APPENDIX

This appendix presents some robustness checks conducted in extension of the analysis in the main paper. The appendix only briefly discusses these results, and reports several of the results in tables. The appendix also contains a brief methodical discussion related to the 2SLS analysis.

First, we investigate whether the Fixed Effects (FE) results in the main analysis is altered when rather applying Random Effects (RE) versions of the models. Table A1 reports results from the RE models, based on the three types of model-specifications (Models A, B and C) utilized in the main analysis.

The RE models yield basically similar results as the FE models, regarding the effects of electoral rules and form of government on economic growth. More specifically, all models find an effect of PR significant at least at the 1%-level. The estimated increase in annual economic growth, when going from a plural-majoritarian to a PR-system, varies between 1.1 and 1.4 percentage points. The estimated effect of substituting a plural-majoritarian system with a semi-PR system in Model A is approximately 1.8 percentage point extra annual growth, and the semi-PR coefficient is significant at the 0.1%-level. The semi-PR effect is smaller, but still positive and significantly different from zero at the 5%-level in the B and C models. As for the FE models in the main paper, no model finds any significant effect of form of government on economic growth.

Table A1 Results from Random Effects Models[a]

	A		B		C	
	b	t	b	t	b	t
PR	1.43***	(4.05)	1.13***	(3.45)	1.10**	(3.19)
Semi-PR	1.84***	(3.67)	1.21*	(2.55)	1.17*	(2.32)
Parliam.	0.44	(0.93)	0.17	(0.36)	0.27	(0.57)
Semi-pres.	0.02	(0.04)	-0.33	(-0.73)	-0.15	(-0.30)
Ethnic fract.	-1.54	(-1.36)	-1.32	(-1.27)	-1.42	(-1.15)
British col.	-0.15	(-0.23)	-1.23	(-1.56)	-1.15	(-1.28)
Iberian col.	-1.41	(-1.08)	-2.75*	(-2.04)	-2.47	(-1.63)
Other col.	-2.89**	(-2.72)	-3.60***	(-3.40)	-3.62*	(-2.50)
Federalist	0.33	(0.64)	-0.06	(-0.11)	0.02	(0.03)
Hyb. fed-un.	-0.03	(-0.06)	0.12	(0.25)	0.22	(0.41)
E.Eur.-Sov.	-2.06*	(-2.13)	-0.50	(-0.45)	-0.46	(-0.36)
Africa SS	-3.74***	(-3.47)	-3.20*	(-2.52)	-4.31**	(-3.03)
Asia-Pacific	-1.53^	(-1.75)	-0.60	(-0.63)	-1.82	(-1.24)
M.E. - N.A.	-0.22	(-0.20)	0.33	(0.29)	-1.70	(-0.72)
Latin Am.	-1.85	(-1.36)	-2.42*	(-1.98)	-2.88*	(-2.12)
Ln GDP pc	-1.88***	(-5.71)	-1.66***	(-4.98)	-1.92***	(-5.55)
Ln Pop.	-0.24	(-1.32)	-0.23	(-1.00)	-0.28	(-1.08)
Ln Reg. dur.	0.09	(0.74)	-0.11	(-0.91)	-0.14	(-1.16)
ENGFRAC			0.08	(0.07)	-0.17	(-0.12)
EURFRAC			1.85*	(2.37)	2.17*	(2.24)
HJFRAROM			-0.38	(-0.78)	-0.49	(-0.86)
Latitude			-0.02	(-1.34)	-0.02	(-1.11)
Polity					-0.07	(-1.18)
Sunni					-2.56	(-1.02)
Shia					0.29	(0.13)
Catholic					-3.15	(-1.12)
Protestant					-2.53	(-0.89)
Orthodox					-3.11	(-1.00)
Hindu					-1.83	(-0.63)
Buddhist+					-2.04	(-0.71)
Indigeneous					-2.40	(-0.83)
N	3701		3521		3520	

[a] In all tables, *** indicates p<0.001, ** indicates p<0.01, * indicates p<0.05 and ^ indicates p<0.10. Decade dummies and constant are omitted from all tables.

Table A2 reports some of the robustness checks described in the text of the main paper. More specifically, the Table presents a model using year dummies instead of decade dummies, models using 1- and 4- instead of 2-year lags on the independent variables, and two models leaving out the Nordic countries and the US from the sample, respectively. The Table also presents models drawing on data from the different time periods and geographical areas described in Secton 4.2 of the main paper, and a model including only observations with a Polity-score greater than or equal to 6.

As already discussed in the main paper, the results from the main analysis are not very sensitive to these various specification-changes, with some exceptions for form of government in the short time-series sample (and in the Western sample, but here the number of countries without parliamentary systems are very small). Generally, there is a positive effect of PR and semi-PR systems on economic growth, but form of government does not systematically influence growth.

Table A2: Selected results from robustness checks (OLS with PCSE, A-models)

	Year dummies b/(t)	1-year lag b/(t)	4-year lag b/(t)	Nordic excl. b/(t)	US excl. b/(t)	Post-1899 b/(t)	Post-1945 b/(t)	Post-1979 b/(t)	Western b/(t)	Non-Western b/(t)	Polity≥6 b/(t)
PR	0.88***	0.88**	0.73*	1.00**	0.90**	0.96***	0.81**	0.97**	0.77*	1.29**	1.27***
	(3.32)	(3.10)	(2.52)	(3.25)	(3.19)	(3.29)	(3.27)	(2.87)	(2.23)	(2.83)	(4.14)
Semi-PR	1.03**	0.94*	1.00*	1.17**	1.11**	1.32**	1.65***	1.92**	0.32	1.44**	1.52**
	(2.59)	(2.41)	(2.31)	(2.80)	(2.72)	(3.09)	(3.68)	(3.11)	(0.39)	(2.58)	(2.96)
Parliamentary	-0.07	-0.01	-0.38	-0.04	0.22	-0.05	0.05	1.29*	-0.95^	0.88	-0.11
	(-0.21)	(-0.03)	(-1.08)	(-0.13)	(0.56)	(-0.14)	(0.15)	(2.09)	(-1.91)	(1.54)	(-0.30)
Semi-presid.	0.13	0.08	-0.38	-0.12	0.32	0.01	0.20	1.04^	-1.37*	0.49	-0.03
	(0.40)	(0.23)	(-0.99)	(-0.34)	(0.81)	(0.04)	(0.60)	(1.94)	(-2.42)	(1.01)	(-0.07)
Ethnic fract.	-1.60**	-1.73***	-1.48**	-1.90***	-1.68***	-1.69***	-1.80***	-2.31***	-0.75	-1.65*	-2.17***
	(-3.17)	(-3.60)	(-2.85)	(-3.87)	(-3.88)	(-3.63)	(-3.99)	(-4.05)	(-1.50)	(-2.37)	(-4.55)
British colony	0.25	0.12	0.15	0.18	0.06	0.18	0.06	0.50	0.08	-0.25	0.60
	(0.82)	(0.33)	(0.38)	(0.48)	(0.16)	(0.43)	(0.19)	(1.00)	(0.18)	(-0.34)	(1.49)
Iberian colony	-1.31	-1.74*	-1.50*	-1.70*	-1.46^	-1.69*	-1.84*	-0.80		-1.59*	-1.07
	(-1.64)	(-2.39)	(-2.45)	(-2.29)	(-1.92)	(-2.24)	(-2.45)	(-0.66)		(-2.11)	(-1.48)
Other colony	-2.19**	-2.47**	-2.48*	-1.99*	-2.05*	-2.09*	-1.79*	-0.68		-1.69^	-2.41*
	(-3.00)	(-3.24)	(-2.25)	(-2.42)	(-2.55)	(-2.55)	(-2.29)	(-0.81)		(-1.94)	(-2.09)
Federalist	0.14	-0.01	0.29	0.10	0.04	-0.06	-0.21	-0.50	1.13**	-0.55	0.33
	(0.51)	(-0.04)	(1.03)	(0.35)	(0.15)	(-0.19)	(-0.78)	(-1.19)	(3.08)	(-1.51)	(0.97)
Hybrid fed.-un.	0.38	0.00	0.64^	0.33	0.38	0.26	0.26	-0.32	0.62	0.02	0.15
	(0.98)	(0.00)	(1.65)	(0.75)	(0.87)	(0.57)	(0.53)	(-0.48)	(1.18)	(0.04)	(0.30)
E.Eur.-Soviet	-0.75	-2.58	1.51*	-0.54	-0.62	-0.76	-0.65	0.86		5.84^	-1.15
	(-1.10)	(-1.38)	(2.26)	(-0.48)	(-0.55)	(-0.67)	(-0.56)	(0.84)		(1.66)	(-1.00)
Africa SS	-0.90	-1.24^	-0.73	-0.97	-0.98	-1.13^	-0.52	0.70		6.19^	-1.37
	(-1.68^)	(-1.75)	(-1.16)	(-1.53)	(-1.56)	(-1.71)	(-0.84)	(0.63)		(1.88)	(-1.52)
Asia-Pacific	0.66	-0.00	0.95	0.83	0.91	0.64	1.17*	1.94*		8.03*	-0.53
	(1.21)	(-0.00)	(1.59)	(1.36)	(1.44)	(1.00)	(1.98)	(1.99)		(2.39)	(-0.62)
M.E.-N.A.	0.24	0.11	0.56	0.26	0.23	0.14	0.33	0.43		6.42^	0.21
	(0.51)	(0.20)	(1.07)	(0.47)	(0.42)	(0.24)	(0.65)	(0.48)		(1.91)	(0.03)
Latin Am.	0.22	0.36	-0.05	0.41	0.43	0.36	0.44	0.84		6.86*	-1.09
	(0.29)	(0.48)	(-0.07)	(0.56)	(0.58)	(0.47)	(0.58)	(0.73)		(2.05)	(-1.50)
Ln GDP pc	-0.29	-0.70*	-0.16	-0.35	-0.39	-0.41	-0.12	-0.27	-3.83***	-0.08	-0.69*
	(-1.33)	(-2.42)	(-0.69)	(-1.30)	(-1.50)	(-1.48)	(-0.44)	(-0.68)	(-6.67)	(-0.28)	(-2.10)
Ln Population	-0.06	-0.00	-0.18*	-0.08	-0.13	-0.04	-0.04	0.13	-0.07	-0.07	-0.11
	(-0.82)	(-0.02)	(-2.00)	(-0.87)	(-1.49)	(-0.41)	(-0.37)	(0.93)	(-0.52)	(-0.56)	(-1.13)
Ln Regime dur.	-0.00	0.06	-0.03	0.07	-0.01	0.02	0.10	0.44*	-0.04	0.24	0.03
	(-0.02)	(0.55)	(-0.24)	(0.61)	(-0.08)	(0.19)	(0.75)	(2.09)	(-0.30)	(1.52)	(0.29)
N	3701	3793	3523	3358	3540	3369	2602	1407	1961	1740	3082

As mentioned in the main paper, I also applied 2SLS to check whether the results above are due to economic growth affecting constitutional structures. It may for example be that some regimes, for example presidential, are more likely to collapse when experiencing low economic growth rates (see e.g. Przeworski and Limongi, 1993), and that we thus have economic growth affecting the composition of regime types in the sample. It may also be that countries with bad prospects for growth historically tended to choose specific constitutions. Since both growth rates and constitutions are persistent over time, constitutional structures should thus perhaps be considered endogenous (Acemoglu, 2005). We therefore need to find instruments for constitutional structures, and apply them in a 2SLS framework.

Persson and Tabellini (2003) use both a set of dummies on time-point of constitutional selection and the Hall and Jones variables (latitude, English speakers as fraction of population, other major European language speakers as fraction of poulation and the Frankel-Romer trade instrument), which are entered as control variables in my B- and C-models, as instruments. However, Acemoglu (2005) makes a convincing case that the latter variables have independent effects on economic outcomes, and thereby bias 2SLS estimators (see also Persson and Tabellini, 2003: 210). I do therefore not use these variables as instruments. Acemoglu (2005) further argues that the time-period dummies are too weakly correlated with the constitutional variables to yield efficient results, although there are no serious consistency-issues. I therefore use these time-period dummies as instruments; at worst they will only yield insignificant results, but they will not generate biases. The time-period dummies are coded on the basis of Persson and Tabellini's (2003) time periods, but the scoring of the dummies reflect changes in constitution as categorized by Schjølset (2008).[1] I leave the Hall and Jones

[1] See Persson and Tabellini (2003). Constitutional structures have been adopted globally according to "fashions". If existing constitutional features were adopted during a specific time

variables out of the 2SLS estimation altogether, but retain the other control variables from above.

The RE2GSLS (RE version of 2SLS) models show no statistically significant effects of the constitutional variables. However, the point-estimates for the non-plural-majoritarian variable are actually larger than the PR-coefficients in the OLS with PCSE, RE and FE models (1.6-1.9 percentage points extra growth). The insignificant results are thus due to the larger RE2GSLS standard errors.

We cannot reject, when using Hausman tests, that the RE2GSLS estimates are significantly different from RE estimates of similar models. One common convention in econometrics is then to accept that endogeneity is not a sufficiently problematic issue, and opt for the most efficient estimator. As seen above in Table A1, the more efficient RE estimators yield a positive, significant effect of PR. However, skeptics may doubt whether there is an effect from PR on growth. Until we find better instruments for electoral rules, we will have no answer to the skeptics. When it comes to form of government, the results from above are reconfirmed; there is no statistically significant effect of presidentialism on growth.

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period, the country-year observation is scored 1 on the dummy that incorporates the "adoption-date". The dummies are 1921-1950, 1951-1980 and 1981-. Introduction of democracy after an autocratic period (with some exceptions, such as invaded democracies under WWII) or changes in electoral system or form of government introduces a new "adoption".

Table A3: Results from RE2GSLS with time period dummies as instruments

Endogenous electoral rule	IV1ER b (t)	IV2ER b (t)	Endogenous form of government.	IV1FG b (t)	IV2FG b (t)
Non-plur.-maj.	1.60 (0.70)	1.92 (0.90)	Non-presidential	1.31 (0.55)	0.06 (0.03)
Parliamentary	0.43 (0.85)	0.32 (0.60)	PR	1.32*** (3.60)	1.29*** (3.77)
Semi-president.	-0.03 (-0.05)	-0.21 (-0.44)	Semi-PR	1.68** (3.19)	1.82*** (3.82)
Ethnic fract.	-1.62^ (-1.66)	0 (.)	Ethnic fract.	-1.09 (-0.61)	-1.26 (-1.17)
British colony	-0.08 (-0.07)	0.01 (0.01)	British colony	-0.58 (-0.44)	-0.15 (-0.19)
Iberian colony	-1.44 (-1.17)	-1.41 (-0.99)	Iberian colony	-0.95 (-0.36)	-1.22 (-0.51)
Other colony	-2.75* (-2.57)	-2.63* (-2.04)	Other colony	-3.39 (-1.61)	-2.74 (-1.42)
Federalist	0.33 (0.67)	0.52 (0.98)	Federalist	0.62 (0.89)	0.50 (0.91)
Hybrid fed.-un.	0.03 (0.05)	0.17 (0.24)	Hybrid fed.-un.	0.01 (0.02)	0.19 (0.35)
E.Eur.-Soviet	-1.67* (-2.14)	-0.77 (-0.87)	E.Eur.-Soviet	-3.99** (-2.78)	-1.20 (-1.34)
Africa SS	-3.15** (-2.88)	-4.26** (-2.97)	Africa SS	-7.21*** (-3.77)	-4.84*** (-3.55)
Asia-Pacific	-1.01 (-0.98)	-2.35 (-1.21)	Asia-Pacific	-4.11** (-2.74)	-2.92* (-2.04)
M.E.-N.A.	-0.06 (-0.05)	-1.47 (-0.71)	M.E.-N.A.	-1.31 (-0.58)	-1.67 (-0.75)
Latin Am.	-1.49 (-1.28)	-2.08 (-1.50)	Latin Am.	-3.64^ (-1.77)	-2.43^ (-1.90)
Ln GDP pc	-1.67*** (-5.51)	-2.02*** (-6.95)	Ln GDP pc	-3.39*** (-9.82)	-2.08*** (-7.16)
Ln Population	-0.23 (-1.53)	-0.22 (-1.36)	Ln Population	-0.41^ (-1.68)	-0.23 (-1.33)
Ln Regime dur.	0.09 (0.60)	0.09 (0.61)	Ln regime dur.	0.06 (0.50)	0.06 (0.52)
Polity		-0.05 (-0.76)	Polity		-0.06 (-0.78)
Sunni		-1.80 (-0.71)	Sunni		-1.83 (-0.70)
Shia		0.90 (0.25)	Shia		0.35 (0.11)
Catholic		-1.54 (-0.56)	Catholic		-1.62 (-0.57)
Protestant+		-1.02 (-0.37)	Protestant+		-0.91 (-0.31)
Orthodox		-4.36 (-1.46)	Orthodox		-4.46 (-1.37)
Hindu		0.02 (0.01)	Hindu		0.01 (0.00)
Buddhist+		-0.42 (-0.15)	Buddhist+		-0.24 (-0.08)
Indigeneous		-1.53 (-0.54)	Indigeneous		-1.39 (-0.48)
N	3701	3700	N	3701	3700

The effects of constitutional rules on economic growth may be non-linear and context dependent. As Persson and Tabellini (2003), I therefore estimate effects on growth with non-parametric matching methods. I use the nnmatch command in STATA, and calculate the average treatment effect (ATE) of plural-majoritarian electoral rules and presidentialism. I match units on all control variables in the most extensive model (the C-version). However, I use a linear time trend as a control variable, instead of the decade dummies, to incorporate that regime-similarity decreases with distance in time.

The matching procedure does not require a specification of functional form; observations are compared with the most similar observations that differ on the treatment variable (non-plural-majoritarian vs. plural-majoritarian, non-presidential vs. presidential). Similarity is calculated on the basis of a propensity score function that takes into account the values of units on all the matching (control) variables. When countries have changed electoral systems or form of government, the matching unit is likely to be a preceding year for the same country, as countries tend to be similar to themselves in earlier years; but difference in time reduces similarity due to the linear time trend. When there have been no historical changes in electoral rule or form of government, country-year observations from relatively similar countries are used as matches. I calculate robust standard errors (Abadie and Imbens, 2002), through a second matching procedure (1 match is used at this stage). This second procedure matches relatively similar country-years that are similar also on the treatment variable.

I calculate results for models where respectively 1, 3, 5 and 10 observations are used as best matches to each unit, to investigate the robustness of the results. Replacement is allowed, so an observation can be used more than once as a match.

The ATE of plural-majoritarian rules is quite substantial, as seen in Table A4. The largest effect is found when using one match, with plural-majoritarian systems GDP per capita estimated to grow with 3.6 percentage points less annually. The ATE is reduced in models using more matches. Using more matches invokes comparisons with less similar observations, but also reduces randomness stemming from comparison between only few units. The standard errors decrease as the number of matches increase. In the model with ten matches, the ATE is 1.5 percentage points GDP per capita growth, which is not far from the effect in the linear models reported above and in the main paper. In all models, the plural-majoritarian ATE is significant at the 0.1%-level. The ATEs for presidentialism, however, are insignificant even at the 10%-level in all models.

Table A4: Results from matching analysis

ATE of going from plural-majoritarian to non-plural-majoritarian system				ATE of going from presidential to non-presidential system			
Number of matches	ATE	T-value	Obs.	Number of matches	ATE	T-value	Obs.
1	3.61	6.41***	3520	1	-0.38	-0.44	3520
3	2.69	4.60***	3520	3	-0.15	-0.30	3520
5	2.03	4.45***	3520	5	-0.03	-0.07	3520
10	1.52	4.97***	3520	10	0.15	0.59	3520

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