Ideology and the Growth of Government

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This version: 20th August 2009*

Abstract

We analyze the impact of ideology on the size of government. In a simple model
the government sets redistribution and provision of public services according to the
preferences of the median voter. Ideology is defined in terms of preferences for public
services and the impact of ideology upon the size of government is shown to increase
with mean income. This idea is tested using measures of ideology based on party
manifestos. We show that the interaction of ideology and mean income has a major
role in explaining the increase and divergence in government size observed across OECD
countries.

Keywords: ideology, Wagner’s law, size of government

JEL Codes: D72, H10

*We are grateful for very helpful comments from two anonymous referees, Gianni de
Fraja, Jon Temple and seminar participants at the University of Bristol, Wissenschafts-
szentrum Berlin, the Royal Economic Society Conference and the UK Political Econ-
omy Workshop at Cambridge. Remaining errors are our sole responsibility.
1 Introduction

Over the post-war years total government spending as a fraction of GDP increased in all OECD member countries. However, growth rates have differed markedly. In 1960 "the size of the public sector was pretty much the same in almost all of the Western developed economies" (Henrekson and Lybeck, 1988): the OECD average stood at 27.2% of GDP. By the late 1990s total government spending was around 60% in Sweden and well above 50% in many other countries of continental Europe and around 35% in Japan, Switzerland and the United States (Persson and Tabellini, 2003). This divergence is remarkable not least because over this same time period there was substantial convergence in overall economic development across OECD members. In this paper we ask whether and how cross-country differences in ideology, as captured by the ideological positioning of the median voter, have played a role in explaining these phenomena. We argue theoretically for, and find empirically, a sizable and significant impact of ideology on the size of the state. In particular the interaction of ideology and the level of GDP per capita can explain both the growth and divergence in government size in OECD countries. Given representative income growth from 1960-1998 we find that a median voter ideology that is one standard deviation right of the mean leads to government growth of around 10 percentage points of GDP. Ideology that is one standard deviation left of the mean leads to government growth of around 20%.

The size of the state has a venerable history as a subject of academic discourse. Theoretical studies have offered numerous explanations for the growth of government, although to date empirical work has not been conclusive.¹ Holsey and Borcherding (1997) make a distinc-

¹The following review draws in part from excellent surveys by Holsey and Borcherding (1997) and Lybeck (1988).
tion between ‘apolitical’ and ‘political’ explanations. The former relate to issues pertaining to the demand and supply of public services. The latter relate to explanations based on the political power of particular members of the electorate and the incentives facing politicians under alternative constitutional rules.

On the apolitical side Wagner (1893) proposed a "law of increasing state activity" which is now known as Wagner’s law. Whilst researchers have proposed alternative definitions of this law (e.g. see Peacock and Scott, 2000) the standard interpretation now seems to be that the income elasticity of demand for publicly provided goods is greater than one (Holsey and Borcherding, 1997). Peacock and Scott (2000) distinguish between ‘traditional’ government services such as defence and law and order, and ‘newer’ functions such as education, health and welfare services including employment insurance and state pensions. According to Wagner’s law the aggregate demand for these services increases more than one-for-one with advances in economic development. However, and perhaps surprisingly, Holsey and Borcherding find that the empirical support in favor of Wagner’s law is "mixed at best".\(^2\)

Nonetheless we take Wagner’s law seriously. One criticism of existing empirical research is that it examines the relationship atheoretically and assumes an unconditional relationship between government size and economic development. In this paper we formalize Wagner’s law, which firstly has the advantage of avoiding Peacock and Scott’s "reductio ad absurdum" that the state will eventually absorb the entire economy. In particular in our model the state starts to grow with income once the median voter’s marginal utility of consumption has diminished to the point where it equals marginal utility from publicly provided services. Thereafter the income elasticity of the demand for government services is positive but di-

\(^{2}\)For example see Ram (1987).
minishing as income rises and the state grows as a percentage of GDP, converging to an ideal (the ‘steady state’) that varies according to underlying parameters. Importantly, the model generates the result that income elasticity is highly dependent upon ideology, defined as the preference of the median voter for public services. Previous empirical work has neglected this aspect in determining government size even though empirical measures for ideology are now available.

Whilst Wagner’s law focuses on the demand side, Baumol’s (1967) cost disease represents a supply side explanation. In this theory the public sector suffers from cost disease because by assumption only the private sector enjoys technological progress. As wages rise the relative cost of the (labor-intensive) public sector will increase and given price-inelastic demand for government goods the public-sector expenditure share must increase. The literature provides some evidence in support of aspects of Baumol’s hypothesis (see Holsey and Borcherding, 1997), but we argue that it does not explain all the cross-sectional variation in the observed growth of the state. For example, the cost disease explanation would attribute the relatively large public sector share in Sweden to higher relative costs of publicly provided goods in that country, but it is not clear how such marked cost differences could arise.

On the political side a seminal contribution is that of Meltzer and Richard (1981). The role of government in their model is solely to redistribute, and voters have distinct preferences over the tax rate given their position in the before-tax income (i.e. productivity) distribution. The poor (rich) prefer higher (lower) taxes in this one-dimensional policy setting and in equilibrium the median voter prevails. Because income distributions in practice are always right-skewed the median voter chooses a positive tax rate, though this is less than unity because voters rationally anticipate the disincentive effect of higher taxes. Their cen-
nal result therefore is that greater inequality, as captured by the difference between mean and median income, leads to bigger government. Unfortunately the Meltzer and Richard (1981) hypothesis has not fared at all well when confronted with the data. For example, Scandinavian countries have quite equal income distributions yet large governments whilst the US has an unequal income distribution with a small government. Our view is that cross-country comparisons of this sort are subject to omitted variable bias, and clearly there are important cultural and social norms that need to be taken into account. It is also the case that Meltzer and Richard understate the complexity of the activities of government. Many public services are not purely forms of redistribution and our model addresses this by giving voters preferences over public goods as well as private consumption. By including public goods, and furthermore ideology in the shape of appetite for these public goods, as well as redistribution we find a potential resolution of this empirical failing.

Boix (2001) develops Meltzer and Richard’s (1981) insight and provides an alternative theoretical explanation for Wagner’s law and divergence in government size. His main thesis is that democracies, as distinct from autocracies, will experience growth of government. As democratic economies develop, given certain changes in the structural makeup of the economy (in particular relating to heterogeneity of risk and demography) there is greater pressure for redistribution when policy is determined by the median voter, hence public sector growth. On the other hand the state is not expected to grow under autocracy with economic development because the pivotal decision-maker here is from the upper end of the income distribution. More relevantly for our own work Boix (2001) proposes a secondary hypothesis in which the size of the state can vary across democracies due to variations in turnout. Given higher abstention rates amongst the poorest income groups, redistributive
pressures are weaker when turnout is low. For a given level of development a democracy with a high turnout would be expected to have a larger state than a democracy with a low turnout rate. Boix finds empirical support for this hypothesis using pooled cross-sectional time-series of annual data for the period 1970-1990. In the empirical analysis below we revisit this hypothesis and find that our measure of ideology has more explanatory power than turnout when interacted with the level of development in determining the size of the public sector.

Recent work has focused on the impact of constitutional rules upon the size of government. Theoretical work by Persson and Tabellini (1999, 2000), Lizzeri and Persico (2001) and Milesi-Ferretti et al (2002) argues for a strong effect of electoral rules, and in particular whether voting is aggregated proportionally or according to majoritarian systems, upon the composition of public spending. The theory also suggests that proportional representation leads to larger overall government. Persson et al (2000) argue theoretically that parliamentary as opposed to presidential government will lead to a larger state. Empirical work by Persson and Tabellini (2003, 2004) finds that differences in government size across countries (measured as an average through the 1990s) are significantly explained by these two constitutional rules. However, these new political-economy theories are all essentially static: the predictions for government size hold regardless of the state of development (i.e. the level of GDP per capita). Indeed Persson and Tabellini (2004) report (in column 5 of table 2) that there is no evidence of any constitutional effects using data from the 1960s. Furthermore, as pointed out by Acemoglu (2005), there is a potential problem of omitted variable bias, and

\footnote{The bottom line in Persson and Tabellini (2004, p. 39) is that presidential regimes and majoritarian elections are found to each cut the size of government by about 5\% of GDP.}
that "differences in culture" (ibid, p.1029) might potentially co-determine the constitutional rule as well as the choice of government size. Holsey and Borcherding (1997) write that "few deny that ideology matters in the size and composition of government spending" (ibid, p. 587). Gabel and Hix (2005) also make this point, and find empirically that ideology is significant in the cross-section.4 We address this question differently, by modeling ideology in terms of relative preferences for public goods, which vary across countries. Furthermore we also find evidence that once ideology is controlled for, the impact of the electoral rule is substantially reduced.

The present paper also extends an empirical literature directly investigating the relationship between ideology and the size of government. Cameron’s (1978) pioneering research investigated variation across countries depending on the extent to which parties defined as leftist were in power during the period under investigation (1960-75). Tavits (2004) analyzed a dataset containing two data points per country (averages for 1974-1983 and 1986-1995) using a similar construction for ideology. Both of these papers found a relationship between the size of government and ideology, but do not rule out country-specific unobserved heterogeneity. Kau and Rubin (2002) find that the Poole-Rosenthal measure of Senate ideology has a small impact on government revenues in time series data for the US.5 Cusack (1997) examines changes in government outlays using annual data for the period 1955-1989, and uses fixed expert judgments of party ideology. Time-varying ideological data for both the government and the electorate are generated using variation in electoral performance, and

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4 In their study ideology measures are constructed using data from the World Values Survey.

5 As with all other previous studies Kau and Rubin only analyze unconditional ideological effects. As they argue in their abstract "Further research on the role of ideology in changing policies over time is clearly warranted."
subsequent government formation of parties across general elections. Our work differs in that we use ideological data, described in more detail below, which vary through time at the level of the party in addition to changes in the electoral performance of different parties. For example, no-one would argue that the UK Labour party has stood still ideologically over four decades, and this is particularly important given that we analyze a longer time horizon, 1960-1998.

In the theory below our interpretation of ideology is that it represents relative preferences for publicly provided goods and services, broadly defined: leftist cultures are keener on state provision, especially of services such as health, education, and social insurance that partly reflect egalitarian values. Right-leaning cultures are keener on market provision. But the central mechanism proposed in this paper is that these preferences are tempered by income. When incomes are low, the pain of taxation in terms of lost utility from reduced private consumption is high. Even if the ideological climate is statist (i.e. left-wing), the median voter in circumstances of low income will not tolerate big increases in taxes. Consequently at low levels of income we would not expect to see much dispersion across countries, and ideologies, in terms of government size. However, as income grows, statist inclinations may be indulged. The marginal utility of private consumption is reduced at higher levels of income and so the left-leaning median voter mandates higher taxes to fund the Wagnerian goods she increasingly desires. The theory thus can predict what is observed in the data: increases in the size of government as GDP levels rise, and divergence, since relative preferences for public goods are different across countries.

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6 This is a reasonably consensual view of what is meant by "left" and "right". For example Gabel and Hix (2005) write that "In general, voters on the left prefer higher taxes and higher levels of public spending than voters on the right".
Of course, ideology will itself have its own deeper determinants and indeed there is an emerging literature which explores the related question of why some societies are more egalitarian than others. Ideology may not be randomly assigned, and may be correlated with unobservables necessitating caution in inference. However, because we employ panel data our empirical analysis focuses on within-country variation, and so deeper cultural and historical causes are controlled for in the fixed effects. Furthermore, because we would expect substantial lags between preferences and enacted policy the ideology measure used in the empirical analysis is constructed as an average of lagged ideology data. Indeed, no evidence of a contemporaneous relationship between ideology and development is found; the significant results all relate to ideology data that predates policy outcomes. In addition, we examine the interaction of alternative (fixed) ideology measures with income as a robustness check of the results. Finally we also establish strong evidence that the sensitivity of government size to income depends positively on ideology and negatively on economic development, as predicted by the theory. In sum, the use of fixed effects and the clear dynamical relationships in the data make us confident that the relationship found between government size and ideology, and especially the interaction of ideology and income is causal.

In the next section we derive the model. Section 3 contains our empirical work and section 4 concludes.

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7 For example Alesina et al (2001) attribute the absence of a welfare state in the US to racial heterogeneity. Alesina and Angeletos (2005) describe how redistributive policy changes depending on differences in beliefs on the extent to which income is determined by luck, birth and connections as opposed to merit. Other important work includes Benabou (2008) and Piketty (1995).
2 The Model

This section lays out a basic model incorporating the premise that preferences for public goods and services, in other words ideology, determines the size of government. In order to analyze this formally we modify the political-economic model developed in the seminal paper by Meltzer and Richard (1981) (MR) to include spending on a generic public good,\(^8\) defined as the Wagnerian components of government spending. In MR the purpose of government is solely to redistribute, thereby financing private consumption. The self-interested voter votes for redistribution so long as it exceeds the lost consumption from taxation. However as argued above the functions of government are much more diverse than just narrow redistribution and in this paper taxation finances both redistribution and other public services.

The model is first outlined using an additive and separable functional form, and following this an explicit solution for the size of the government is derived, following Meltzer and Richard (1983), by employing a Stone-Geary utility function. As they note this function is capable of showing whether the share of income taxed remains constant, increases, or decreases as income changes, and in particular whether or not public goods may be viewed as a ‘luxury’.

The objective function is written as

\[ u_i(c_i, g) = F(c_i) + \beta G(g) \]  

(1)

where \( c_i \) is consumption of person \( i \), \( g \) is the per capita level of publicly provided goods and \( \beta \) is the share of income taxed.

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\(^8\)Note that ‘public goods’ here may be rivalrous and excludable and so are not necessarily pure public goods in the Samuelson sense.
services and $F$ and $G$ are concave in their arguments. $g$ represents the Wagnerian components of government activity such as health, education, and indeed part of redistribution, when it is demanded for insurance purposes or egalitarian reasons. $\beta > 0$ is a preference parameter that reflects tastes for publicly provided goods and services, and this forms our index of society's ideological position. Greater values of $\beta$ characterize more left-wing cultures. The functions $F$ and $G$ exhibit diminishing returns, and may be restricted so that private consumption is modeled as a necessity and public goods as a luxury.\(^9\)

Income, $y_i$, differs across individuals\(^{10}\) and is taxed at a linear rate, $t$. As in MR consumption is augmented by lump-sum redistribution, $r$:

$$c_i = (1 - t) y_i + r.$$  \hspace{1cm} (2)

Taxation is used to finance both pure redistribution and the public good and the budget is balanced hence

$$ty = g + r.$$  \hspace{1cm} (3)

where $\bar{y}$ is mean income. In order to derive an interior solution mean income is modeled to be declining in redistribution in the spirit of MR. More specifically

$$\bar{y} = y^* \left( 1 - \delta \left( \frac{r}{y^*} \right)^2 \right)$$  \hspace{1cm} (4)

where $y^*$ is potential income and $\delta$ captures the sensitivity of actual income to redistribution.

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\(^{9}\) This is made explicit below in the case of the Stone-Geary functional form.

\(^{10}\) We are assuming that the underlying productivity distribution is exogenous.
The appendix provides more details on the model solution and a first result is that the median voter chooses redistribution

\[ r^m = \frac{(m - 1)}{2\delta} y^* \]  

(5)

where \( m \equiv \frac{\bar{y}}{y_m} > 1 \) is the ratio of mean to median voter income \( y_m \) capturing the extent of inequality.\textsuperscript{12} The choice of \( r \) is independent of the functional forms \( F \) and \( G \), ideology \( (\beta) \) and the level of government spending and hence will be a Condorcet winner given single peaked preferences (which follow from the concavity of \( F \)). Election-oriented policymakers are thus obliged to choose \( r^m \) whatever their decision on public good provision. Redistribution is increasing in inequality \( (m) \) and decreasing in \( \delta \) as would be expected. Substituting (5) into (4) yields

\[ \bar{y} = y^* \left(1 - \delta\rho^2\right) \]  

(6)

where \( \rho \equiv \frac{(m - 1)}{2\delta} \) and hence the proportionate level of waste in the economy is constant and the fraction of income used for redistribution is constant, and independent of the level of income. These findings are in line with Meltzer and Richard (1981).

Equation (5) defines the popular choice of redistribution, but in the general setting it is not possible to find an explicit solution for public good provision. The median voter’s choice
for \( g \), denoted \( g^m \), is implicitly defined by the first order condition

\[
F'(c^m) = m\beta G'(g^m)
\]

(7)

where \( F' \) and \( G' \) are the marginal utilities of private and public good consumption respectively. If the functional form is restricted so that the preferred level of the public good is monotone in income, then again the median voter’s choice will be preferred in any pair-wise election and thus is a Condorcet winner. Equation (7) shows that the desired level of government spending is increasing in \( \beta \). In order for (7) to hold with equality any increase in \( \beta \) must be met with a commensurate increase in \( F' \) (through higher taxes) together with a decrease in \( G' \) (hence greater public spending).

In this setting the question of how the size of the government evolves with income depends on the curvature of both \( F \) and \( G \). One version of Wagner’s law is that as incomes rise, and consumption of both private and public goods increase, the marginal utility derived from the public good diminishes more slowly than the marginal utility of private consumption. Equalization of marginal utilities will therefore imply an increasing share of the public sector.\(^{13}\)

A possible foundation for this would be to model private consumption as a necessity, with low levels of consumption initially yielding very high marginal utility, but which declines relatively quickly once subsistence has been achieved. Following Meltzer and Richard (1983) we employ a Stone-Geary utility function, which exhibits this property and as they note can generate results with the share of income taxed changing with income. Our functional form

\(^{13}\)How individuals’ relative preferences over private consumption and public goods change with income has been the subject of considerable attention. See for example, Epple and Romano (1996) who discuss such a trade-off and refer to evidence that individuals are increasingly willing to sacrifice private consumption for goods such as healthcare and crime prevention as their incomes rise.
will be

\[ u_i(c_i, g) = \ln(c_i - \mu) + \beta \ln(g + \mu) \]  

(8)

where \( \mu \geq 0 \) is the Stone-Geary parameter.\(^{14}\) In the spirit of Wagner's law we model private consumption as a necessity and public goods as a luxury so \( \mu \) is interpreted as the subsistence level of consumption. In this instance the choice of \( g \) is diminishing in income and the median voter's choice is pivotal. The median voter's preferred policy is derived in the appendix and consists of equation (5) above and

\[ g^m = \frac{\beta (4\delta + (m-1)^2)}{4\delta (1+\beta)} y^* - \frac{(1+\beta m) \mu}{1+\beta}. \]  

(9)

It is clear from (9) that the proportion of income spent on the public good increases with income. Combining (9) with equations (3)-(6) yields

\[ t^m = \frac{4\beta \delta + (m-1)(\beta m + 2 + \beta)}{(1+\beta)(4\delta - (m-1)^2)} - \frac{(1+\beta m) \mu}{(1+\beta) \bar{y}}. \]  

(10)

In order to ensure that \( g^m \geq 0 \) and \( t^m < 1 \) two conditions are formally required:

\[ \bar{y} \geq \frac{(1+\beta m)(4\delta - (m-1)^2)}{\beta(4\delta + (m-1)^2)} \mu \]  

(11)

\[ \delta > \frac{(m-1)(2\beta m + 1 + m)}{4} \]  

(12)

\(^{14}\)In what follows we assume that all \( c_i > \mu \) in equilibrium otherwise equation (8) is not defined. That is, the productivity level of the poorest individual is sufficiently high such that his income net of tax and including redistribution covers necessary consumption. A sufficient condition for this would be if redistribution were high enough to meet necessary consumption (a stated objective of some welfare states).
Condition (11) ensures that $g^m \geq 0$ and can be described as a minimum development requirement: mean income must be sufficiently large relative to subsistence ($\mu$) such that there are incentives for the median voter to tax at a rate to supply public goods as well as redistribution. Since our focus is on OECD countries we argue this is a reasonable assumption. Condition (12) ensures that $t^m < 1$. This will obtain as long as the sensitivity of mean income to redistribution (governed in equation (4) by $\delta$) is high enough to dissuade the median voter from increasing taxes further.

Given equation (10) and conditions (11) and (12) we have the following proposition, for which details are available in the appendix.

**Proposition 1** (i) Ideology. Holding $\bar{y}$, $m$ and the other model parameters constant, a higher value of $\beta$ entails a larger state. The greater the relative preference for public goods, the larger the government.

(ii) Wagner’s law. Holding $\beta$, $m$ and the other model parameters constant, government grows with mean income. Furthermore the income elasticity of the demand for government is positive, but diminishing.

Part (i) of proposition 1 is straightforward and unsurprising.

Part (ii) of proposition 1 formalizes Wagner’s law. Whilst for any given level of inequality the proportion of income redistributed is independent of mean income, taxes nevertheless start to increase once income passes a critical threshold ($\bar{y}_g$) at which the median voter additionally starts to mandate the provision of public services. This threshold is defined
where (11) holds with equality, i.e.

\[ \bar{y}_g = \frac{1 + \beta m}{\beta (4\delta + (m - 1)^2)} - \frac{(m - 1)^2 \mu}{4\delta}. \]  

(13)

At income levels below this threshold taxes are set purely to redistribute as dictated by equation (5), and \( g = 0 \). Beyond \( \bar{y}_g \) the median voter’s income becomes sufficiently high that her marginal utility from private consumption has declined to the point at which it equates the marginal utility derived from the public good. Thereafter the marginal utility of the public good declines more slowly than the marginal utility of private consumption and taxes start to increase to pay for the public goods as well as redistribution. Nonetheless in this model policy does not suffer from Peacock and Scott’s (2000) ‘reductio ad absurdum’ discussed in the introduction. From (10) we have

\[ \lim_{y \to \infty} t = \frac{4\beta \delta + (m - 1)(\beta m + 2 + \beta)}{(1 + \beta)(4\delta - (m - 1)^2)}. \]  

(14)

Equation (14) is less than unity given (12). In a world of positive economic growth at the limit the public sector converges to some ‘steady state’ which is increasing in left-wing ideology and the efficiency of redistribution (i.e. declining in \( \delta \)). The ‘steady state’ also is increasing in inequality \((m)\) for precisely the reasons given by Meltzer and Richard (1981) - the further away the median from mean income, the greater the extent of redistribution from the rich to the poor, all else equal.

The income elasticity of the demand for overall government size is positive, although diminishing as the economy grows. The fact that the growth of government is initially rapid is due to the form of the utility function: once subsistence has been achieved, the
median voter then allocates a constant proportion of her marginal income to both private consumption and the public good, $g$. Overall the proportion of total income devoted to public sector activities (redistribution and provision of public goods) increases and converges towards some level that is in large part determined by tastes for public provision or ideology as characterized by the parameter $\beta$.

Proposition 2 Interaction. The impact of ideology on government size will increase with income.

Proposition 2 establishes that the impact of ideology upon government size is context-dependent. The difference in government size between two countries of alternative ideological persuasion will expand as their economies grow. Thus, differences in government size in leftist and rightist countries at low levels of income tend to be small. As incomes rise the capacity for state expansion rises and differences in ideology manifest themselves more concretely.

In figure 1 we calibrate the model for archetypal left- and right-leaning countries (we think of Sweden vs the US). The model parameters are set as follows: $\mu = $2000, $m = 2$, $\delta = 3$ (though the general argument is robust to alternative parameterizations). For the left- (right-) wing country we parameterize ideology as $\beta_L = 0.6$ ($\beta_R = 0.3$). The proportion of income that is directly redistributed (denoted $r(y)$ in the figure) can be calculated from equation (5) and as with Meltzer and Richard is a clear function of the level of inequality - for this parameterization a value of 18%. This is the size of the state at low levels of income. As would be expected public sector growth starts to occur somewhat sooner in the left-wing country, in which threshold income is $6205$ whereas the threshold is $9026$ in the right-wing country. The threshold at which government growth commences clearly depends
on the subsistence requirement and if the left-wing country (again we think of Sweden) has a larger subsistence requirement (e.g. food and heating) then this could shift the threshold to the extent it happens earlier in the right-wing country. Numerically if $\mu = $3000 then the income threshold in the left-wing country is put back to $9307. However, once income starts to grows beyond the threshold then the state in the left-wing country grows faster and the ideological difference between the two countries manifests itself increasingly strongly. At the limit the left-wing country’s government grows to 62.5% whereas in the right-wing country the state share of GDP grows to no more than 45.5%. It is this interaction between GDP levels and ideology that we argue explains much of the growth and divergence of government size across OECD countries in the latter half of the last century.

3 Evidence

In this section we will test the implications of the model. The empirical analysis focuses on 17 OECD countries that have been democracies throughout the post-war era and that have data on total outlays and ideology. The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, the Netherlands, Norway, Sweden, Switzerland, the UK and the US.

The dependent variable is total government outlays as a percentage share of GDP, from the OECD Economic Outlook database. These data are available from 1960 and were chosen as they include all forms of government expenditure at all levels of government. As such, they include both redistribution and expenditure on public goods, and both civilian and military expenditure. Figure 2 depicts these data, which show considerable anti-cyclicality
as would be expected, and a secular upward trend in all countries. The increasing dispersion across countries is also noteworthy, especially given the convergence in GDP per capita across OECD members over this time horizon. Our argument is that the impact of ideology on the median voter’s preference for public goods increases as the marginal utility of consumption of private goods declines. The median voter thus becomes increasingly willing to exercise her preferred public-sector outcome with increases in the level of economic development.15

The principle ideology measures used in this paper come from the Manifesto Research Group (MRG) data of Budge et al (2001). These data summarize left-right ideology at the level of the party, and following Kim and Fording (2001) annual series are constructed for the median voter ideological position in each country by weighting party ideologies according to their vote received. Country level averages of these data are presented in figure 3 showing, as would be expected, that the Scandinavian countries are on average substantially more left-wing than say the US or Australia. It is perhaps surprising that the UK is left of the Netherlands and Denmark on average through this time period, but as would be expected the UK exhibits a marked drift to the right in the 1980s (as do other Anglo-Saxon countries) and the period 1945-1979 (i.e. prior to Thatcher) constitutes around 2/3 of the data set. Gabel and Huber (2000) argue that the MRG data accurately reflect differences and trends in ideology, and they correspond well with other data sources such as expert surveys (e.g.

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15 Ideally the above theory would be best investigated empirically examining different types of spending but there are substantial definitional issues. Firstly there are many items which in literal terms would be classed as redistribution, but in the context of our model would conceptually be part of Wagnerian public goods - services which the electorate wants more of at greater levels of economic development. For example social security payments would in literal terms be redistribution, but would also be desired for insurance purposes. The desire to insure would likely be increasing with economic development. Similarly there are elements of all types of public goods - education, health, defence, law and order and so on, which arguably can be thought of as ‘payment in kind’ - in other words redistribution.
Castles and Mair (1984)) and data from the World Values Survey (WVS). To the best of our knowledge the MRG data are the only time-varying, cross-country measure of party positions, and these characteristics have obvious advantages for the empirical approach taken in this paper.\textsuperscript{16} Nonetheless it is important to verify that results obtained with alternative measures are not meaningfully different, and to this end we also examine interaction effects using data from the WVS.

Figure 4 illustrates the ideology series over time, averaging over countries with proportional representation (PR) and majoritarian electoral rules respectively. Following Persson and Tabellini’s (2003) definition the majoritarian countries are Australia, Canada, France, the UK and the US. In the 1950s and 1960s both sets of democracies if anything exhibit a left-wards shift, though during this period neither group is consistently different from the other. Things changed markedly in the late 1970s with the right-ward shift in the Anglo-Saxon countries. In the 1990s median voters in the PR countries also apparently shifted to the right, though they remain on average left of voters in the majoritarian countries.

Because in reality there are substantial lags between preferences, as expressed in the ideology data, and policy enacted by government, in the regression analysis below we use a moving average of the previous 10-years’ MRG data, with $\overline{MRG}_{it}$ denoted as this moving average term. Quantitatively the Kim and Fording (2001) median voter data take values from -100 (extreme left) to +100 (extreme right) so to ease inference the data are transformed according to $\overline{ideo}_{it} = \frac{\overline{MRG}_{it}}{100}$ ensuring that the variable $\overline{ideo}_{it}$ is scaled from minus

\textsuperscript{16}Blais, Blake and Dion (1993) investigate whether the changing party composition of cabinets can predict changes in government spending. However, unlike here their analysis relies on a fixed classification of parties being either of the left, centre or right. They suggest that in some specifications a majority of left-wing parties in a cabinet is associated with a small increase in government spending.
unity (extreme right) to unity (extreme left). Taking the average of the past 10 years’ data helps to lessen concerns about endogeneity - the ideology measures now substantially predate the observations on government size. In figure 5 averages of these data are plotted against average government size in the 1990s. The correlation coefficient between these two variables is 0.7, and the figure shows that ideology can potentially explain a lot of the observed variation in government size across countries.

To examine the relationship between government size, income and ideology more systematically we now turn to panel data analysis, drawing on the specifications used in Persson and Tabellini (2003) (PT). Their analysis (out of necessity given their wider scope) focused on central government expenditure only. However, for the OECD countries it is possible to use total government outlays as the dependent variable (denoted by t in section 2 ), which is preferable in that it includes expenditures made by local government. We employ the same control variables17 used as standard by PT, and in addition, use their cyclical control variables,18 as these are in most cases significant in the case of the OECD countries. Finally, the lagged dependent variable is also generally included as a regressor because of the substantial persistence in government size. The time dimension of the panel is sufficiently long that the dynamic panel bias should be negligible (Nickell, 1981).

Table 1 contains fixed effects panel estimation results for regressions examining the impact of ideology on government size under the assumption that the impact of ideology is

---

17 Specifically ‘PROP1564’ - the percentage of the country’s population between 15 and 64 year of age in the total population, ‘PROP65’ - the percentage of the country’s population over the age of 65 in the total population, and ‘TRADE’ - the sum of exports and imports measured as a share of GDP. Rodrik (1998) proposes a theoretical explanation for the observed correlation between openness and the size of government.

18 The cyclical control variables are ‘YGAP’ - the deviation of aggregate output from its trend value in percent, ‘OIL_EX’ - the oil price multiplied by a dummy variable equal to 1 if net exports of oil are positive and ‘OIL_IM’ - the oil price multiplied by a dummy variable equal to 1 if net exports of oil are negative.
independent of the level of economic development. These results are hence comparable with the previous empirical literature examining this relationship. In column (1a) ideology is positive and significant at the 5% level - as would be expected and consistent with the first part of proposition 1. Given the presence of the lagged dependent variable the parameter estimates in column (1a) reflect the current-period (or short-run) impact upon t of the explanatory variables. Column (1b) presents the corresponding ‘long-run’ parameter estimates, illustrating the impact of particular levels of income and ideology upon the long-run steady state level of t - which we denote $t^*$. The p-value for the estimated long-run coefficient for ideology is 2.4%, and the effect is sizeable: consider the size of the state in an archetypal right-wing country (say the US) compared with that in an archetypal left-wing country (say Sweden). The right- (left-) wing country has ideology set equal to one standard deviation (0.12) below (above) the mean ideology score (0.04) in the sample. If we take the switch from being archetypally right to archetypally left (a two-standard deviation change in ideology), then the long run impact of this switch is an increase in the size of government of 5.03%, all else equal. Nonetheless, we argue this is a crude estimate of how ideology impacts upon the size of government, because its effect may vary with the level of economic development.

A potential concern in this analysis is that ideology may be endogenous. As observed in the introduction ideology may have deeper cultural determinants, such as historical, legal or other socioeconomic characteristics considered in the literature referenced in footnote 7 above. However, such variables are in large part time-invariant (or at least highly persistent) and the analysis here controls for fixed effects as well as conditioning on lagged government

\[ t_t = \alpha_{t-1} + \beta Y_t + \gamma I_t + \delta Y_t I_t + ... \]

the long-run level of $t$ is taken as

\[ t^* = \frac{\beta}{1-\alpha} Y_t + \frac{\gamma}{1-\alpha} I_t + \frac{\delta}{1-\alpha} Y_t I_t + ... = \lambda Y_t + \mu I_t + \nu Y_t I_t + .... \]

The standard errors of the long-run parameters, $\lambda$, $\mu$, and $\nu$ are estimated using the delta method.
size. An alternative form of endogeneity could relate ideology to the size of the state. For example large governments might engender a belief in large governments, or more generally both might be outcomes of a single underlying process. In columns (2a) and (2b) the estimation is repeated for the contemporaneous ideology measure \((\text{ideo}_{it})\) rather than the moving average of the previous 10 years \((\text{ideo}_{it-10})\). Notably there is no meaningful relationship detected whatsoever with an incorrectly signed coefficient estimate that is statistically insignificant. The evidence is that ideology affects government size with a lag, giving credence to the use of the moving average and in some sense establishing Granger causality from ideology to the size of the government. That is, within countries, ideology has forecasting power for predicting subsequent changes in the size of government but not vice versa.\(^{20}\) Moreover, our inclusion of the lagged dependent variable further mitigates such concerns.

Table 2 turns to consideration of the interaction of ideology and income upon total government outlays. For comparison purposes first column (1a) uses the same specification\(^{21}\) as that used by Boix (2001), confirming his finding of a positive and statistically significant relationship between the size of government and the interaction of turnout and income. However, in column (1b) using this same specification and including ideology and its interaction with income the turnout-income interaction becomes insignificant, whilst the interaction of ideology and income is highly significant. From this we argue that the mechanism proposed in this paper has greater explanatory power than that in Boix (2001), at least within

\(^{20}\) Of course, Granger causality does not imply true causality. It remains possible that an unknown third dynamic process drives both ideology and the size of the state. The candidate explanations examined in the literature endogenizing ideology thus far has focussed on variables that are not time-varying, but we cannot rule out this possibility.

\(^{21}\) In particular the lagged dependent variable is omitted. In other regressions (not reported) with the lagged dependent variable included, turnout and its interaction with income, were in all cases found to be insignificant.
Columns (2a) and (3a) re-introduce the lagged dependent variable and respectively show the results using fixed effects only and using both fixed effects and time effects. As before columns (2b) and (3b) contain long run parameter estimates. At first glance the impact of ideology in column (1) is estimated to be negative - contrary to expectation. However, the overall impact of ideology is always positive in this sample because of the interaction with income. In order to interpret the findings in column (2) consider the growth of government in the archetypal left- and right-wing countries defined above. In 1960 mean income was $6185, and in 1998 mean income was $15881. Given this increase in income in both countries, and holding other controls constant, the overall increase in the steady-state level of the size of government ($t^*$) in the right-wing country is 10.53% of GDP, whereas the increase in the left-wing country is 20.62% - a sizeable and important divergence. As discussed by Braumoeller (2004), inference is more complex in the presence of interaction terms, and one approach he advocates is to plot the marginal effect of ideology conditional on income, contained in figure 6. In line with the theoretical analysis this plot suggests an insignificant impact of ideology at low levels of income and an increasing impact as incomes rise.22

Column (3) of table 2 displays regression results when common time effects are also included. The direct impact of income now becomes insignificant as the time effects do a better job of capturing the common trend than income itself. However the parameter estimates pertaining to ideology are comparable with the results in column (2), with government size in leftist and rightist regimes diverging substantially given representative income increases.

22 The Y-intercept is at around $5000, implying an estimated negative effect of leftist ideology on the size of government in Japan, Italy, and Iceland at the start of the 1960s and Ireland until around 1970. Nonetheless, at these low levels of income the impact is statistically insignificant from zero.
The results reported thus far suggest sizeable differences in the size of government depending on ideological differences and may explain why Persson and Tabellini (2004) find that the electoral rule has an impact on the size of government in the 1990s but not in the 1960s: if majoritarian countries are typically right-wing, and countries with PR electoral rules are typically left-wing (and figure 4 is suggestive of this), then our model can explain their results - but of course the mechanism is now straightforward median-voter demand, rather than due to the constitutional rule itself. Columns (1) and (2) of table 3 splits the sample by electoral rule and finds no substantial differences across electoral rules in how government size responds to income and ideology. In both subsamples as well as in the full sample the interaction of ideology and income is found to be statistically and economically significant. These variables continue to explain a substantial component of the growth, and divergence of government size in OECD countries over the latter half of the twentieth century.

Columns (3) and (4) of table 3 present results investigating whether or not ideology mitigates the impact of the electoral rule. Because there is little variation in the electoral rule within countries in the sample period, these regressions drop the fixed effects, so caution must be applied in interpreting the results. In column (3) ideology and its interaction with income are dropped and Persson and Tabellini’s constitutional variable $MAJ$ - equal to one for majoritarian systems and zero for proportional representation - is included as a separate regressor. Consistent with Persson and Tabellini (2004) the effect of $MAJ$ is found to be negative with a p-value of 2.3%. In column (4) the regression is augmented with the ideology

\footnote{Unfortunately the sample only contains two presidential democracies so it is not feasible to investigate the impact of presidential vs parliamentary governments.}
variables and the statistical impact of $MAJ$ is markedly reduced as the parameter estimate is almost halved and the significance level drops to 18.2%. These results should not be taken as a rejection of Persson and Tabellini (2004), not least because their empirical analysis includes more countries. Nevertheless the evidence presented here suggests an important qualification to their findings.

As remarked earlier the principal advantage of the MRG manifesto data is that they are time-varying. This property allows panel estimation, and also reflects the likelihood that the ideological tastes of particular populations and electorates have changed over time. Nonetheless, it is also possible to examine interaction effects using alternative fixed country-specific measures for ideology, and such measures are available from the World Values Survey (WVS). Following Gabel and Hix (2005) two values from the WVS are utilized, namely the ‘self-positioning in political scale’ ideology variable, and the ‘inequality is necessary for incentives’ variable. In both cases the measure taken is the median response on a 10-point scale, with higher values representing increasing right-wing inclination.\footnote{Gabel and Hix (2004) provide a full description of these two variables. Inequality/incentives data were not available for Denmark, Germany and Sweden.} In addition to the WVS measures two further fixed ideology measures are constructed from the MRG dataset: firstly the arithmetic mean of the entire annual series used in the above analysis, and secondly the arithmetic mean of the annual series in the years prior to 1960. This latter measure is of particular interest because it is unequivocally pre-determined, and plausibly exogenous given that meaningful divergence in the size of the state did not occur until the 1970s.

Table 4 contains the estimation results for the fixed ideology regressions. In column (1) the coefficient for the interaction of WVS self-positioning ideology and income has the
correct sign but is insignificant. However, as Gabel and Hix (2004) acknowledge the self-positioning left-right measure is susceptible to the criticism that the implied policy content may differ from country to country. That might suggest the inequality/incentives variable is preferable. In column (2) when this variable is used instead the estimated coefficient is correctly signed and significant at the 2% level. Greater agreement with the notion that inequality is necessary for economic incentives is statistically associated with a dampening of the growth of government.

Columns (3) and (4) contain the estimation results using fixed measures taken from the MRG. Both are correctly signed and significant at the 10% level. A certain amount of noise would be expected given that individuals countries’ own median ideological positioning has varied through time, though nonetheless the average measures (depicted in figure 3 prior to transformation) at least have some informative value in terms of how economic growth has influenced the growth of government. Column (4) contains a particularly striking result that countries’ measured average ideology from before 1960 has informative content for the growth and divergence of government size. Whilst the magnitude of the coefficient is somewhat reduced it is still comparable with column (3) and indeed the results of the analysis reported in the previous tables. Overall we take the evidence from the fixed ideology regressions as supportive of the central hypothesis advanced in this paper.

The heart of the theoretical mechanism in this paper is the income elasticity of demand for government. This is positive, but depends on ideology, and also on the level of economic development. As a final empirical analysis these ideas are tested directly by employing a two-step approach. The first stage estimates a model with the controls described above but excluding the ideology measure and its interaction with income, but now estimating country
specific slopes for income per capita. Formally,

$$Outlays_{it} = \beta_{0i} + \beta_{1i}Y_{it} + X'\beta + \varepsilon_{it}$$

is estimated on a rolling subset of the data, 1960-1980, 1961-1981 and so on up to 1978-1998 to generate time-varying and country specific estimates of the relationship between government size and income per capita, which we term the Wagner relationship. Parameter estimates for $\hat{\beta}_{1ia}$ (where the subscripts $i$ and $a$ respectively denote countries and the midpoint of the time window) are collected and in the second stage then regressed on the mid-point ideology measure and mid-point income, i.e.

$$\hat{\beta}_{1ia} = \gamma_0 + \gamma_1ideo_{ia} + \gamma_2Y_{ia} + \zeta_{ia}.$$ 

Hence for example $\hat{\beta}_{111}$ describes the Wagner relationship for country 1 (Australia) for the period 1960-1980, $\hat{\beta}_{112}$ for Australia 1961-1981 and so on. In the second stage the corresponding ideology measures are $\overline{ideo}_{1,1970}$ (recall this is the arithmetic mean for the variable $ideo$ from 1960-1970), $\overline{ideo}_{1,1971}$ (mean $ideo$ 1961-1971) and so on. Similarly the relevant income measures are $Y_{1,1970}$, $Y_{1,1971}$ and so on.

Estimation of the second stage yielded

$$\hat{\beta}_{1ia} = \frac{1.282}{(0.233)} + \frac{0.806ideo_{ia}}{(0.353)} - \frac{0.078Y_{ia}}{(0.019)} \quad (15)$$

(with robust standard errors reported in parentheses). The relationship between the estimated Wagner coefficients and ideology is highly statistically significant. To interpret these
results consider table 5 which displays the inferred Wagner coefficient for archetypal left- and right-wing regimes at mean income levels in 1960 and 1998. A coefficient of unity means that an additional $1000 in income per capita leads to an increase in the size of government by 1 percentage point of GDP (1%). Left-wing regimes at average 1960 levels of income exhibit a high level of sensitivity: the increase in economic development required to increase government by 1% is just $1076. On the other hand, right-wing regimes at the initial development level require an additional $1376 to yield a 1% increase in government size. It is particularly clear from the table that the level of economic development has a strong dampening effect on the Wagner coefficient. Even in leftist regimes at average 1998 income levels a 1% increase in state size requires an additional $5814. Governments in right-wing regimes have at this stage essentially plateaued as anticipated in the theory.

The results of this last exercise provide strong evidence that the sensitivity of government size to income varies meaningfully with ideology and the level of economic development. As predicted by the theory above sensitivity is much greater in the 1960s than in the 1990s, though in either case sensitivity depends importantly upon ideology. This complements the previous findings that the level of government size is affected by ideology, but that the impact of ideology depends on the state of development. In this case the theory points to a stronger effect in the later years, and again this is exactly what is borne out in the data.

4 Conclusion

This paper asks how ideology affects the size of government. We define ideology in terms of differing tastes for public provision over private consumption. In a simple model where
private consumption is a necessity, and public services are luxury goods, the impact of ideology is shown to increase with the level of income. Using data from party manifestos, time-varying measures for the median-voter’s ideological position are constructed. Ideology as measured by these data has a significant impact upon government size which increases with the level of economic development as our model predicts. At 1960s income levels the impact of ideology on government size is small. At 1990s income levels the impact is large. By itself, Wagner’s law would predict convergence in government size given the convergence in income levels over the same period. In practice, the variation in government size has increased, a result we explain in terms of median voters’ preferences. Additionally the sensitivity of government size to income also depends on ideology and is much higher at the beginning of the sample and diminishes with economic development. Our model, and the ideology data we use can thus explain observed government size in the 1960s and 1990s and indeed why there has been increased divergence within the OECD during this period.

A further contribution of the paper is to investigate Persson and Tabellini’s (2004) finding of significant effects of constitutional rules. We would not argue that the results presented here are sufficient to negate their argument. For one thing their data set is much larger; we are restricted due to the limited availability of ideology data. For another it is not possible to separate out the time-invariant constitutional rule from the fixed effect in panel analysis. Nonetheless, allowing for differences in ideology may influence the interpretation of their results. Our theory can explain the 1960s observations as well as the 1990s observations, and it does appear that ideology is correlated with electoral rules, at least in the smaller set of countries studied here.

Future research might seek to investigate the role of ideology in determining specific policy
variables. It would also be possible to disaggregate the MRG dataset and investigate the relative importance of more specific policy preference measures, and investigate the relative importance of the ideology of the executive and the legislature.
Appendix - Model Derivation

Given equation (2) and the balanced budget condition (3) the utility function (1) can be rewritten as

\[ u_i(c_i, g) = F \left[ \left(1 - \frac{g + r}{y_i} \right) y_i + r \right] + \beta G(g) \]

which for the median voter is

\[ u_m(c_m, g) = F \left[ \frac{1}{m} (\bar{y} - (g + r)) + r \right] + \beta G(g) \]

where \( m \equiv \frac{\bar{y}}{\bar{y}_m} \). Given (4) then

\[ u_m(c_m, g) = F \left[ \frac{1}{m} \left( y^* - \frac{r^2}{y^*} - (g + r) \right) + r \right] + \beta G(g) \tag{A1} \]

and differentiating (A1) with respect to \( r \) and setting the resulting expression to zero gives (5) in the text. Differentiation of (A1) with respect to \( g \) and setting the resulting expression to zero yields equation (7).

In the instance of the Stone-Geary utility function the indirect utility function is now written as

\[ u_m(c_m, g) = \ln \left[ \frac{1}{m} \left( y^* - \frac{r^2}{y^*} - (g + r) \right) + r - \mu \right] + \beta \ln (g + \mu) \]

and differentiating this expression with respect to \( g \) and setting this equal to zero yields

\[ \beta \left( y^* - \frac{r^2}{y^*} - (g + r) + m (r - \mu) \right) = g + \mu. \]
Substituting in equation (5) and solving for \( g \) yields equation (9) in the text.

Proof of Propositions

Proposition 1 part (i)

Given (3) and the fact that \( \frac{m}{y} \) is constant the first part of the proposition requires that

\[
\frac{\partial (g^m/y)}{\partial \beta} = \frac{1}{(1 + \beta)^2} \left( \frac{4\delta + (m-1)^2}{4\delta (1 - \delta p^2)} \right) - \frac{m-1}{(1 + \beta)^2} \frac{\mu}{y} > 0
\]

and rearranging this gives

\[
y > \frac{(4\delta + (m-1)^2)(m-1)}{4\delta + (m-1)^2} \mu.
\]

This equation is implied by condition (11) provided that \( \delta > \frac{(m-1)^2}{4} \) which follows from condition (12).

Proposition 1 part (ii)

Again using (3) and the fact that \( \frac{m}{y} \) is constant the second part of the proposition requires that

\[
\frac{\partial (g^m/y)}{\partial y} = \frac{(1 + \beta m)\mu}{(1 + \beta) y^2} > 0
\]

which is positive by inspection. The second derivative is negative, thus establishing the second part of the proposition:
\[
\frac{\partial^2 (g^m / \bar{y})}{\partial \bar{y}^2} = -\frac{(1 + \beta m) \mu}{(1 + \beta) \bar{y}^3}.
\]

**Proposition 2**

Differentiating (A2) with respect to \( \beta \) gives

\[
\frac{\partial^2 (g^m / \bar{y})}{\partial \bar{y} \partial \beta} = \frac{[m - 1] \mu}{(1 + \beta)^2 \bar{y}^2} > 0.
\]
Figure 1: Projected Government Size

Calibration: $m = 2, \mu = 2000, \delta = 3, \beta_L = 0.6, \beta_R = 0.3$
Figure 2: Total Government Outlays as a share of GDP in OECD countries
Figure 3: Average median voter ideological position by country 1945-1998. Source: Budge et al (2001).
Figure 4: Average Median Voter ideology in majoritarian and PR countries. Author’s calculations using data from Budge et al (2001).
Figure 5: Average government size in the 90s versus average median voter ideology 1945-1998.
Figure 6: Marginal effect of ideology on government spending conditional on income per capita
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Sample: all
Number of Observations: 608 608 608 608
Number of Countries: 17 17 17 17
$R^2$ (within): 0.95 0.94

Table 1: Dynamic panel estimation with fixed effects

Notes: Panel regressions of Government Outlays as a percentage share of GDP including PROP1564, PROP65, TRADE, YGAP, OIL_EX, OIL_IM as control variables. OECD comprises the entire data set. L.Outlays is the lagged dependent variable. Y is income per capita in $000s of 1985 prices (PPP), ideo is the 10 year moving average ideology variable described in the text, ideo is the contemporaneous ideology variable. Robust standard errors are shown in parentheses. Columns (1b) and (2b) contain ‘long-run’ parameter estimates, with standard errors estimated by the delta method.
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**Table 2**: Dynamic panel estimation including interaction terms

Notes: As for table 1 excluding the demographic controls \(PROP\)1564 and \(PROP\)65. Columns (1) and (2) present results for fixed effects regressions and column (3) additionally includes time effects.
Table 3: Panel estimation of subsamples divided by electoral rule

Notes: As for table 2. Fixed effects and time effects included in columns (1) and (2). Fixed effects are omitted from columns (3) and (4) because MAJ does not vary through time. PR comprises the subset of observations with Proportional Representation electoral rules, Maj the subset of observations with Majoritarian electoral rules. MAJ is a dummy variable set equal to one for countries with majoritarian electoral rule.
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<td>(0.253)**</td>
</tr>
<tr>
<td>$ideo_{pre-1960} \times Y$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$0.365$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.183)*</td>
</tr>
</tbody>
</table>

| Sample                                               | all      | all      | all      | all     |
| Number of Observations                                | 608      | 501      | 608      | 608     |
| Number of Countries                                   | 17       | 14       | 17       | 17      |
| $R^2$ (within)                                        | 0.97     | 0.96     | 0.97     | 0.97    |

**Table 4: Alternative fixed ideology interaction effects**

Notes: As for table 2. Fixed effects and time effects included. The lagged dependent variable and income are also included as regressors. The coefficient reported is for the interaction of ideology and income. $SELFPOS$ is the WVS self-positioning in political scale variable (question E033 in the WVS). $INEQUAL – INCENTIVE$ is the WVS "we need larger income differences as incentives for individual effort" variable (question E035 in the WVS). $ideo_{all}$ is the country-specific arithmetic mean of the annual $ideo$ series. $ideo_{pre-1960}$ is the country-specific mean for the $ideo$ series up until 1960.
<table>
<thead>
<tr>
<th>Archetypal Left</th>
<th>0.929</th>
<th>0.172</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archetypal Right</td>
<td>0.735</td>
<td>-0.022</td>
</tr>
</tbody>
</table>

**Table 5: Estimated Wagner coefficients for archetypal left- and right-wing regimes at 1960 and 1998 levels of income**

Notes: The estimated coefficients are generated using equation (15) in the text. 1960 mean income was $6185 per capita and 1998 mean income was $15881 per capita. The archetypal left-wing regime has an ideology measure set equal to 0.16 and the archetypal right-wing regime has an ideology measure set equal to -0.08.
References


