Electoral rules, labor market coordination, and macroeconomic performance

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Abstract

Two distinct literatures have studied the macroeconomic effects of electoral systems and of labor market structures, respectively. Results include a positive association between PR electoral systems and growth, but also between PR and inflation, as well as negative or hump-shaped relationships between labor market coordination and the "misery variables", unemployment and inflation. However, these results could be biased; particular electoral system and labor market features co-vary systematically, and extant studies have typically not taken this into account. Effects attributed to PR systems could really stem from labor market coordination, and *vice versa*. We re-evaluate the relationships with macroeconomic outcomes for both electoral systems and labor market structures by modelling them jointly. Employing data from more than 30 democracies, with time series from 1960–2010, we identify some robust and some non-robust associations. First, we find that PR systems are, indeed, associated with higher growth rates, but not with higher inflation. Regarding labor market coordination, we identify robust curve-linear relationships with unemployment and inflation; intermediate levels of coordination correspond with worse macroeconomic performance – albeit not lower growth – even when accounting for electoral system features.

Introduction

In the Nordics and other developed democracies, the electoral system and institutions pertaining to labor market coordination are keystones for regulating, respectively, political life and the workplace. By shaping economic policies, the proportional representation (PR) electoral systems and centralized wage bargaining characterizing, for example, Norway and Denmark, *could* be key institutional components of the broader "Nordic model" that help explain these countries' macroeconomic successes.

We re-investigate these relationships using cross country—time series data. We propose a simple, but important, adjustment to extant studies: Paralleling studies that disentangle effects of (the broader concepts) "Consensus Democracy" and "Corporatism" (Anderson 2001; Giuliani 2016), we simultaneously account for electoral system and labor market institutions. Given their strong interrelationship, failing to do so could bias regression coefficients for electoral systems and labor market institutions on, respectively, inflation, unemployment, and economic growth.

Scholars have proposed various arguments explaining why specific electoral systems and labor market features go together. They may co-vary because certain factors jointly determine them; for example, popular pressures for adopting both PR and corporatist labor market institutions may be greater in small and open economies (Katzenstein, 1985; Rogowski, 1987). Having PR systems may also increase the likelihood of adopting corporatist institutions, since labor organizations have greater incentives to institutionalize links with specific parties (Martin & Swank, 2012). Alternatively, there may be reverse effects, e.g. because rightist parties have stronger incentives to adopt PR in tightly organized economies (Cusack et al., 2010).

We find that some relationships change when jointly investigating electoral system and labor market institutions, while others remain stable. For instance, PR is systematically associated with higher growth, even when accounting for stronger labor market coordination in PR countries. We further identify a robust curve-linear relationship between labor market coordination and the "misery variables", i.e., inflation and unemployment rates. Other unobserved confounders likely remain, and we thus caution against readily interpreting our results as identifying causal effects. Our contribution is rather to assess and mitigate one key source of bias.

Below, we first recap studies on macroeconomic effects of electoral systems, and then labor market institutions. Thereafter, we present our data and model specifications. Before concluding, we present the results.

Macroeconomic effects of electoral systems

Scholars have long argued that plural-majoritarian systems produce better economic policies and macroeconomic outcomes than PR by enhancing political accountability (Ferejohn, 1986; Persson & Tabellini, 2004). The proposed superiority of plural-majoritarian systems supposedly comes from, e.g., high vote—seat share elasticities – small changes in party/candidate vote shares generate large changes in parliamentary seat distribution. Hence, politicians should prioritize passing policies that voters prefer, over other motives. Conversely,

PR systems have lower vote—seat share elasticities, and larger district magnitudes make monitoring individual candidates more difficult for constituents (Persson & Tabellini, 2003) Further, PR systems often blur lines of accountability through inducing multi-party coalition governments, where assigning responsibilities for policies and outcomes is more difficult for voters (Powell & Whitten, 1993).

Rogowski and colleagues find such an anticipated pattern for price levels – prices are lower in plurality systems, benefitting voters/consumers (Linzer & Rogowski, 2008; Rogowski & Kayser, 2002). In contrast, there is little evidence of plurality systems inducing higher growth (Persson & Tabellini 2003). Indeed, different arguments predict that PR could increase growth, despite weaker accountability links: Under PR, governments typically raise more revenue, allowing for more investment in productivity-enhancing public goods. Second, PR incentivizes politicians to propose policies, such as inclusive education programs, appealing to large, geographically dispersed voter groups (Milesi-Ferretti, Perotti, & Rostagno, 2002), and such policies enhance growth. Third, PR systems often yield more moderate post-electoral changes in parliamentary seat composition, inducing policy stability over time, thus reducing various risks and costs for investors (Rogowski, 1987).[1] Knutsen (2011) reports that PR systems are associated with significantly higher growth rates than plural-majoritarian,[2] finding that the relationship holds when accounting for country-fixed effects.

Still, Knutsen (and others) does not control for how labor markets are organized. Since labor market organization may influence macroeconomic outcomes, this may yield particular biases. Notably, centralized wage bargaining correlates with PR, and if centralized bargaining enhances growth, extant estimates of PR on growth may be upward biased.

Macroeconomic effects of labor market coordination

The literature on labor market organization and macroeconomic outcomes offers mixed conclusions (Kenworthy, 2003). Yet, different studies highlight that aspects of "corporatism" may have benevolent effects. Most empirical studies (see Rueda, 2008, p.366) focus on more specific features such as level of wage-bargaining and union centralization. The early wage-bargaining literature (Cameron, 1978; Soskice, 1990) argues that centralized unions foster wage-moderation and reduce unemployment (see also Bassanini & Duval, 2006, pp.45–46; Uusitalo, 2005). Others have focused on union membership structure (Garrett & Way, 1999) and whether bargaining partners are insulated from negative macroeconomic consequences of their wage-demands (Olson, 1982). Well-networked and extensive unions will bear/internalize more of the costs of "irresponsible" demands, and therefore pursue bargaining strategies that keep labor costs down. Centralized and comprehensive labor unions should therefore

[1] This list of mechanisms is not exhaustive. Electoral rules may, e.g., affect corruption (Persson & Tabellini, 2003) and redistribution (Iversen & Soskice, 2006), which may, in turn, influence growth rates. Further, electoral rules affect which types of candidates are selected. Which types of politicians hold office, in turn, influences the selection of economic policies (e.g., Chattopadhyay & Duflo 2004; Hyytinen et al. 2017). Yet, the expected sign of such an indirect effect is not straightforward. Galasso & Nannicini (2017), for example, argue that plural-majoritarian systems produce lower-quality candidates (than PR) when associated with few or very many competitive districts, but higher-quality candidates for intermediate numbers of such districts

[2] Also studies employing data from fewer countries find positive or null-effects of PR on growth (Lijphart, 1999, pp. 263–270).

correspond with lower inflation and lower unemployment, and – despite a less direct link – potentially also higher growth (Traxler & Brandl, 2012).

Yet, strong unions can act as conservative forces, having the interest *and* capacity to block productivity-enhancing reforms (Lindbeck & Snower, 2001). This could, over time, induce high unemployment and perhaps even reduce growth (Faggio & Nickell, 2007, p.18). When combined with the arguments pointing in the opposite direction, there may be no clear net effects of having strong, centralized unions (Aidt & Tzannatos, 2008, p.272), *or* non-linear effects. Intermediate levels of centralization may induce the worst outcomes, with unions not being comprehensive enough to internalize externalities of excessive demands, but strong enough to push demands through (Rueda, 2008). Calmfors & Driffill (1988) point to the *level* of wage-bargaining, with firm-level and national-level bargaining producing lower inflation and lower unemployment, whereas sectoral-level bargaining induces higher inflation and unemployment.

But, as discussed, PR, which correlates with centralized bargaining, might, e.g., increase inflation. When unaccounted for, this may upward bias estimates of centralized bargaining on inflation. Centralized bargaining might thus have an even stronger inflation-reducing effect than extant studies suggest.

Data and design

Hence, plausible arguments exist for why electoral rules *and* labor market institutions affect macroeconomic outcomes. However, the two literatures rarely cite each other, or control for the alternative institutions. This is unfortunate since electoral rules and labor market structures strongly co-vary. Countries with PR systems, such as the Nordics, often display corporatist labor market institutions. Countries with plurality systems, such as the US and UK, often have pluralist labor market institutions. Our measure of centralization in wage bargaining (CENT, from 0–1) has a mean of 0.25 for plural-majoritarian and 0.44 for PR systems. The correlation between CENT and our election system dummy is .44. Thus, studies showing an association between, say, PR and growth might really be tapping into an effect attributable to centralized wage bargaining. This warrants a re-evaluation of relationships between these two institutional categories and key macroeconomic outcomes.

Our study parallels a smaller literature criticizing and re-investigating the findings of Lijphart (1999). Lijphart's "Consensus Democracy" concept is encompassing, capturing political-institutional characteristics such as electoral- and party systems, but also corporatist economic institutions. Anderson (2001) and Giuliani (2016) criticize Lijphart for including corporatism, and find that the residual effects of consensus democracy on inflation and unemployment vanish once accounting for corporatism.

Yet, our analysis differs from these studies: First, we analyze the more specific concepts of electoral system and wage-bargaining centralization. This allows using more extensive samples and, vitally, leveraging time series variation. Further, drawing on the labor-market economics literature, we model a possible non-linear relationship between labor market coordination and macroeconomic outcomes. Finally, we include economic growth as an outcome.

Our core models draw on observations from 31 OECD countries, with maximum time series from 1960–2010 (see Appendix A.1). This limits the generalizability of results to modern OECD countries.[3] Still, by only including fairly rich democracies, we mitigate concerns of unit heterogeneity.

The electoral systems coding pertain to lower-chamber/unicameral parliamentary elections at the national level. Data is from Schjølset (2008), and updated for recent years drawing on Armingeon et al (2017). Schjølset's categorization distinguishes Plural-Majoritarian, Semi-PR, and PR systems. Given the theoretical focus on the PR—Plurality distinction, the unclear conceptual distinction between PR and semi-PR systems in the coding, and the few semi-PR observations, we employ a dummy coding Plurality-Majoritarian systems as 1 and Semi-PR and PR systems as 0.[4]

We employ CENT (0–1 scale), from Visser (2011). Being a summary measure capturing centralization of wage bargaining, CENT weights centralization of power, organizationally; union/confederation coordination on demands; and, concentration of membership across unions/confederations at the predominant bargaining level. Labor markets are centralized where bargaining predominantly occurs nationally, with most members belonging to one union-federation with strong central authority (or a few, highly coordinated organizations).[5]

Regarding the outcome variables, (PPP-adjusted, real) GDP data are from Bolt & Zanden (2013). We use GDP per capita growth as dependent variable, and include ln GDP per capita to control for confounding from differences in initial income level. Inflation, from the World Bank, is highly skewed with median of 4.7 and mean of 11.6 in our sample. Thus, we use *ln(inflation+(minimum observed inflation in sample+1))*, which is close to normally distributed. Data on unemployed as percent of labor force are produced by combining OECD Historical Statistics with World Bank estimates. This variable ranges from 0.2–24.2.

Electoral systems are notoriously resistant to changes. With 31 countries, and time series "only" extending back to 1960, our sample includes one within-country change from plural-majoritarian to PR (New Zealand 1993), disabling control for country-fixed effects. Hence, unobserved country-specific characteristics could influence our results. We try to guard against this through different strategies. First, we always control for region-specific effects (region dummies from Hadenius & Teorell 2007). Second, we control for log population to account for smaller and larger countries having differential propensities to adopt PR and corporatist labor market institutions (Katzenstein, 1985). Third, we test models where we

[3] Details pertaining to the "effective samples", following Aronow & Samii (2015), are in Appendix A.1. For instance, a few smaller countries with short time series, such as Lithuania, Slovenia and Hungary, have very low regression weights in the growth regressions. More generally, regression weights are higher for the older (and richer) OECD countries than newer Eastern European members.

[4] Since PR systems differ substantially e.g. in ballot structure, and such differences may influence economic outcomes, e.g. because open-list ballots under PR incentivize politicians to target narrow constituencies, we re-ran our benchmark separating between open- and closed-list PR. Results, for instance, show that both open- and closed-list PR are associated with higher growth than plural-majoritarian systems, although results are actually only robust for open-list PR (Appendix Table XII).

[5] Explicitly: √[(Confederation authority*Confederation coordination*Confederation membership concentration)+(Union authority*Union coordination*Union membership concentration)]

include additional (country-fixed *and* time-varying) controls. While results are robust to controlling for other plausible confounders such as trade openness or ethnic composition (Appendix A.2), we opt for a more parsimonious benchmark to mitigate post-treatment bias. We always include year-fixed effects to control for different time periods being systematically associated with, say, higher unemployment globally. Country-year is unit of analysis, and we employ OLS with panel-corrected standard errors (PCSE) that account for panel-level heteroscedasticity as our benchmark.

Let us highlight one caveat. Some arguments suggest that PR leads to coordinated labor markets, and others that coordinated labor markets induce adoption of PR. Without a clever identification strategy, we cannot know – when regressing macroeconomic outcomes on both variables jointly – whether we mitigate omitted variable bias or rather control for a relevant indirect effect. What we do know, however, is that our estimates become better approximations of the direct effects of the respective institutions. Thus, our estimation strategy is conservative, but we also report regressions that would capture possible indirect effects by including only one set of institutions.

Empirical analysis

Table 1 displays our three (PR; CENT; PR *and* CENT) baseline regressions for each outcome variable. To isolate the impact of the control strategy, we keep samples constant for each outcome.

Table 1: Baseline models.

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	III	IV	V	VI	VII	VIII	IX
	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)
PR	0.417*		0.538**	0.146		-0.013	-0.031**		-0.042**
	(2.44)		(2.61)	(0.61)		(-0.04)	(-3.47)		(-3.36)
CENT		-1.221	-2.769+		9.132**	9.170**		0.140*	0.259**
		(-0.95)	(-1.89)		(5.92)	(5.31)		(2.08)	(3.04)
$CENT^2$		1.558	2.593*		-10.369**	-10.395**		-0.166**	-0.245**
		(1.52)	(2.29)		(-8.34)	(-7.78)		(-3.22)	(-3.97)
Ln GDP p.c.	-0.403	-0.581	-0.350	-8.955**	-8.924**	-8.929**	-0.280**	-0.262**	-0.285**
	(-0.90)	(-1.32)	(-0.76)	(-15.56)	(-15.43)	(-15.50)	(-5.91)	(-5.76)	(-5.72)
Ln Population	-0.037	-0.117	-0.071	1.023**	1.063**	1.062**	-0.002	0.005	0.001
	(-0.49)	(-1.38)	(-0.83)	(10.33)	(10.37)	(9.87)	(-0.62)	(1.00)	(0.20)
Region dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	961	961	961	860	860	860	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max years TS	51	51	51	51	51	51	50	50	50
R^2	.415	.414	.417	.578	.606	.606	.403	.404	.408

Notes: +p<0.1, *p<0.05, **p<0.01. Dependent variable is given in top row. All models are OLS with PCSE, adjusting for panel-level heteroscedasticity.

We first discuss the electoral system results. Overall, our analysis reveals that controlling for labor market institutions sometimes affect estimates for PR on inflation and unemployment. However, results on growth remain stable when controlling for labor market institutions. The latter is illustrated by comparing Models I and III. Model I shows that PR systems systematically have higher growth than plural-majoritarian. This result is *not* altered by controlling for labor market centralization: The PR estimate in Model III is actually higher, and turns significant at 1% (rather than 5%).

Appendix A.2 shows that this pattern occurs in various specifications. PR is positively associated with growth and mostly, though not always, significant.[6] If anything, results are stronger once controlling for labor market institutions, e.g. in models omitting population or adding a control for trade openness, when dropping the Nordics, or using a Random Effects estimator.

Regarding unemployment, PR changes sign from positive to negative, once controlling for CENT in Model VI, but remains insignificant. The result is, also more generally, sensitive to control strategy: When dropping population, PR is negative and significant (1%). But, the coefficient is attenuated once controlling for labor market institutions (almost halved, and now significant at 5%). PR systems do not have a robust relationship with unemployment.

While less robust, PR is mostly negatively related to inflation, and the relationship generally increases in strength once controlling for CENT. In the benchmark, PR is negative and significant, both when omitting (Model VII) and controlling (Model IX) for CENT, but the estimate increases by about a third in the latter specification. While Rogowski and colleagues have reported a price-level reducing effect of plural-majoritarian systems, we find suggestive evidence that PR reduces inflation rates, especially when controlling for labor market centralization.

In contrast with the electoral system results, Models II and III exemplify that there is no very clear relationship between labor-market centralization and growth. Point estimates suggest a non-linear relationship, with intermediate centralization being associated with somewhat lower growth but this relationship is significant only when accounting for electoral system. While not entirely robust, the pattern that intermediate centralization relates to slower growth typically turns clearer when controlling for PR also in alternative specifications (e.g., when dropping the highly influential case of Austria from the regressions).

There is even clearer evidence that centralization systematically relates to unemployment and inflation. This is perhaps not too surprising: Theoretical arguments on union centralization typically highlight effects on wage demands, which are clearly linked to inflation, but also to unemployment (short-term and structural) through different "Phillips Curve" mechanisms. Expectations on growth are less clear.

Models V and VII show a hump-shaped relationship between labor market centralization and unemployment and inflation. This association *could* have been due to the more centralized labor market institutions being located in PR systems. However, Models VI and IX suggest this is not so, and these findings are quite robust (Appendix A.2).[7] The hump-shaped relationship is, most often, unaltered (and sometimes turns clearer) once controlling for electoral system.

[6] One exception is when clustering errors by country. Yet, PR remains significant when modeling autocorrelation as a panel-specific AR(1) process (Appendix A.2).

[7] Results turn weaker once adjusting for panel-specific AR(1) autocorrelation. Yet, results are retained when clustering errors by country. Further, following Aronow and Samii (2015), we find that Austria has a very high regression weight for the (linear) CENT coefficients. When omitting Austria, the hump-shaped relationship turns much weaker for inflation, but remains robust for unemployment.

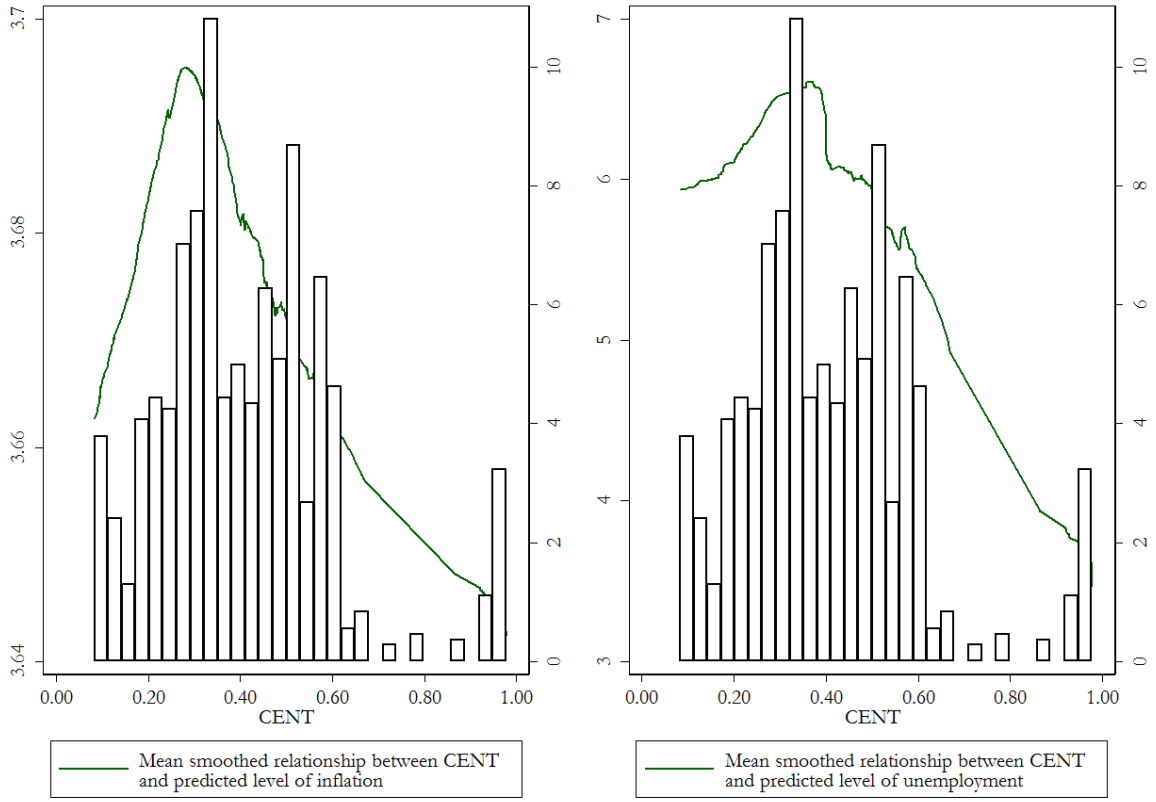

Figure 1: Predicted values (left Y-Axis) on inflation (left diagram), and unemployment (right) over CENT (X-axis). Predictions are based on running-mean smoothing (all covariates from baseline at means). Histograms on CENT distributions are overlaid (percent observations on right Y-axis).

Figure 1 displays predicted inflation and unemployment rates from Models VI and IX. Predictions are based on running-mean smoothing to detect more fine-grained patterns. Yet, Figure 1 basically shows hump-shaped patterns. For example, going from 0 to 0.4 on CENT increases predicted unemployment rate by about 0.7 percentage points, whereas going from 0.4 to 1 reduces it by about 3 percentage points.

Conclusion

We have argued for the importance of jointly accounting for electoral systems and labor market institutions when investigating macroeconomic outcomes. Particular electoral systems and labor market institutions tend to cluster together in packages, as the "Nordic model" encompassing PR systems and centralized wage bargaining exemplify. Since most studies have not accounted for this institutional clustering, extant results could be biased.

Drawing on data from OECD democracies, we assess this potential source of bias by considering relationships between electoral systems and labor market structures, on the one hand, and various macroeconomic outcomes. PR systems are related to higher economic growth, even when accounting for more coordinated labor market institutions in PR countries. However, we do not find that PR is related to higher inflation (cf. Linzer & Rogowski, 2008)

or to unemployment, and the latter (null) result often turns clearer once accounting for labor market features.

We find curve-linear relationships between centralization of wage negotiations and inflation/unemployment. Very decentralized and highly centralized systems have lower inflation and unemployment than intermediate systems. Importantly, the curve-linear relationships are robust to accounting for the electoral system. There are also indications that intermediate centralization corresponds with slower growth, though only when accounting for electoral system differences.

Literature

Aidt, T. S., & Tzannatos, Z. (2008). Trade unions, collective bargaining and macroeconomic performance: a review. *Industrial Relations Journal*, *39*(4), 258–295.

Anderson, L. (2001). The Implications of Institutional Design for Macroeconomic Performance: Reassessing the Claims of Consensus Democracy. *Comparative Political Studies*, *34*(4), 429–452.

Aronow, P.M., & Samii, C. (2015). Does Regression Produce Representative Estimates of Causal Effects. *American Journal of Political Science, 60*(1), 250–267.

Bassanini, A., & Duval, R. (2006). The determinants of unemployment across OECD countries: Reassessing the role of policies and institutions. *OECD Economic Studies*, *42*(1), 7–86.

Bolt, J., & Zanden, J. L. van. (2013). *The First Update of the Maddison Project; Re-Estimating Growth Before 1820*. Maddison Project Working Paper 4.

Brandl, B., & Traxler, F. (2009). Labour conflicts: A cross-national analysis of economic and institutional determinants, 1971–2002. *European Sociological Review*, *26*(5)1, 519–540,

Calmfors, L., & Driffill, J. (1988). Bargaining structure, corporatism and macroeconomic performance. *Economic Policy*, *3*(6), 13–61.

Cameron, D. R. (1978). The expansion of the public economy: A comparative analysis. *American Political Science Review*, *72*(4), 1243–1261.

Chattopadhyay, R., & Duflo, E. (2004). Women as Policy Makers: Evidence from a Randomized Policy Experiment in India. *Econometrica* 72(5), 1409–1443.

Cusack, T., Iversen, T., & Soskice, D. (2010). Coevolution of capitalism and political representation: The choice of electoral systems. *American Political Science Review*, *104*(2), 393–403.

Faggio, G., & Nickell, S. (2007). Patterns of work across the OECD. *The Economic Journal*, *117*(521), F416–F440.

Ferejohn, J. (1986). Incumbent Performance and Electoral Control. *Public Choice*, *50*(1), 5–25.

Galasso, V., & Nannicini, T. (2017). Political Selection under Alternative Electoral Rules. *Public Choice 171*(3–4), 257–281.

Garrett, G., & Way, C. (1999). Public sector unions, corporatism, and macroeconomic performance. *Comparative Political Studies*, *32*(4), 411–434.

Giuliani, M. (2016). Patterns of democracy reconsidered: The ambiguous relationship between corporatism and consensualism. *European Journal of Political Research*, *55*(1), 22–42.

Hadenius, A., & Teorell, J. (2007). Pathways from authoritarianism. *Journal of Democracy*, *18*(1), 143–157.

Hyytinen, A., Meriläinen, J., Saarimaa, T., Toivanen O., & Tukiainen, J. (2017). Public Employees as Politicians: Evidence from Close Elections. *American Political Science Review* OnlineFirst, 1–14.

Iversen, T., & Soskice, D. (2006). Electoral Institutions and the Politics of Coalitions: Why Some Democracies Redistribute More Than Others. *American Political Science Review* 100(2), 165–181.

Katzenstein, P. J. (1985). *Small states in world markets: Industrial policy in Europe*. Itacha: Cornell University Press.

Kenworthy, L. (2003). Quantitative indicators of corporatism. *International Journal of Sociology*, *33*(3), 10–44.

Knutsen, C. H. (2011). Which democracies prosper? Electoral rules, form of government and economic growth. *Electoral Studies*, *30*(1), 83–90.

Lindbeck, A., & Snower, D. J. (2001). Centralized bargaining and reorganized work: Are they compatible? *European Economic Review*, *45*(10), 1851–1875.

Linzer, D. A., & Rogowski, R. L. (2008). Lower Prices: The Impact of Majoritarian Systems in Democracies Around the World. *The Journal of Politics*, *70*(1), 17–27.

Martin, C. J., & Swank, D. (2012). *The Political Construction of Business Interests: Coordination, Growth, and Equality*. Cambridge: Cambridge University Press.

Milesi-Ferretti, G. M., Perotti, R., & Rostagno, M. (2002). Electoral systems and public spending. *Quarterly Journal of Economics, 117(2)*, 609–657.

Olson, M. (1982). *The rise and decline of nations: Economic growth, stagflation, and social rigidities*. New Heaven: Yale University Press.

Persson, T., & Tabellini, G. (2003). *The economic effects of constitutions*. Cambridge: MIT Press.

Persson, T., & Tabellini, G. (2004). Constitutions and economic policy. *Journal of Economic Perspectives*, *18*(1), 75–98.

Powell, G., & Whitten, G. (1993). A Cross-National Analysis of Economic Voting: Taking Account of the Political Context. *American Journal of Political Science, 37*(2), 391-414

Rogowski, R. (1987). Trade and the variety of democratic institutions. *International Organization*, *41*(2), 203–223.

Rogowski, R., & Kayser, M. A. (2002). Majoritarian electoral systems and consumer power: price-level evidence from the OECD countries. *American Journal of Political Science*, *46*(3), 526–539.

Rueda, D. (2008). Left government, policy, and corporatism: Explaining the influence of partisanship on inequality. *World Politics*, *60*(3), 349–389.

Schjølset, A. (2008). *Institutional Variance of the Democratic Peace, 1816-2002*. University of Southern California. PhD Thesis.

Soskice, D. (1990). Wage determination: the changing role of institutions in advanced industrialized countries. *Oxford Review of Economic Policy*, *60*(4), 36–61.

Traxler, F., & Brandl, B. (2012). Collective Bargaining, Inter-Sectoral Heterogeneity and Competitiveness: A Cross-National Comparison of Macroeconomic Performance. *British Journal of Industrial Relations*, *50*(1), 73–98.

Uusitalo, R. (2005). Do Centralized Bargains Lead to Wage Moderation? Time-Series Evidence from Finland. In H. Piekkola & K. Snellman (Eds.), *Collective Bargaining and Wage Formation* (pp.121–132). Heidelberg: Physica-Verlag.

Visser, J. (2011). ICTWSS: Database on institutional characteristics of trade unions, wage setting, state intervention and social pacts in 34 countries between 1960 and 2007. *AIAS, University of Amsterdam, Amsterdam*.

Online Appendices for

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Appendix A.1 Descriptive statistics and sample information

Table I. The country-years that enter all our baseline models

	Start year	End year
United States	1961	2009
Canada	1961	1993
United Kingdom	1961	2010
Ireland	1971	2010
Netherlands	1961	2010
Belgium	1961	2010
France	1963	2010
Switzerland	1981	2010
Spain	1978	2004
Portugal	1978	2008
Germany	1991	2010
Austria	1961	2010
Italy	1961	2010
Greece	1980	2008
Lithuania	2001	2008
Finland	1961	2010
Sweden	1961	2010
Norway	1961	2010
Denmark	1961	2010
Japan	1961	2010
Australia	1961	2008
New Zealand	1978	2008

Table II. The country-years that enter GDP per capita growth models

	Start year	End year
United States	1960	2009
Canada	1960	2009
United Kingdom	1960	2010
Ireland	1960	2010
Netherlands	1960	2010
Belgium	1960	2010
France	1963	2010
Switzerland	1960	2010
Spain	1978	2010
Portugal	1978	2008
Germany	1992	2010
Poland	1990	2010
Austria	1960	2010
Hungary	1995	2008
Czech Republic	1995	2009
Slovak Republic	1995	2008
Italy	1960	2010
Slovenia	1998	2008
Greece	1980	2008
Bulgaria	1990	2008
Romania	1993	2008
Estonia	1992	2007
Latvia	1995	2007
Lithuania	2001	2008
Finland	1960	2010
Sweden	1960	2010
Norway	1960	2010
Denmark	1960	2010
Japan	1960	2010
Australia	1961	2008
New Zealand	1970	2008

Table III. The country-years that enter unemployment rate models

	Start year	End year
United States	1960	2009
Canada	1960	1993
United Kingdom	1960	2010
Ireland	1960	2010
Netherlands	1960	2010
Belgium	1960	2010
France	1963	2010
Switzerland	1960	2010
Spain	1978	2004
Portugal	1978	2008
Germany	1991	2010
Austria	1960	2010
Italy	1960	2010
Greece	1980	2008
Lithuania	2001	2008
Finland	1960	2010
Sweden	1960	2010
Norway	1960	2010
Denmark	1960	2010
Japan	1960	2010
Australia	1960	2008
New Zealand	1970	2008

Table IV. The country-years that enter inflation models

	Start year	End year
United States	1961	2009
Canada	1961	2009
United Kingdom	1961	2010
Ireland	1971	2010
Netherlands	1961	2010
Belgium	1961	2010
France	1963	2010
Switzerland	1981	2010
Spain	1978	2010
Portugal	1978	2008
Germany	1991	2010
Poland	1993	2010
Austria	1961	2010
Hungary	1995	2008
Czech Republic	1995	2009
Slovak Republic	1993	2008
Italy	1961	2010
Slovenia	1998	2008
Greece	1980	2008
Bulgaria	1990	2008
Romania	1993	2008
Estonia	1996	2007
Latvia	1995	2007
Lithuania	2001	2008
Finland	1961	2010
Sweden	1961	2010
Norway	1961	2010
Denmark	1961	2010
Japan	1961	2010
Australia	1961	2008
New Zealand	1978	2008

Table V. Descriptive statistics, restricted to the 809 observations that enter all our baseline models

	Mean	Std. dev.	Min.	Max.
Inflation	3.66	0.11	3.32	4.12
Unemployment (percent)	6.07	3.98	0.18	24.20
Proportional Representation (dummy)	0.75	0.44	0	1
GDP/capita (logged)	9.61	0.35	8.40	10.35
GDP/capita (growth)	2.33	2.41	-9.03	10.99
Population (log)	9.71	1.24	8.00	12.63
CENT	0.41	0.20	0.08	0.98
$CENT^2$	0.21	0.21	0.01	0.96

Table VI. Contributions to effect estimates and the "effective sample", following the procedure of Aronow and Samii (2015), for Model 3, Table 1

Country	Country contribution to effect estimate of PR	Country	Country contribution to effect estimate of CENT (linear coefficient)
Lithuania	.0000348	Lithuania	.0008218
Slovenia	.0004259	Hungary	.0009667
Hungary	.0009377	Poland	.0010981
Greece	.0009603	Romania	.0014694
Estonia	.000977	Belgium	.0015718
Norway	.001404	Slovenia	.0019263
Romania	.0015207	France	.0021443
Portugal	.0015357	Canada	.0024981
Austria	.002503	Latvia	.0027117
Denmark	.0030477	Denmark	.0030859
Bulgaria	.0032167	Bulgaria	.0036785
Ireland	.00337	Spain	.0038628
Latvia	.0042466	Greece	.0038665
Sweden	.0053602	Czech Republic	.0041395
Czech Republic	.007974	Sweden	.0049186
Poland	.0081299	Portugal	.0050766
Slovakia	.0100142	Estonia	.0073848
Belgium	.0111423	Japan	.0084941
Japan	.0112946	Germany	.0089511
Netherlands	.0114927	Norway	.0096545
United States	.0117647	United States	.0122384
Finland	.0121263	Netherlands	.0147485
Germany	.0127587	Slovakia	.0157423
Spain	.026966	Italy	.0161558
France	.0584163	Ireland	.0242508
United Kingdom	.0781463	United Kingdom	.0375458
Switzerland	.0936624	Finland	.0382589
Italy	.1114095	Australia	.0596748
Canada	.1378556	New Zealand	.0778266
Australia	.1777079	Switzerland	.1029324
New Zealand	.1895983	Austria	.5223046

Note: The composition of the effective sample are not very different for the unemployment and inflation regressions, and tables with the specific regression weights for these regressions are available on request (and possible to construct using the available replication material).

Table VII. Country means on main independent variables, calculated for sample entering Model 3, Table 1 (benchmark GDP per capita growth specification).

	CENT	PR
Lithuania	0.306	1
Hungary	0.236	1
Poland	0.227	1
Romania	0.241	1
Belgium	0.461	1
Slovenia	0.332	1
France	0.204	0
Canada	0.277	0
Latvia	0.504	1
Denmark	0.530	1
Bulgaria	0.338	1
Spain	0.331	1
Greece	0.332	1
Czech Republic	0.259	1
Sweden	0.541	1
Portugal	0.315	1
Estonia	0.327	1
Japan	0.223	1
Germany	0.456	1
Norway	0.575	1
United States	0.131	0
Netherlands	0.538	1
Slovakia	0.507	1
Italy	0.322	1
Ireland	0.414	1
United Kingdom	0.206	0
Finland	0.387	1
Australia	0.509	0
New Zealand	0.268	0.410
Switzerland	0.328	1
Austria	0.955	1

Appendix A.2 Robustness tests

Table I. Including Ethnic Fractionalization

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	III	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.364*		0.521*	0.389		-0.145	-0.030**		-0.042**
	(2.17)		(2.56)	(1.61)		(-0.52)	(-3.71)		(-3.52)
CENT		-1.564	-3.034*		11.665**	12.118**		0.143*	0.259**
		(-1.22)	(-2.05)		(7.35)	(6.69)		(1.99)	(2.90)
$CENT^2$		1.657	2.651*		-11.327**	-11.632**		-0.167**	-0.245**
		(1.62)	(2.34)		(-9.11)	(-8.50)		(-3.17)	(-3.93)
Ln GDP p.c.	-0.323	-0.449	-0.236	-9.691**	-9.897**	-9.967**	-0.280**	-0.263**	-0.285**
	(-0.71)	(-0.99)	(-0.50)	(-16.16)	(-16.49)	(-16.34)	(-5.80)	(-5.48)	(-5.50)
Ln Population	-0.037	-0.127	-0.081	1.004**	1.146**	1.135**	-0.002	0.005	0.001
	(-0.49)	(-1.49)	(-0.95)	(10.20)	(10.70)	(10.24)	(-0.62)	(0.99)	(0.20)
Ethnic fraction.	-0.486	-0.571+	-0.524+	3.633**	3.612**	3.628**	0.002	0.005	-0.000
	(-1.64)	(-1.79)	(-1.66)	(7.75)	(7.69)	(7.80)	(0.12)	(0.24)	(-0.01)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	961	961	961	860	860	860	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant, region dummies and year dummies are omitted from table. Ethnic fractionalization index is taken from Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. Journal of Economic Growth, 8(2), 155–194.

Table II. Including trade openness

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I b/t	II b/t	III b/t	IV b/t	V b/t	VI b/t	VII b/t	VIII b/t	IX b/t
PR	0.264		0.448*	-0.072		-0.048	-0.021*		-0.032*
	(1.43)		(2.09)	(-0.27)		(-0.16)	(-2.13)		(-2.45)
CENT		-3.021*	-4.201**		7.440**	7.573**		0.231**	0.314**
		(-2.11)	(-2.63)		(4.26)	(4.09)		(2.68)	(3.04)
$CENT^2$		2.967*	3.736**		-9.084**	-9.172**		-0.245**	-0.298**
		(2.56)	(2.99)		(-6.46)	(-6.37)		(-3.73)	(-3.97)
Ln GDP pc	-1.214**	-1.327**	-1.128*	-9.673**	-9.481**	-9.503**	-0.303**	-0.289**	-0.308**
	(-2.60)	(-2.88)	(-2.34)	(-16.20)	(-15.62)	(-15.75)	(-5.61)	(-5.53)	(-5.41)
Ln Population	0.086	-0.000	0.034	1.261**	1.251**	1.247**	0.001	0.006	0.004
	(1.00)	(-0.00)	(0.35)	(12.34)	(11.47)	(11.05)	(0.27)	(1.17)	(0.81)
Trade openness	1.683**	1.939**	1.853**	2.724**	2.270**	2.278**	-0.041+	-0.061**	-0.054*
	(4.47)	(5.03)	(4.82)	(5.39)	(4.56)	(4.48)	(-1.94)	(-2.66)	(-2.44)
Region dum.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	826	826	826	761	761	761	772	772	772
Countries	31	31	31	22	22	22	31	31	31
Max time series	45	45	45	45	45	45	44	44	44

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant, region dummies and year dummies are omitted from table. Trade openness is from Barbieri, K., Keshk, O., & Pollins, B. (2008). Correlates of war project trade data set codebook. Codebook Version, 2.
Retrieved from http://correlatesofwar.org/COW2%20Data/Trade/Trade_Codebook_2.01.pdf

Table III. Prais-Winsten regressions with panel-specific AR(1) correction

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	II	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.626**		0.985**	-1.333**		-1.159+	-0.035*		-0.042*
	(2.63)		(3.21)	(-2.78)		(-1.85)	(-2.32)		(-2.29)
CENT		-1.390	-4.811*		-2.147	-1.561		0.272+	0.318+
		(-0.85)	(-2.38)		(-0.88)	(-0.65)		(1.73)	(1.94)
$CENT^2$		1.634	3.916**		1.335	1.189		-0.261*	-0.284*
		(1.30)	(2.62)		(0.58)	(0.52)		(-2.35)	(-2.51)
Ln GDP p.c.	0.454	0.195	0.624	-9.233**	-8.663**	-9.114**	-0.359**	-0.345**	-0.370**
	(0.79)	(0.35)	(1.06)	(-7.17)	(-6.63)	(-6.97)	(-3.96)	(-3.85)	(-3.76)
Ln Population	0.003	-0.137	-0.065	1.083**	1.226**	1.037**	-0.001	0.016	0.006
	(0.03)	(-1.24)	(-0.60)	(4.68)	(4.68)	(3.57)	(-0.09)	(1.36)	(0.64)
N	961	961	961	860	860	860	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. Constant, region dummies and year dummies are omitted from table.

Table IV. Clustered Sandwich Estimator

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	II	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.417		0.538	0.146		-0.013	-0.031+		-0.042+
	(1.39)		(1.39)	(0.15)		(-0.01)	(-1.78)		(-1.81)
CENT		-1.221	-2.769		9.132+	9.170+		0.140	0.259+
		(-0.68)	(-1.23)		(1.90)	(1.87)		(1.14)	(1.72)
$CENT^2$		1.558	2.593		-10.369*	-10.395*		-0.166	-0.245*
		(1.16)	(1.62)		(-2.78)	(-2.74)		(-1.67)	(-2.14)
Ln GDP p.c.	-0.403	-0.581	-0.350	-8.955**	-8.924**	-8.929**	-0.280**	-0.262**	-0.285**
	(-0.65)	(-1.08)	(-0.52)	(-4.57)	(-4.54)	(-4.58)	(-3.93)	(-3.85)	(-3.79)
Ln Population	-0.037	-0.117	-0.071	1.023*	1.063**	1.062*	-0.002	0.005	0.001
	(-0.34)	(-0.96)	(-0.58)	(2.81)	(2.92)	(2.71)	(-0.29)	(0.58)	(0.10)
N	961	961	961	860	860	860	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. Constant, region dummies and year dummies are omitted from table.

Table V. Estimating Table 1 with Random effects (on country) and clustered errors (on country)

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	III	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.552*		0.752*	-0.176		-0.225	-0.048**		-0.063**
	(1.97)		(2.08)	(-0.26)		(-0.30)	(-2.59)		(-2.76)
CENT		-1.786	-3.995		-0.145	-0.226		0.179	0.324*
		(-1.00)	(-1.61)		(-0.03)	(-0.05)		(1.29)	(2.10)
$CENT^2$		1.888	3.371*		-1.667	-1.532		-0.196+	-0.290*
		(1.50)	(1.96)		(-0.28)	(-0.25)		(-1.74)	(-2.43)
Ln GDP pc	-1.367**	-1.511**	-1.220**	-6.774**	-6.518**	-6.572**	-0.283**	-0.270**	-0.298**
	(-3.35)	(-3.53)	(-2.70)	(-3.69)	(-3.81)	(-3.80)	(-4.16)	(-3.95)	(-4.09)
Ln population	0.051	-0.052	-0.026	0.458	0.442	0.418	-0.009	-0.000	-0.003
	(0.41)	(-0.37)	(-0.19)	(1.04)	(1.07)	(0.93)	(-1.09)	(-0.01)	(-0.37)
Region dummies	No	No	No	No	No	No	No	No	No
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	964	964	964	864	864	864	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are Random Effects (GLS) models with errors clustered by country. Constant and year dummies are omitted from table.

Table VI. Dropping Ln population

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I b/t	II b/t	III b/t	IV b/t	V b/t	VI b/t	VII b/t	VIII b/t	IX b/t
PR	0.482**		0.606**	-1.382**		-0.771*	-0.027**		-0.043**
	(3.54)		(2.95)	(-6.87)		(-2.45)	(-3.36)		(-3.20)
CENT		-0.132	-2.373+		-0.683	2.246		0.098+	0.253**
		(-0.13)	(-1.73)		(-0.50)	(1.16)		(1.87)	(3.36)
$CENT^2$		0.828	2.334*		-3.711**	-5.697**		-0.139**	-0.241**
		(0.90)	(2.13)		(-3.20)	(-3.83)		(-3.10)	(-4.26)
Ln GDP p.c	-0.314	-0.556	-0.273	-8.756**	-7.893**	-8.305**	-0.279**	-0.260**	-0.285**
	(-0.69)	(-1.28)	(-0.59)	(-14.44)	(-13.09)	(-13.51)	(-5.84)	(-5.84)	(-5.72)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	962	962	962	860	860	860	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant, region dummies and year dummies are omitted from table.

Table VII. Dropping Ln GDP per capita

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I b/t	II b/t	III b/t	IV b/t	V b/t	VI b/t	VII b/t	VIII b/t	IX b/t
PR	0.476**		0.611**	1.129**		1.611**	0.017*		0.024*
	(2.82)		(3.09)	(4.27)		(4.97)	(2.11)		(2.32)
CENT		-1.309	-3.027*		6.554**	1.862		0.135*	0.066
		(-1.03)	(-2.13)		(3.88)	(1.01)		(2.07)	(0.83)
$CENT^2$		1.589	2.751*		-9.070**	-5.850**		-0.176**	-0.130*
		(1.56)	(2.48)		(-6.51)	(-4.15)		(-3.46)	(-2.17)
Ln Population	-0.031	-0.131	-0.072	0.951**	0.657**	0.822**	0.006	0.002	0.004
	(-0.41)	(-1.58)	(-0.85)	(8.07)	(5.37)	(6.69)	(1.48)	(0.54)	(1.05)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	961	961	961	866	866	866	936	936	936
Countries	31	31	31	23	23	23	34	34	34
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant, region dummies and year dummies are omitted from table.

Table VIII. Dropping region dummies

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	III	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.552**		0.752**	-1.150**		-1.684**	-0.044**		-0.058**
	(3.25)		(3.75)	(-4.55)		(-5.76)	(-5.07)		(-4.80)
CENT		-1.786	-3.995**		9.007**	14.216**		0.138*	0.306**
		(-1.35)	(-2.69)		(5.49)	(7.08)		(2.10)	(3.72)
$CENT^2$		1.888+	3.371**		-10.177**	-13.724**		-0.164**	-0.275**
		(1.80)	(2.95)		(-7.68)	(-8.83)		(-3.24)	(-4.60)
Ln GDP p.c.	-1.367**	-1.511**	-1.220**	-8.399**	-7.829**	-8.754**	-0.274**	-0.259**	-0.284**
	(-3.86)	(-4.36)	(-3.31)	(-14.04)	(-12.81)	(-14.59)	(-5.77)	(-5.52)	(-5.63)
Ln Population	0.051	-0.052	-0.026	0.335**	0.572**	0.526**	-0.009**	-0.002	-0.003
	(0.69)	(-0.59)	(-0.30)	(3.19)	(5.22)	(4.71)	(-2.88)	(-0.42)	(-0.89)
Region dummies	No	No	No	No	No	No	No	No	No
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	964	964	964	864	864	864	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant and year dummies are omitted from table.

Table IX. Dropping year dummies

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	III	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.200		0.158	1.707**		2.523**	-0.022*		-0.022+
	(0.97)		(0.68)	(4.93)		(6.12)	(-2.19)		(-1.75)
CENT		-0.307	-0.762		4.662*	-2.799		0.064	0.124
		(-0.20)	(-0.45)		(2.15)	(-1.23)		(0.83)	(1.39)
$CENT^2$		0.976	1.286		-7.886**	-2.728		-0.123*	-0.164*
		(0.75)	(0.93)		(-4.64)	(-1.64)		(-2.02)	(-2.42)
Ln GDP p.c.	-1.774**	-1.780**	-1.772**	0.689+	0.767*	0.785*	-0.201**	-0.201**	-0.202**
	(-7.04)	(-7.03)	(-7.02)	(1.75)	(2.01)	(2.11)	(-10.31)	(-10.26)	(-10.34)
Ln Population	-0.101	-0.102	-0.088	1.119**	0.627**	0.875**	-0.003	-0.001	-0.003
	(-1.07)	(-1.01)	(-0.84)	(7.66)	(4.22)	(5.82)	(-0.58)	(-0.26)	(-0.69)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	No	No	No	No	No	No	No	No
N	961	961	961	860	860	860	907	907	907
Countries	31	31	31	22	22	22	31	31	31
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant and region dummies are omitted from table.

Table X. Dropping Nordic countries from sample

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I b/t	II b/t	III b/t	IV b/t	V b/t	VI b/t	VII b/t	VIII b/t	IX b/t
PR	0.446**		0.561**	0.201		0.063	-0.047**		-0.055**
	(2.59)		(2.71)	(0.83)		(0.22)	(-4.35)		(-3.88)
CENT		-1.625	-3.138*		10.163**	9.981**		0.054	0.197*
		(-1.22)	(-2.07)		(6.26)	(5.54)		(0.72)	(2.29)
$CENT^2$		1.937+	2.915*		-11.081**	-10.961**		-0.088	-0.177**
		(1.79)	(2.47)		(-8.24)	(-7.68)		(-1.48)	(-2.79)
Ln GDP p.c.	-0.427	-0.678	-0.418	-9.366**	-9.131**	-9.100**	-0.329**	-0.297**	-0.331**
	(-0.87)	(-1.42)	(-0.83)	(-14.95)	(-14.68)	(-14.57)	(-6.08)	(-5.87)	(-5.86)
Ln Population	-0.026	-0.095	-0.054	1.143**	1.130**	1.135**	0.006	0.011+	0.007
	(-0.30)	(-0.98)	(-0.57)	(10.51)	(9.94)	(9.72)	(1.23)	(1.87)	(1.40)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	758	758	758	657	657	657	708	708	708
Countries	27	27	27	18	18	18	27	27	27
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant and region dummies are omitted from table.

Table XI. Dropping Austria from sample

	GDP P.C. GROWTH			UNEMPLOYMENT RATE			INFLATION RATE		
	I	II	II	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
PR	0.389*		0.550**	0.343		-0.014	-0.027**		-0.040**
	(2.28)		(2.69)	(1.41)		(-0.05)	(-2.99)		(-3.23)
CENT		-3.788	-5.746*		9.765**	9.820**		-0.107	0.020
		(-1.62)	(-2.36)		(3.42)	(3.31)		(-0.85)	(0.16)
$CENT^2$		5.321+	6.922*		-11.320**	-11.366**		0.194	0.098
		(1.71)	(2.20)		(-2.98)	(-2.96)		(1.05)	(0.55)
Ln GDP p.c.	-0.409	-0.678	-0.456	-8.854**	-8.810**	-8.816**	-0.280**	-0.275**	-0.296**
	(-0.91)	(-1.46)	(-0.95)	(-15.39)	(-14.92)	(-14.93)	(-5.89)	(-5.66)	(-5.63)
Ln Population	-0.035	-0.119	-0.072	0.992**	1.060**	1.059**	-0.003	0.005	0.001
	(-0.47)	(-1.41)	(-0.85)	(9.98)	(10.30)	(9.80)	(-0.76)	(1.04)	(0.31)
N	910	910	910	809	809	809	857	857	857
Countries	30	30	30	21	21	21	30	30	30
Max time series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Constant and region dummies are omitted from table.

Table XII. Nuancing PR electoral systems, according to ballot structure (open vs closed-list)

	GDP P.C. GROWTH			UNEMPLOYMENT RATE				INFLATION RATE	
	I	II	II	IV	V	VI	VII	VIII	IX
	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t	b/t
Open-list PR	0.633**		0.659**	-0.220		-0.322	-0.027*		-0.036*
	(2.99)		(2.90)	(-0.78)		(-1.03)	(-2.01)		(-2.39)
Closed-list PR	0.314+		0.280	0.359		0.747*	-0.036**		-0.046**
	(1.69)		(1.17)	(1.32)		(2.11)	(-3.92)		(-3.34)
CENT		-0.502	-1.315		8.806**	5.728**		0.063	0.224*
		(-0.37)	(-0.79)		(5.02)	(2.68)		(0.79)	(2.14)
$CENT^2$		0.979	1.689		-10.217**	-8.548**		-0.104+	-0.208**
		(0.91)	(1.36)		(-7.40)	(-5.39)		(-1.72)	(-2.80)
Ln GDP p.c.	-0.158	-0.321	-0.201	-9.015**	-8.874**	-8.615**	-0.298**	-0.276**	-0.300**
	(-0.33)	(-0.69)	(-0.42)	(-14.17)	(-14.06)	(-13.80)	(-5.80)	(-5.62)	(-5.68)
Ln Population	0.004	-0.083	0.010	0.876**	0.942**	0.772**	-0.000	0.004	0.003
	(0.06)	(-0.88)	(0.11)	(8.44)	(8.01)	(6.54)	(-0.04)	(0.73)	(0.58)
N	844	844	844	743	743	743	792	792	792
Countries	29	29	29	20	20	20	29	29	29
Max time-series	51	51	51	51	51	51	50	50	50

Notes: + p<0.1, * p<0.05, ** p<0.01. Dependent variable is given in top row. All models are OLS with panel corrected standard errors, adjusting for panel-level heteroscedasticity. Plural-majoritarian systems is the reference category for the electoral system categorization. The coding of Open- vs Closed-list PR draws on the Electoral System Change in Europe (ESCE) dataset (Pilet et al 2016), using their FT_ballot variable (we count "flexible list", "open list", "panachage", and "ordinal systems" in the Open-list category when we sub-divide the PR systems. Constant and region dummies are omitted from table.