy level	—	—	—	0.704***	—	—	—	—
				[5.38]				
BeNeLux dummy	—	—	—	—	0.930*	—	—	—
					[1.75]			
Rural population	—	—	—	—	—	−0.021	—	—
						[1.33]		
Government size	—	—	—	—	—	—	0.056	—
							[1.61]	
Trade union density	—	—	—	—	—	—	—	0.015
								[1.66]
Constant	23.93***	25.59***	23.38***	3.77***	23.31***	24.96***	17.16**	24.21***
	[4.31]	[4.47]	[4.17]	[2.51]	[4.41]	[4.66]	[2.41]	[4.61]
Adjusted R^2	0.73	0.72	0.73	0.80	0.75	0.74	0.75	0.75
F-statistics	17.55***	16.80***	17.80***	28.93***	19.82***	18.44***	19.33***	19.52***
VIF-values	⩽1.66	⩽1.16	⩽1.82	⩽1.00	⩽1.38	⩽1.40	⩽1.87	⩽1.24
N	25	25	25	25	25	25	25	25

Notes: Dependent variable: Railway subsidies per line km (log mean 1998–2008). Unstandardised coefficients of OLS regressions. Absolute value of *t*-statistics in brackets. Owing to heteroscedasticity, Model (4) is based on White heteroscedasticity-robust standard errors. Levels of statistical significance: *10 per cent,

Busemeyer, 2009; Keman, 2010), we are convinced that cross-sectional regressions are still an appropriate tool for exploring cross-national differences in public expenditures.

Do Parties Make a Difference? Multiple Regression Results

The regression results in Table 2 indicate that government partisanship does in fact help to explain the considerable cross-national differences – but in another way than expected by the partisan difference hypothesis of traditional partisan theory. Controlling (i) for sector size (captured by the dependent variable), (ii) for differences between East and West European countries and (iii) for cross-country differences in the extent of intermodal competition (the results of these and other control variables are discussed below), the level of subsidisation was higher (lower) in countries governed by bourgeois (left-wing) parties. This effect is rather weak in the short run; that is, when the partisan composition of government is considered only in the period the subsidies were paid (that is, 1998–2008). Although the variable 'bourgeois government' has a positive sign and is statistically significant at the 10 per cent level (see Model 1),[3] the variables 'leftist government' and Schmidt's government ideology index have a negative sign but remain statistically insignificant (Models 2 and 3). However, if one follows previous research in comparative public policy (for example, Castles, 2007b; Schmidt, 2010) and takes into account that the 'partisan legacy' may matter in the sense that the size of subsidy expenditures may to a large extent be set by decisions of governments in the (distant) past, then the partisan differences become clearer.

The coefficient of the variable 'bourgeois government' is positive and statistically significant at the 5 per cent (Model 5) and 1 per cent (Model 9) level, even if these regressions are jackknifed (that is, each country removed in turn). The coefficient of 'leftist government' is consistently negative and gets statistically significant at the 10 per cent level in Model (10); but narrowly misses the 10 per cent level in this specification if single countries are removed (*P*-values between 0.021 and 0.176). The coefficient of the government ideology index (higher values indicate stronger left-wing parties in government) is negative and statistically significant at the 10 per cent (Model 7) and 1 per cent (Model 11); when jackknifed, the coefficient remains significant at the 5 per cent level in Model (11), and narrowly misses the 10 per cent level in Model (7) if Slovenia ($P = 0.106$) and Lithuania (0.124) are removed.[4]

Models (5)–(11) consider the partisan composition of government in the medium term and long term to get a measure of the dominant partisan heritage.[5] Medium term means that the average of the respective partisan variable is calculated for the period 1990–2008 in the case of West European countries. In the case of East European countries, the average for the period between the first democratically elected

government since 1990 (as coded in Schmidt, 2013) until 2008 is taken. Long term means that the average for the period between the first democratically elected government after the end of World War II (that is, 1945) until 2008 is taken. Following Schmidt (1996), in the case of Greece, Portugal and Spain, the calculation period starts after their transition from authoritarian to democratic regimes (that is, 1974, 1976 and 1977, respectively). In the case of the East European countries, the long-term calculation period starts with the first democratically elected government after the opening of the 'Iron Curtain' in 1990.

Interestingly, exploring the determinants of industrial subsidies, Neven (1994) and Zahariadis (2010) also get the regression result that subsidy levels are lower (higher) under leftist (bourgeois) governments. One possible explanation for this empirical finding might be that leftist and bourgeois parties have different clienteles (that is, party members, voters and interest groups), which they are trying to satisfy (see Zahariadis, 2010, p. 445). Given the fact that the railway sector is not only an important input factor for a well-functioning economy (transportation of goods) but at the same time a profitable source of revenue for other economic entities (contracts for business firms constructing tracks, locomotives, train stations and so on), granting subsidies to the railway industry may be perceived as one way of doing something good for the private sector of the economy. As bourgeois parties are often said to be more 'business friendly' than leftist parties, this might explain why they tend to inject more public money into this industry although their public rhetoric often follows market-liberal principles.

By contrast, railway workers and their trade unions as core supporters of left parties may prefer 'State aid' directly accruing to them over subsidy payments directly benefitting railway firms. To provide help to their core clientele, left-leaning parties in power can (try to) implement stricter employment protection rules, generous old-age provision schemes, munificent unemployment benefits in the case of layoffs or regulations creating better working conditions. These types of state support, however, do not (directly) show up in the EU State Aid Scoreboard data.

Finally, regarding the Green party hypothesis, the regression analysis suggests that Green parties do not make a difference in the field under investigation. Holding other factors constant, subsidy levels were not significantly higher in countries with a high-cabinet seat share of Green parties (averages 1998–2008 and 1990–2008; see Models 4 and 8 in Table 2). This also holds for other operationalisations of the Green party variable (detailed regression results not reported): the percentage of years with Green party participation in government (both in the short run, 1998–2008, and longer run, 1990–2008); and dummy variables getting 1 if the Greens were part of at least one government during the respective time periods (that is, 1990–2008, 1998–2008).

A possible explanation for this finding is that Green party power in national government was rather low in the considered country sample and time period. According to Schmidt (2013), Green parties were part of national governments in less than half of the countries (11 of EU-25): Belgium (1999–2003), Bulgaria (1995/1996),

Czech Republic (2007/2008), Finland (1995–2002; 2007/2008), France (1997–2002), Germany (1998–2005), Ireland (2007/2008), Italy (1992–1994; 1996–2001; 2006–2008), Latvia (2002–2008), Romania (1991/1992) and Slovenia (1991–1993). Hence, over the period 1990–2008, only in 59 out of 475 country-years (that is, 12.4 per cent) there was Green government participation. Moreover, only in two countries did the Green cabinet seat share exceed a threshold of 17 per cent: in Germany in 7 years (maximum 21.4 per cent) and in Latvia in 4 years (maximum 27.9 per cent). Drawing on 'contagion theory' (for example, Hicks and Swank, 1992), another explanation for the fact that Green parties do not matter in the considered context is that the main parties in the respective political systems might simply have adopted Green policies such as, for instance, shifting more traffic from roads to railways.

Control Variables and Robustness Checks

It is clear '… that the party composition of government is but one variable among a wide variety of determinants of public policy, and that a 'partisan theory' (Hibbs, 1992) of public policy is but one approach to the comparative study of policy outputs among other theories' (Schmidt, 1996, p. 169). On the basis of the politico-economic literature on the determinants of government subsidies in other areas of economic policy (for example, Blais, 1986; Neven, 1994; Obinger and Zohlnhöfer, 2007; Zahariadis, 2008, 2010; Keman, 2010), it is hypothesised that the allocation of subsidies to the railway sector is also influenced by socio-economic and sector-specific factors (for example, sector size, intermodal competition and public/private ownership), the public budget situation, and past subsidy commitments (that is, policy inheritance). In so doing, we analytically consider subsidisation as being a governmental allocation decision affected by partisan preferences and certain constraints a government is confronted with.

Socio-economic and sector-specific conditions

An obvious explanation for the cross-country differences, which has already been identified above, is the factor 'sector size'. A high level of subsidisation may just reflect the high subsidy requirements of a large railway network. In fact, there is a statistically significant positive correlation between rail subsidies and line kms indicating that countries with a relatively large railway network also show a relatively high level of rail subsidisation ($r = 0.595$***). In a bivariate regression with the absolute level of subsidy expenditures (log mean 1998–2008) as the dependent variable, network length (log mean 1998–2008) already explains 36 per cent of the variation between countries (detailed results not reported). Hence, to control for

sector size, we used subsidies per line km as the dependent variable of the multiple regression analysis.[6]

As Table 2 shows, the coefficient of the dummy variable 'Eastern Europe' is negative and statistically significant in all regression models. This is not surprising. The results of the bivariate correlation analysis and the comparison of means presented above have already revealed that subsidy levels are considerably lower in East European countries. At least three factors help explain this East–West divide: the degree of economic development, the level of economic growth and the extent of carbon dioxide emissions (details below). These factors are not only highly correlated with the East dummy but are also highly correlated with each other. Thus, to avoid multicollinearity problems, we decided to include the East dummy as a kind of 'master control variable' in all regressions.

First of all, East European member states show a significantly lower level of economic development as measured by real GDP per capita (pbis = –0.869***). At the same time, the degree of economic development is an important explanation of the cross-national differences in the extent of rail subsidisation. There is a statistically significant positive correlation between real GDP per capita and subsidies per line km ($\rho = 0.810$***). Through the lens of socio-economic theories of public policy (Peacock and Scott, 2000; Wilensky, 2002), an interpretation for this finding is that citizens and companies in richer countries might (i) demand a higher quality of railway services and infrastructures and/or (ii) be accustomed to a higher service and infrastructure quality. In fact, there is a statistically significant positive correlation between real GDP per capita and the index variable 'quality of railroad infrastructure' (mean 2001–2008; higher index values indicate higher quality; $\rho = 0.538$***), which is one item of the Global Competitiveness Index provided by the World Economic Forum (2012). In East European countries, which exhibit a comparatively low level of economic development (see above), rail infrastructure quality is significantly lower than in West European countries (pbis = –0.509***). A comparatively high societal demand possibly translates into a comparatively high demand of the national railway industry for public subsidies (for example, when higher quality implies higher costs). At the same time, governments in more economically prosperous countries might be able to meet their citizens' and companies' demands because of larger tax revenues compared with countries that are economically less advanced.

Moreover, East European countries have experienced significantly higher levels of economic growth (real GDP growth) compared with their fellow member states in Western Europe (pbis = 0.658***). At the same time, economic growth is an important explanation of the cross-national differences in the extent of rail subsidisation. There is a statistically significant negative correlation between real GDP growth and subsidies per line km ($\rho = -0.589$***). This suggests that there is an inverse relationship between economic growth and subsidy expenditures as hypothesised in studies investigating industrial subsidies (for example, Obinger

and Zohlnhöfer, 2007). There is a plausible explanation for the fact that subsidies to the railway sector are higher in times of economic slump: lower freight volumes and declining passenger traffic may result in lower revenues from freight and passenger transport, leading to an increased demand for and supply of public subsidies.

Furthermore, East European countries exhibit lower levels of carbon dioxide emissions from transport (in million tonnes; pbis = −0.667***). At the same time, carbon dioxide emissions are an important explanation of the cross-national differences in the extent of rail subsidisation. There is a statistically significant positive correlation between carbon dioxide emissions from transport and subsidies per line km ($\rho = 0.545$***). A plausible explanation for this positive association is that policymakers in high-emission countries inject a comparatively high level of public money into the railway sector in order to try to shift traffic towards this relatively low-emission transport mode.

Intermodal competition

When it is assumed that many policymakers today have environmental concerns in mind and use subsidies as a policy instrument to shift traffic from road to rail transport, then an obvious control variable is the degree of competition between these modes of transport (so-called intermodal competition). Contrary to expectations, in all regression models the variable 'road passengers' measuring the share of passenger transport via cars and buses in total inland passenger transport (percentage of total passenger-kms travelled by trains, cars and buses; Eurostat data) has a negative sign and reaches statistical significance in some models. In other words, railway subsidy levels, *ceteris paribus*, are not systematically higher in countries with high levels of passenger transport via road. A possible explanation for this unexpected result is that, as noted earlier, payments for so-called 'public service obligations', such as subsidies to promote local passenger traffic by rail, are not included in the EC's subsidy data set. Another interpretation could be that governments in countries in which many citizen-voters prefer to travel on the road may have little incentive to massively subsidise rail passenger transport as a competing mode of transport.

As Model (1) in Table 3 shows, the independent variable 'road freight', measuring the share of freight transport via roads (in percentage of total inland freight transport by railways, roads and waterways in freight tonne kms; Eurostat data), has the expected positive sign but remains statistically insignificant. We abstained from including this variable in all specifications as it causes a multicollinearity problem: the share of road freight transport is significantly lower in East European countries (pbis = −0.608***). Also note that we included the modal-split variables in time-lagged form (that is, share of road transport in the year *before* the first year for which

subsidy data is available for a country) because of the danger of reverse causality: high railway subsidies might cause a higher share of rail transport, while the latter might cause cuts in subsidy payments.

Public/private ownership

In what follows, we test whether other obvious control variables increase the explanatory power of the best-fit regression Model (9) in Table 2 that serves as the baseline model and explains 73 per cent of the cross-country variation of subsidy levels. It might be argued, for instance, that whether a railway industry is 100 per cent state-owned or (partly) run by private-sector companies makes a difference in terms of subsidisation. However, as the insignificant coefficient of the variable 'public ownership' in Model (2) in Table 3 suggests, the degree of government ownership does not contribute to the explanation of the cross-national differences in the extent of subsidisation.[7] The variable 'public ownership' is an additive index mainly calculated on the basis of an OECD (2011) data set (Conway and Nicoletti, 2006) that provides information about the ownership status of 'the largest firm in operation' in the sub-sectors rail infrastructure, passenger transport and freight transport over the period 1975–2007. As we will see below, in most cases the incumbent state-owned company is still the biggest player. In addition, information provided in IBM (2011) was taken into account. The coding in each sub-sector is as follows: 0 = no government ownership; 0.25 = majority of shares private; 0.75 = majority of shares state owned; 1 = 100 per cent state-owned. Hence, the highest possible index value for a country in a year is 3. The variable 'public ownership' included in Model (2) in Table 3 represents the mean value 1998–2008 for each country.

A possible explanation of why ownership status does not help explain the cross-country differences could be that the cross-country variance in terms of public/private ownership is rather low in our country sample. According to the coding and data sources explained above, there are only four countries that have witnessed major changes away from public ownership. Denmark and the Netherlands switched to 'no government ownership' in the freight sector in 2001 and 2000, respectively. In Estonia, the incumbent operator Eesti Raudtee, who operates about 70 per cent of the country's rail network and performs rail freight transport, was privatised in 2001 (34 per cent of shares still held by the Estonian government) and re-nationalised in 2007 (that is, 100 per cent state-owned). As passenger transport was provided by private and state-owned operators during our investigation period, this sub-sector is coded with 0.5 throughout. The United Kingdom switched to 'no government ownership' in the passenger transport sector in 1994, in the freight transport sector in 1994 and in the infrastructure sector in 1996 – though it should be mentioned that Network Rail as a private company limited by guarantee, which since 2002 (after

the collapse of Railtrack) owns the infrastructure, receives government funding and also has public members (UK Department of Transport and local authorities) acting as guarantors (see Newbery, 2006, for more details).[8]

Fiscal pressure

Furthermore, we found no evidence for the fiscal-pressure hypothesis, whereby subsidy levels should be lower in countries whose leeway for subsidisation is constrained by a high level of public debt (see, for example, Neven, 1994; Zahariadis, 2002; Obinger and Zohlnhöfer, 2007; Keman, 2010). Including the level of general government gross public debt in percentage of GDP (Eurostat data) yielded statistically insignificant results for this variable (see Model 3, Table 3). A statistically insignificant result also occurs when the level of general government net debt interest payments in percentage of GDP (Eurostat/OECD data) is taken as a proxy for fiscal stress (detailed regression results not reported). One explanation for this empirical finding is that state support for rail transport as a 'service of general interest' might have remained untouched by the pressure for budget consolidation exerted by the EU's Stability and Growth Pact regime. As mentioned above, only 2 out of 25 countries – Greece and Spain – in 2008 showed a lower subsidy level than at the beginning of the observation period. Note that we included the fiscal variables in time-lagged form (that is, public debt and debt interest payments in the year *before* the first year for which subsidy data is available for a country) because of the obvious reverse causality (or endogeneity) problem: a high level of subsidy expenditures in a certain time period (say, 1998–2008) might cause budgetary problems in this period; and fiscal problems in this particular period might cause subsidy-expenditure cuts in this time period.

Path dependence and policy inheritance

The fact that only 2 out of 25 countries reduced subsidy levels over time illustrates that 'path dependence' (Pierson, 2000) and 'policy inheritance' (Rose, 1990) play an important role in the field under investigation. Countries starting on a relatively high initial level of subsidisation (that is, the first year for which subsidy data is available for a country) also exhibited a relatively high subsidy level in subsequent years. Statistically, the mean level of subsidy payments (per line km) in the investigation period is positively and significantly related to the extent of subsidies in the past (that is, the initial level of subsidisation per line km; $\rho = 0.949^{***}$). The adjusted R^2 of regression Model (4) in Table 3 shows that the initial level of subsidisation explains 80 per cent of the cross-country variation in subsidisation. This result suggests that it is difficult for a government (regardless of whether leftist or rightist) to massively

cut back the level of subsidies in a country in the short run (say, between 1998 and 2008).

Note that this conclusion is not in conflict with the partisan effects reported above: government partisanship makes a difference in the *cross-country* perspective, however, in the *within-country* perspective – observing the rather short time period 1998–2008 – inheritance seems to be more important than government ideology. Although the initial level of subsidisation already explains a great deal of the subsequent cross-country variation, we abstained from including the initial level as the 'master variable' in all model specifications. Given the short investigation period and the high stickiness of subsidy spending over this short time period, in our view it is rather unsatisfactory to 'explain' the cross-national differences in subsidy levels over this period just by the 'historic' initial level of subsidisation (that is, the extent of subsidisation a few years earlier). The latter approach would raise the question of which factors may explain the cross-national differences in the initial levels.

Finally, it should be noted that, to test whether single countries have a strong leverage on the findings, we jackknifed all model specifications presented in Table 3 by removing each country in turn; the regression results are not sensitive to the exclusion of any single country. As a further robustness test, we included a BeNeLux dummy taking on the value of 1 for Belgium, the Netherlands and Luxemburg that exhibit the highest subsidy levels in our regression analysis and together could be an 'influential case' in statistical terms. Model (5) in Table 3 shows that the inclusion of the BeNeLux dummy does not significantly change the results.

Conclusion

In recent years, a number of empirical studies in the field of comparative political economy have analysed the development and determinants of government subsidies granted to different sectors of the economy in advanced democracies. The public subsidisation of railways has been neglected in this literature. This is surprising given the fact that almost all EU member states – Cyprus and Malta 'have no railway operators' (EC, 2012a) – inject a considerable amount of public money into this industry year after year. Moreover, the EC's State Aid Scoreboard reveals that railway subsidies account for about 40 per cent of the total subsidies granted by EU member states (2008 figures).

This article has used a multiple regression framework to investigate what drives the substantial differences in the extent of rail subsidisation in the EU-25 over the period 1998–2008. It turns out that subsidy levels are significantly higher in countries with a large railway network and a high degree of economic development. Controlling for these socio-economic factors and other potential determinants (public/private ownership, intermodal competition and so on), the regression analysis moreover suggests that the political allocation of subsidies to the railway industry

is not a purely technical issue beyond left and right. By contrast, government ideology helps to explain the substantial cross-national differences: subsidy levels are systematically lower (higher) in countries governed by left-wing (bourgeois) parties. This result is in line with the partisan effects identified in Neven (1994) and Zahariadis (2010) for the field of industrial subsidies – and is remarkable insofar as traditional partisan theory within the political economy literature on subsidisation expects that government ideology works in the opposite direction: that is, left-leaning governments are expected to be more inclined to financially support national industries.

As the empirical findings briefly summarised here were already discussed in detail above, we can finally point out some promising avenues for further research. It would be interesting to investigate, for instance, whether the identified partisan effects remain robust when the analysed subsidisation period is extended further back in time. This would, furthermore, allow an examination of the long-term development of rail subsidisation. Going beyond our macro-quantitative analysis using the EC's aggregate-level data for the whole railway industry, it would also be interesting to explore in more depth exactly how the demand for and supply of subsidies interact. A deeper analysis of the determinants of rail subsidisation in a comparative perspective, however, requires more and better (internationally comparable) data both in the time-series and the intra-sectoral dimension. Which particular railway enterprises in a country receive public subsidies? For which purposes are the subsidies paid? Which sub-sectors (network, freight traffic and passenger traffic) receive railway subsidies? Is the railway sector subsidised via other channels not disclosed to the Commission (for example, tax exemptions, interest-free loans and debt guarantees)?

In this context, a special issue worth exploring is whether interest groups play a role in the field of rail subsidisation. In some countries, there might be powerful railway trade unions and/or associations of railway enterprises lobbying for more subsidies and against subsidy retrenchment. The coefficient of the variable 'trade union density' in regression Model (8) in Table 3, which narrowly misses the 10 per cent significance level, points in this direction. However, this is just a proxy variable measuring union density in the whole economy (that is, union membership as a proportion of wage and salary earners; mean values 1998–2008; Armingeon *et al*, 2012). Hence, a further desideratum for future research is to develop interest-group indicators based on comparable cross-country data on the strength and the lobbying activities of employers' associations and trade unions in the railway industry.

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Notes

1 If not otherwise stated, the results of bivariate correlations reported in this article are based on average values of the respective variables for the period 1998–2008 ($N = 25$ countries), using Eurostat data. Depending on the scale level, different correlation coefficients were appropriate and calculated: r (Pearson's product-moment correlation coefficient), ρ (Spearman's rank correlation coefficient), or (point biserial correlation coefficient) pbis. Where appropriate, the variables were logarithmically transformed. Levels of statistical significance: *10 per cent, **5 per cent, ***1 per cent.

2 The Scoreboard 'includes all public subsidies communicated to the Commission as well as subsidies that have been notified and authorised by the Commission under relevant State aid rules. The figures exclude compensation for services of general economic interest' (EC, 2011).

3 Note, however, that the 'bourgeois' coefficient narrowly misses the 10 per cent significance level ($P \leqslant 0.10$) if Model (1) is jackknifed (that is, each country is removed in turn to test whether the results are sensitive to the exclusion of single countries): Lithuania (P-value of 'bourgeois government' after removing this country: 0.108), Sweden (0.113), Slovenia (0.142), the Netherlands (0.147), Luxembourg (0.154) and Portugal (0.163).

4 The coefficients for the right-wing parties (that is, cabinet share of bourgeois parties excluding Christian Democrats) in the different time periods continuously show a positive sign but remain statistically insignificant and are not reported.

5 Schmidt (2010, p. 212) notes: 'Advanced partisan theory adds to standard partisan theory the distinction between short-term impacts and the long-term legacies of parties. Partisan effects comprise not only contemporaneous short-term impacts (measured by a party A's cabinet seats share at a particular time point or over a shorter period), but also the long-term legacy of a party A on policy positions in that society' (see also Castles, 2007b, pp. 29–30).

6 One might conjecture that subsidies, *ceteris paribus*, are higher in less-urbanised countries because of the need to connect rural areas. However, the coefficient of the variable 'rural population' (in percentage

of total population; World Bank data) included as an additional control remains insignificant and does not change the presented regression results (see Model 6, Table 3).

7 As an additional control, we included the general size of the public sector (that is, total general government expenditure as a percentage of GDP; Eurostat data) as it captures a general propensity to rely on the public budget in order to finance public goods. The variable 'government size' shows the expected positive sign but remains insignificant when added to our baseline model (see Model 7, Table 3) as it is correlated with the independent variables 'Eastern Europe' (pbis = –0.467**) and 'road passengers' ($\rho = -0.546$***). In any case, the inclusion or exclusion of the size-of-government variable does not affect our main results.

8 As an alternative specification, we included a privatisation dummy getting 1 in the cases of Estonia, Denmark, the Netherlands and the United Kingdom. Moreover, we tested a UK dummy as the United Kingdom is the country with the most experience in rail privatisation. In both specifications, the respective privatisation variable was statistically insignificant (detailed regression results not reported) and did not change the results.

References

AMTRAK. (2008) Public Funding Levels of European Passenger Railroads. Amtrak Office of the Inspector General, Evaluation Report E-08-02, 22 April.

Armingeon, K., Careja, R., Weisstanner, D., Engler, S., Potolidis, P. and Gerber, M. (2012) Comparative Political Data Set III, 1990–2010 (35 OECD countries and/or EU member countries). University of Berne, Switzerland, Institute of Political Science.

Blais, A. (1986) The political economy of public subsidies. *Comparative Political Studies* 19(2): 201–216.

Busemeyer, M.R. (2009) From myth to reality: Globalization and public spending in OECD countries revisited. *European Journal of Political Research* 48(4): 455–482.

Castles, F.G. (ed.) (2007a) *The Disappearing State? Retrenchment Realities in an Age of Globalisation*. Cheltenham, UK: Edward Elgar.

Castles, F.G. (ed.) (2007b) Testing the retrenchment hypothesis: An aggregate overview. In: *The Disappearing State? Retrenchment Realities in an Age of Globalisation*. Cheltenham, UK: Edward Elgar, pp. 19–43.

Conway, P. and Nicoletti, G. (2006) Product Market Regulation in the Non-Manufacturing Sectors of OECD Countries: Measurement and Highlights. Paris: OECD Economics Department Working Papers no. 530.

European Commission (EC). (2008) Community Guidelines on State Aid for Railway Undertakings. *Official Journal of the European Union* 2008/C 184/07, 22 July, pp. 13–31.

European Commission (EC). (2012a) State Aid Scoreboard. Autumn 2012 Update. Brussels, Belgium, 21 December.

European Commission (EC). (2012b) EU Transport in Figures 2012. Luxembourg.

European Commission (EC). (2011) State Aid Scoreboard: Data on State Aid Expenditure (as of 31 December). Brussels, Belgium: European Commission, DG Energy and Transport.

European Green Party. (2006) The charter of the European greens: European green party guiding principles. Adopted at the 2nd EGP Congress; Geneva, 13–14 October.

Friederiszick, H.W., Röller, L.-H. and Schulz, C.C. (2003) Evaluation of the Effectiveness of State Aid as a Policy Instrument: The Railway Sector. Berlin, Germany: Humboldt University (mimeo).

Hibbs, D.A. (1992) Partisan theory after fifteen years. *European Journal of Political Economy* 8(3): 361–373.

Hicks, A.M. and Swank, D. (1992) Politics, institutions, and welfare spending in industrialized democracies, 1960–1982. *American Political Science Review* 86(3): 658–674.

IBM. (2011) *Rail Liberalisation Index 2011. Market Opening: Comparison of the Rail Markets of the Member States of the European Union, Switzerland and Norway*. Brussels, Belgium: IBM Global Business Services.

Keman, H. (2010) Fading away of state support to the economy? A comparative analysis of the OECD world (1980–2002). *Comparative European Politics* 8(3): 281–303.
Kittel, B. and Winner, H. (2005) How reliable is pooled analysis in political economy? The globalization-welfare state nexus revisited. *European Journal of Political Research* 44(1): 269–293.
Müller-Rommel, F. and Poguntke, T. (eds.) (2002) *Green Parties in National Governments*. London: Frank Cass Publishers.
Neven, D.J. (1994) The Political Economy of State Aids in the European Community: Some Econometric Evidence. CEPR Discussion Paper no. 945. London: Centre for Economic Policy Research.
Newbery, D.M. (2006) Privatising network industries. In: M. Köthenbürger, H.-W. Sinn and J. Whalley (eds.) *Privatization Experiences in the European Union*. Cambridge, MA: MIT Press, pp. 3–49.
Obinger, H. and Zohlnhöfer, R. (2007) The real race to the bottom: What happened to economic affairs expenditure after 1980? In: F.G. Castles (ed.) *The Disappearing State? Retrenchment Realities in an Age of Globalisation*. Cheltenham, UK: Edward Elgar, pp. 184–214.
OECD. (2011) Product Market Regulation Database, www.oecd.org/economy/pmr.
Otáhal, T. and Pospíšil, T. (2009) Will Czech trains ever reach their destinations efficiently? *Independent Review* 14(2): 271–287.
Oum, T.H. and Yu, C. (1994) Economic efficiency of railways and implications for public policy: A comparative study of the OECD countries' railways. *Journal of Transport Economics and Policy* 28(2): 121–138.
Peacock, A.T. and Scott, A. (2000) The curious attraction of Wagner's law. *Public Choice* 102(1/2): 1–17.
Perkins, S. (2005) The Role of Government in European Railway Investment and Funding. Paper presented at China Railway Investment & Financing Reform Forum, Beijing, September.
Pierson, P. (2000) Increasing returns, path dependence, and the study of politics. *American Political Science Review* 94(2): 251–267.
Plümper, T., Troeger, V. and Manow, P. (2005) Panel data analysis in comparative politics: Linking method to theory. *European Journal of Political Research* 44(2): 327–354.
Przeworski, A. and Teune, H. (1970) *The Logic of Comparative Social Inquiry*. New York: John Wiley.
Rose, R. (1990) Inheritance before choice in public policy. *Journal of Theoretical Politics* 2(3): 263–291.
Schmidt, M.G. (1996) When parties matter. A review of the possibilities and limits of partisan influence on public policy. *European Journal of Political Research* 30(2): 155–183.
Schmidt, M.G. (2010) Parties. In: F.G. Castles, S. Leibfried, J. Lewis, H. Obinger and C. Pierson (eds.) *The Oxford Handbook of the Welfare State*. Oxford: Oxford University Press, pp. 211–226.
Schmidt, M.G. (2013) The Partisan Composition of Governments in OECD Democracies, 1945–2012. Unpublished dataset, University of Heidelberg (Germany), Institute of Political Science.
Wilensky, H.L. (2002) *Rich Democracies: Political Economy, Public Policy, and Performance*. Berkeley, CA: University of California Press.
Wilson, S.E. and Butler, D.M. (2007) A lot more to do: The sensitivity of time-series cross-section analyses to simple alternative specifications. *Political Analysis* 15(2): 101–123.
World Economic Forum. (2012) The global competitiveness report. *Executive Opinion Survey (different issues)*. Geneva, Switzerland: World Economic Forum.
Zahariadis, N. (2002) The political economy of state subsidies in Europe. *Policy Studies Journal* 30(2): 285–298.
Zahariadis, N. (2008) *State Subsidies in the Global Economy*. New York: Palgrave Macmillan.
Zahariadis, N. (2010) State aid and partisan government in the European Union. *Social Science Quarterly* 91(2): 436–454.