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Abstract

The size of government depends positively on the labor share given price-inelastic demand for public services. OECD data support this hypothesis and also show a stronger dependence under left-wing ideology because larger government employs a larger workforce. A permanent one standard deviation increase in the labor share is found on average to increase government size by about 9% of GDP, with increases of 6% in right-wing countries and 12% in left-wing countries. Contrary to Baumol's cost-disease the relationship is estimated to be independent of income. Recent reductions in the labor-share have substantially slowed the growth of government in many countries.

JEL Codes: H10, H50, O41

Keywords: Size of government, labor share, Baumol's cost disease.

1 Introduction

Explanations of the size of government have historically focussed on its growth. However, as shown in figure 1, the share of government as a percentage of GDP in the OECD area has if anything declined in recent years. The 10 year average up until 2007 was lower than that up to 1998 in all but three of these countries.¹ Notwithstanding important cyclical features in many of the countries it is remarkable how growth in relative government size was the norm from the early 1960s to around the mid-1980s, and thereafter, more-or-less universally ceased - all be it at different levels in different countries.

The literature distinguishes between demand- and supply-side explanations for the growth of government.² Pickering and Rockey (2011) attribute the increases and the divergence in government size observed in the earlier part of the sample as due, in important part, to demand-side factors. The income elasticity of demand for public services is argued to exceed unity, as in Wagner's (1893) law, once the median voter has reached a certain level of income, and this income elasticity differs with ideology. However in their theory government still continues to grow with income, converging to a steady state that depends on ideology. This theory successfully explains the growth and divergence observed in the data up until 1998, but the discontinuous nature of the dependent variable noted above suggests other factors at work.

This paper argues that supply side factors are also important, and thus proposes an

¹The data are truncated at 2007 because after this date financial bail-outs and fiscal stimuli have led to significant increases in total outlays in many countries. An important question for posterity will concern the legacy of these shocks for government size.

²It is not the purpose of this paper to provide a systematic survey of the extensive literature on the size of government. Interested readers should consult Holsey and Borchering (1997), Lybeck (1988) and Shelton (2007).

explanation for the more recent contractions in government size. The central hypothesis is that the relative size of government is increasing in the labor share. In recent years the labor share has declined in many countries,³ and in the model below the labor share represents costs of production.⁴ Arguably output in many areas of the public sector is labor-intensive to the extent that labor *is* output in some instances, for example in nursing and one-to-one teaching, so if the labor share increases then so does government size when demand is inelastic. Furthermore, the larger government is, as in regimes that may be classified as left-wing, the greater the sensitivity of government size to movements in the overall labor share of income.

The seminal supply-side explanation of government growth is Baumol's (1967) cost disease. This follows from the twin assumptions of inelastic demand for government services and economic growth driven by the private sector.⁵ In the theory below it is shown that in the Baumolian setting the impact of the labor share on government size is predicted to increase as the economy grows, because a larger portion of the workforce gets subsumed into the public sector over time. However, it is not clear that productivity improvements are exclusive to the private sector. The rapid advances in information technology and communications have benefited all sectors of the economy. Innovations in the defense sector have in part led to radical reductions in manpower, arguably without loss of effect.⁶ Information technology

³This phenomenon has not gone unnoticed in the academic literature, e.g. see Azmat et al (2012).

⁴In a different setting the New Keynesian macroeconomics literature, exemplified in Galí and Gertler (1999), also uses the labor share as a measure of real marginal production costs.

⁵Borcherding (1985) estimates that 31% of the observed growth of total government size in the U.S. between 1902 and 1978 is due to the Baumol effect. Borcherding et al (2004) find similar evidence in a panel of OECD countries.

⁶Of course it would be possible to take issue with this statement at several levels, but the point is that technological change has at least changed the nature of the activities of the military.

has also arguably underpinned systemic change in public education.⁷ Furthermore, recent research laments a slowing down of private sector innovation - for example Cowen (2011) and Gordon (2012). It therefore seems possible that public sector productivity growth could even outstrip that in the private sector. In this environment, economic growth leads to small government under conditions of inelastic demand because a smaller workforce is required to deliver given services. The testable implication here is that the impact of the labor share on the size of government falls rather than increases with income.

These hypotheses are tested on a panel of OECD countries by augmenting the empirical analysis of Pickering and Rockey (2011) with data up until 2007 and including the labor share as a new explanatory variable. The labor share of income is found to have a substantial effect on the size of the government. It is estimated that a permanent one standard deviation increase in the labor share will increase government size by about 9% of GDP. Furthermore, and anticipated in the model outlined below, this effect is found to increase in countries with left-wing ideology. In right-wing countries the estimated effect is an increase of about 6% of GDP, whilst in left-wing countries the estimated increase is 12% of GDP. However, contrary to the cost-disease explanation of government growth the impact of the labor share is not found to depend on income levels.

The contention of this paper is that reductions in the labor share, observed in many countries over the past two decades, have played an important role in arresting the growth of government, and indeed have allowed it to contract in some instances. However, the labor share cannot fall indefinitely, and indeed one cannot rule out a future in which private sector

⁷In the UK, the average student-staff ratio in higher education has increased from below 8 in the 1950s to 17 in 2012. Again whether or not these changes are driven by technology or politics is debateable, but the numbers are at least suggestive that productivity is not a given constant.

productivity growth exceeds that in the public sector. For these reasons cost disease may well return in the future.

The next section revisits Baumol's (1967) model with the objective of deriving an explicit relationship between the relative size of government and the labor share. Section 3 contains the empirical work and section 4 concludes.

2 The Model

There are two sectors in the economy. Sector one is the public sector and sector two is the private sector. Formally:

$$Y_{1t} = aL_{1t}e^{r_1t} \tag{1}$$

$$Y_{2t} = bL_{2t}e^{r_2t} \tag{2}$$

where Y_{1t} and Y_{2t} are respectively output in the public and private sectors, L_{1t} and L_{2t} are the respective employment levels, a and b are exogenous parameters, r_1 and r_2 are exogenous productivity growth parameters, and t is a time index. Note that in Baumol's original paper $r_1 = 0$, though here for generality productivity growth may be higher in either sector. Costs depend only on wages, which following Baumol grow in accord with productivity in the private sector, hence

$$W_t = We^{r_2t} \tag{3}$$

where W is a constant.

Baumol examines the evolution of an economy in which the relative outputs of the two

sectors are maintained, "perhaps with the aid of government subsidy, or if demand for the product in question were sufficiently price inelastic or income inelastic." Given (1) and (2) this means that

$$\left(\frac{b}{a}\right) \frac{Y_1}{Y_2} = \frac{L_{1t}e^{(r_1-r_2)t}}{L_{2t}} = K$$

where K is constant and represents society's choice concerning the appropriate level of public output relative to private output. Given these elements,

$$L_{1t} = \frac{LK e^{(r_2-r_1)t}}{1 + K e^{(r_2-r_1)t}} \quad (4)$$

$$L_{2t} = \frac{L}{1 + K e^{(r_2-r_1)t}} \quad (5)$$

where $L = L_1 + L_2$. As Baumol discusses, in the scenario where $r_1 = 0$, then the public sector gradually absorbs the labor force over time. In this instance equations (1-5) are simply a restatement of the same in Baumol (1967). However, if $r_1 > r_2$ then it is the private sector which grows in employment terms, and of course if $r_2 = r_1$ then the proportion of the workforce working in the public sector is constant and depends only on K .

The size of the government here is defined by total expenditure on production in the public sector relative to total output:

$$g_t = \frac{W_t L_{1t}}{I_t} \quad (6)$$

where following Baumol $I_t \equiv B_1 Y_{1t} + B_2 Y_{2t}$ is total GDP and B_1 and B_2 are weights. On

the other hand the labor share is defined as

$$s_t = \frac{W_t L}{I_t}. \quad (7)$$

Substitution of (4) and (7) into (6) gives government size as a function of the labor share

$$g_t = \frac{s_t K e^{(r_2 - r_1)t}}{1 + K e^{(r_2 - r_1)t}} \quad (8)$$

with the following concrete hypotheses:

1. The size of government is increasing in the labor share.
2. The sensitivity of government size to the labor share is increasing with leftist ideology (as proxied in the model by K).
3. (a) If $r_2 > r_1$ (the cost disease case) the sensitivity of government size to the labor share increases with the level of economic development (as proxied in the model by time). (b) If instead $r_2 < r_1$ then the sensitivity of the government size to the labor share decreases with the level of economic development.

Hypothesis 1 is a syllogism following from two premises. The first of these is that the labor share is representative of costs in the public sector. This follows clearly if we take the stark example that labor *is* output in the instance of public services like nursing and one-to-one teaching. But more generally the idea that the labor share denotes production costs is also widely used in modern macroeconomics. For example Galí and Gertler (1999) show that the New Keynesian Phillips Curve has price inflation depending on production

costs rather than the output gap, and that production costs are structurally defined by the labor share of income. The second premise is price-inelastic demand. The source of the price inelasticity is an interesting question in its own right (though not the topic of this paper). Arguably it reflects tastes for public sector goods.⁸ Most OECD countries adhere, albeit to varying degrees, to ideas of universalism in provision (especially of health and education), and as such exhibit strong inertia in provision of these types of goods, at least in terms of volume. Empirically Borcharding (1985) and others have found demand in the OECD to be inelastic using public-sector price indices.⁹

Hypothesis 2 follows straightforwardly. When the public sector is relatively large, for instance in the case of Sweden, the effect of a particular change in costs, represented by the labor share, on government size is increased. Note that hypotheses 1 and 2 both hold with or without cost disease. All that is required for these is that public sector output is labor-costs are important component of total costs, and that demand is price-inelastic. However, if it is also the case that the public sector is increasingly absorbing the workforce over time - due to Baumol's twin assumptions of inelastic demand *and* growth driven by the private sector (case 3(a): $r_2 > r_1$), then as the economy develops, and thus diverts more of its resources into the public sector, the impact of variation in costs on government size increases. If instead productivity growth in the public sector is greater than in the private sector (case 3(b): $r_2 < r_1$), then the impact of cost variation on government size falls with overall economic development.

⁸One perhaps should not rule out public choice issues here either. For example Buchanan and Tullock (1962, 1977) explain the rise of public spending by the voting power of bureaucrats. If the voting power of bureaucrats increases, then bureau wages relative to private sector wages may also increase.

⁹Borcharding (1985), Borcharding et al (2004), Henrekson and Lybeck (1988), Ferris and West (1996) and Neck and Getzner (2007) also find demand for public services to be price-inelastic.

Figure 2 embeds the impact of the labor share on government size in the diagrammatic analysis used by West (1991), Ferris and West (1996) and Winer et al (2008). In the diagram the y-axis denotes the relative price of government services, and the x-axis denotes relative output. There are two alternative demand curves (both considered in Baumol's original paper). A perfectly inelastic demand curve is given by D_{CRO} (demand with constant relative output), whilst demand under constant relative expenditure (D_{CRE}) implies constant unit elasticity. Under D_{CRE} , nothing on the supply side matters: any cost change is reflected in a quantity change keeping the relative share of expenditure on government constant.¹⁰ However, supply side explanations of the growth of government require that demand is at least to some extent inelastic (D_{CRO}).¹¹ At any point in time marginal production costs (of government-supplied goods) are denoted by a horizontal line, and which in general depend temporally on underlying growth in the two sectors.¹² In the cost disease case ($r_2 > r_1$) then at low levels of technology the opportunity cost of public sector output is low (represented in the figure by MC_1) but as private-sector based innovation proceeds the relative cost of government increases (MC_2). Variation in the labor share of income causes fluctuations in costs, as denoted by the arrows in the figure. When the public sector employs an increasingly large portion of the workforce, then the impact of given fluctuations in the labor share of income has an increasingly large impact on government size. The labor share induced fluctuations around MC_2 are thus larger than those around MC_1 . This argument is reversed

¹⁰Of course shifts in the demand curve, as expressed in Wagner's law or for other reasons, could even here explain government growth.

¹¹Clearly D_{CRO} is an extreme case, but all of the arguments go through as long as the elasticity of demand is less than unity.

¹²Costs in the public sector are denoted $C_1 = W_t L_{1t} = P_t Y_t g_t$ given that $g_t = \frac{W_t L_{1t}}{P_t Y_t}$. Using (8) then $C_1 = P_t Y_t \frac{s_t K e^{(r_2 - r_1)t}}{1 + K e^{(r_2 - r_1)t}}$. Given $P_t = 1$ (with no loss of generality) then marginal costs are $\frac{dC_1}{dY_1} = \frac{s_t K e^{(r_2 - r_1)t}}{1 + K e^{(r_2 - r_1)t}}$. This may be constant if productivity growth in the two sectors are equal.

in the case of $r_2 < r_1$, the marginal production costs of public sector output is now falling over time, and given fluctuations in the Labor share have a smaller impact on government size.

Figure 2 also depicts the Kau and Rubin (1981, 2002) hypothesis that the relative size of government has increased because the social costs of tax collection have fallen over time. A benevolent government equates marginal benefits, given by demand which is to some degree elastic, and the full marginal (i.e. including both production and social) costs of government. A rightward shift of $MC + SC$ over time therefore leads to larger government as long as demand is not perfectly inelastic. Kau and Rubin (2002) and Winer et al (2008) find in particular that increased female participation in the labor force in the US led to greater government expenditure, and interpret this finding as due to reduced tax collection costs when a greater percentage of the population participates in the formal labor market.

3 Evidence

Pickering and Rockey (2011) (henceforth PR) analyze the growth of government in a panel of OECD countries over the period 1960-1998. The dependent variable is total government outlays as a percentage share of GDP, taken from the OECD Economic Outlook database. In the present paper these data are extended until 2007 (thereafter macroeconomic conditions take a substantial toll on outlays in many countries, hence 2008 and beyond are omitted from the analysis.) Figure 1 depicts these data, which as noted in the introduction show an upward trend in all countries in the earlier years (though to differing extents), followed by stasis or even slight decline. This paper builds on the previous analysis by augmenting the

PR specification with data for the labor share. Labor share data are also taken from the OECD database and are presented in figure 3, displaying interesting and usable variation across and within countries. The mean value of the labor share data in this sample is 0.69, not far from the two thirds rule of thumb used as standard in macroeconomic calibration. There is nonetheless a notable decline through the sample period in many countries in recent years. In all countries except Iceland and Switzerland the 10 year average to 1990 exceeds the 10 year average to 2007. The argument of this paper is that the smaller labor share has played an important role in explaining the slow-down in the growth of government in recent years. Figure 3 also reveals Austria and Iceland as outliers from the other countries, respectively with unusually high and low labor shares throughout much of the sample.

There are some potential difficulties relating to statistical inference when regressing government size on the labor share. A first issue relates to the definition of the labor share. In particular the OECD labor share data includes employer-contributions (social insurance) as well as salaries and wages. The potential problem here is that large government is associated with greater employer-contributions and social insurance - hence the labor share could be endogenous to government size. However, the labor share data do not seem to be biased upwards for larger public sectors (e.g. Norway & Sweden, the countries with the largest governments, do not have abnormally large labor shares). Furthermore the OECD themselves report that these contributions are "remarkably stable", e.g. it was 14% on average in 1975 (near the beginning of our sample), and 14% in 2005 (near the end of our sample).¹³ The econometric analysis employs fixed effects, so identification follows from changes to the labor share over time within each country. If the observed labor share changes within countries

¹³See <http://www.oecd.org/tax/taxpolicyanalysis/oecdtaxdatabase.htm>

are not due to changes in employer contributions, then it is legitimate to assume that they do represent real changes in costs of production beyond employers contributions.

More broadly the labor share itself will also have its own driving variables, which problematically also may independently drive government size. One possibility is due to the economic cycle: different macroeconomic theories posit different predictions for the cyclical behavior of the labor share. In simple RBC models it is acyclical. In ‘old’ Keynesian models emphasizing nominal wage rigidity, the labor share can be anti-cyclical depending on the elasticity of demand for labor. In contrast the new Keynesian literature, as exemplified by Gali and Gertler (1999), emphasizes price-stickiness, which implies a pro-cyclical labor share. Because government outlays in the OECD are quite strongly anticyclical (i.e. due to automatic stabilizers) there is a danger that the labor share would be simply picking up a cyclical effect on spending. To address this problem the regression analysis includes controls for the output gap,¹⁴ and following Persson and Tabellini (2003) the oil price interacted with an indicator variable depending on whether the country is a net oil-importer or exporter. Common time effects are also included in the regression analysis.

At a structural level Bentolila and Saint-Paul (2003) show theoretically that the labor share varies with differential labor- and capital-augmenting technology and the degree of complementarity between labor and capital in production. These technological characteristics will also drive GDP - which in turn represents the central mechanism in explaining government growth according to Wagner’s (1893) law. Hence for example the labor share may increase (or fall) due to labor- (or capital-) augmenting technology improvement. A con-

¹⁴The output gap data ‘YGAP’ are derived following Persson and Tabellini (2003) using the Hodrick-Prescott filter. Observations where the output gap is greater than 5% in magnitude are omitted from the regression analysis.

current increase in GDP may then increase government demand for Wagnerian reasons. Thus it is not impossible that under certain conditions changes in the labor share may conflate labor-share (supply) and Wagner (demand) mechanisms in the econometrics. Nonetheless, it is clear from figure 3 that there is no clear overall correlation between real income per capita and the labor share. Furthermore the regression analysis includes time effects, the real oil price (which to some extent may drive changes in relative labor/capital productivity) and of course real GDP per capita to separate out these potential drivers.

Alternatively the labor share may also be a reflection of differing or changing preferences/tastes/ideology towards inequality in society. A high labor share may indicate an egalitarian ideology as society sets institutions and policies in order to increase relative rewards to workers rather than owners of capital. Inference therefore could conflate the ideological explanation for government size with the supply-side cost explanation. The regression analysis thus includes fixed effects as standard, which will control for any constant country-specific differences in ideology as well as other time-invariant characteristics. Furthermore the analysis includes the time-varying ideology data used in PR as well as its interaction with income. In addition to these controls, and following Kau and Rubin (2002) and Winer et al (2008), female participation in the labor force is included as an additional variable,¹⁵ so that this alternative supply-side explanation of government growth may also be controlled for.

Column 1a of table 1 contains estimation results in a regression specification extending that used in PR. This includes fixed effects, the lagged dependent variable and a number of

¹⁵Specifically these data, taken from the OECD statistical database, are female labor force as a percentage of the female population between 15 and 64 years.

control variables together with the labor share data.¹⁶ Importantly, the unconditional impact of the labor share is estimated to be positive, and is significant at the 5% level. Given the presence of the lagged dependent variable, the parameter estimates in column 1a reflect the current-period (or short-run) impact of the explanatory variables. Column 1b presents the corresponding long-run parameter estimates,¹⁷ illustrating the impact of particular levels of both income and the labor share on the long-run steady-state level of government size. The p-value for the estimated long-run coefficient for the labor share is 0.4%, and the estimated effect is sizable: A sustained one standard deviation (7%) increase in the labor share is estimated to result in an eventual increase in the size of government by 8% of GDP.

The impact of the female participation rate on government size to some extent conflicts with previous findings.¹⁸ In the context of the US, Kau and Rubin (2002) and Winer et al (2008) found it to be positively related with total government *spending*, but in the OECD sample studied here, increased female participation in the labor force if anything reduces relative government *size*.¹⁹ This is an intriguing reversal. The obvious interpretation of this is that increased female participation has increased GDP to a greater extent than it has government spending. A further possible explanation of this could be that increased female labor force participation leads to an increase in the income of the median voter relative to

¹⁶Column 1 of table 1 is the same specification as used in column 2 of table 2 in PR including the labor share data and female participation as additional explanatory variables, and over the longer time horizon up until 2007.

¹⁷Given the regression $g_t = \alpha g_{t-1} + \beta Y_t + \gamma I_t + \delta Y_t I_t + \dots$ the long-run level of g is taken as $g^* = \frac{\beta}{1-\alpha} Y_t + \frac{\gamma}{1-\alpha} I_t + \frac{\delta}{1-\alpha} Y_t I_t + \dots = \lambda Y_t + \mu I_t + \nu Y_t I_t + \dots$. The standard errors of the long-run parameters, λ , μ , and ν are estimated using the delta method.

¹⁸Ferris and West (1999) also found an insignificant but negative effect of female participation, on pay in the public sector relative to the private sector, when looking at US data - also contrary to the Kau and Rubin (1981, 2002) hypothesis.

¹⁹Although Winer et al (2008) found "at best a much smaller positive effect" of female participation on government spending levels in their replication of Kau and Rubin (2002).

mean income, which in turn reduces the demand for redistribution. These concerns may be greater in the non-US OECD members, wherein redistribution and total government size are greater, but full consideration of this finding lies beyond the scope of this paper.

Column 2 of table 1 presents estimation results excluding Austria and Iceland from the analysis, which as noted above are outliers in terms of their labor share histories. These countries are clearly not driving the results because the labor share is now statistically significant at the 1% level. The standard deviation of the labor share in the sample excluding these two countries is reduced to 5%, but given the parameter estimate in column 2b a permanent one standard deviation increase in the labor share is estimated in this sample to increase government size in the long-run by 9%.

Table 2 extends the regression results reported in table 1 to include time effects. In this regression income is no longer statistically significant. PR also found that the inclusion of time effects reduced the explanatory power of income, undermining Wagner's law as an explanation for the growth of government. However, the labor share continues to be positive and statistically significant, both in the full sample and excluding Austria and Iceland in column 2.

In table 3, following hypotheses 2 and 3 above, interaction terms are included. The first of these is the product of the labor share and average median voter ideology within the country over the full sample. As described in PR the average ideology data cohere with the consensus: Scandinavian countries are more left-wing than continental Europe, and Anglo-Saxon countries - especially Australia and the US, are on average the most right-wing amongst the OECD sample. These ideology data vary from -0.13 (Iceland) and -0.11 (the US), to 0.16 (Sweden) and 0.24 (Norway) with more positive numbers indicating more

leftist ideologies. Hypothesis 2 anticipates a positive and significantly estimated coefficient pertaining to the interaction of ideology and the labor share, and the results reported in table 3 strongly support this hypotheses. The exclusion of Austria and Iceland (in column 2) again does not alter this inference. Using the parameter estimates in column 2b, a sustained one standard deviation increase in the labor share (5%) is estimated to increase government size by 5.86% in the case of a representative right-wing regime (ideology = -0.1) and by 12.76% in the case of a representative left-wing regime (ideology = 0.1).

The second interaction term is the product of the labor share with mean income. Recall that the theory is ambiguous in its prediction here, anticipating a positive effect if private sector growth outstrips public sector growth (the case of cost-disease), and a negative effect in the opposite case, or insignificance if productivity growth is equal across the sectors. The estimation results over the full sample relating to this interaction are insignificant, hence are not supportive of cost disease (or indeed its converse, where public sector productivity increases at a faster rate than private sector productivity). This represents a fairly weak test of Baumol's cost disease in the context of explaining government growth, though the evidence is at least suggestive that if demand for government services is price-inelastic, then productivity growth in the two sectors is not systematically different. If it were, then employment shares in the two sectors would change, and the labor-share would have different effects on government size depending on income.²⁰

A potential source of concern with the econometric inference is the Nickell (1981) bias associated with models involving fixed effects and a lagged dependent variable. The bias is

²⁰Pilichowski and Turkisch (2008) report that the public sector employment share has indeed been quite stable over time within the OECD countries (see their figure 9.)

of the order $(\frac{1}{T})$, and the data set contains 36 years of data, hence this problem is likely quite small. Nonetheless a means to correct this bias is provided by Bruno's (2005) extension of Kiviet (1995), but which also entails the drawback of reduced statistical efficiency. Furthermore these estimators are consistent only when the cross sectional dimension of the panel tends to infinity (our is only 17 or 15 countries). Nonetheless because it is not clear a priori which of the Nickell-bias or estimation inefficiency plus inconsistency is the greater evil, we also present results using the Bruno (2005) estimation procedure. Table 4 contains these results, which largely support the findings already reported. The impact of the labor share is still strongly conditional on the prevailing ideology as hypothesized, whilst the labor share interaction with income is again insignificantly different from zero. Overall the parameter estimates are not significantly different from those reported in Table 3, and hence do not overturn the main findings of the paper.

4 Conclusion

This paper argues that the labor share is an important determinant of the size of government. Under conditions of inelastic demand for government, the size of government is increasing in the labor share, and secondly the impact of the labor share is greater in left-wing economies. Under Baumolian cost disease, then variation in the labor share is predicted to have greater impact on the scale of government. Data from the OECD support the first two of these hypotheses. The labor share unambiguously positively impacts the size of government, and this impact is bigger under left-wing ideology. Recent declines in the labor share have therefore arrested the growth of government witnessed in much of the post-war era.

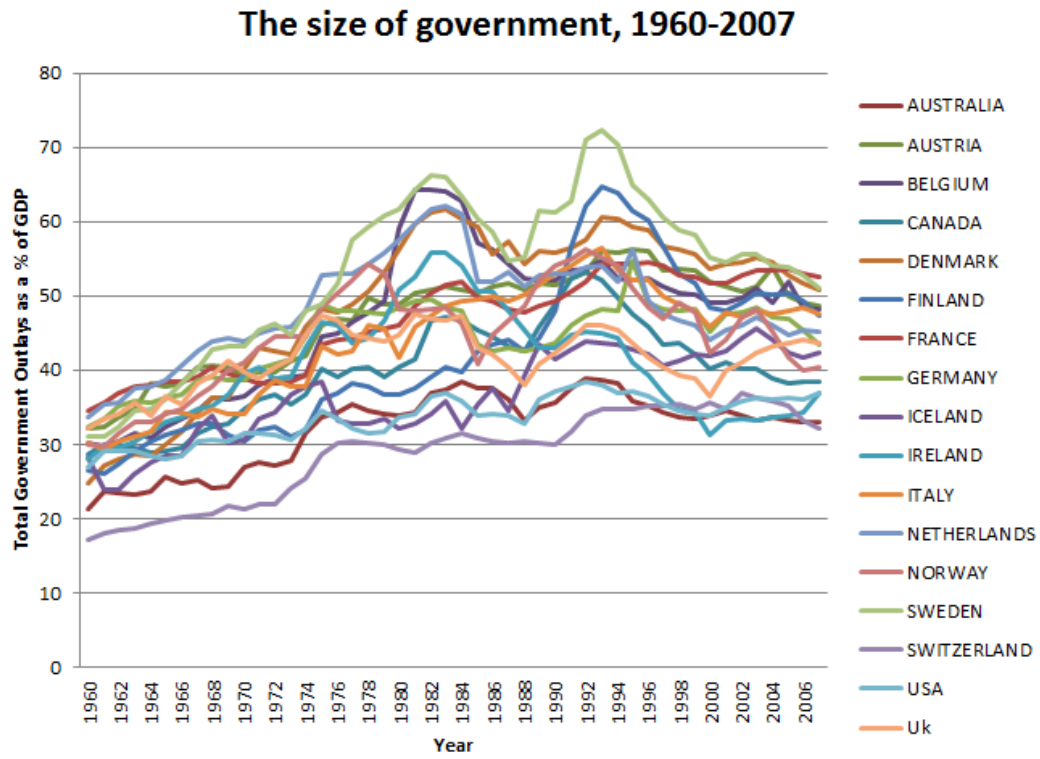


Figure 1: The size of government, 1960-2007

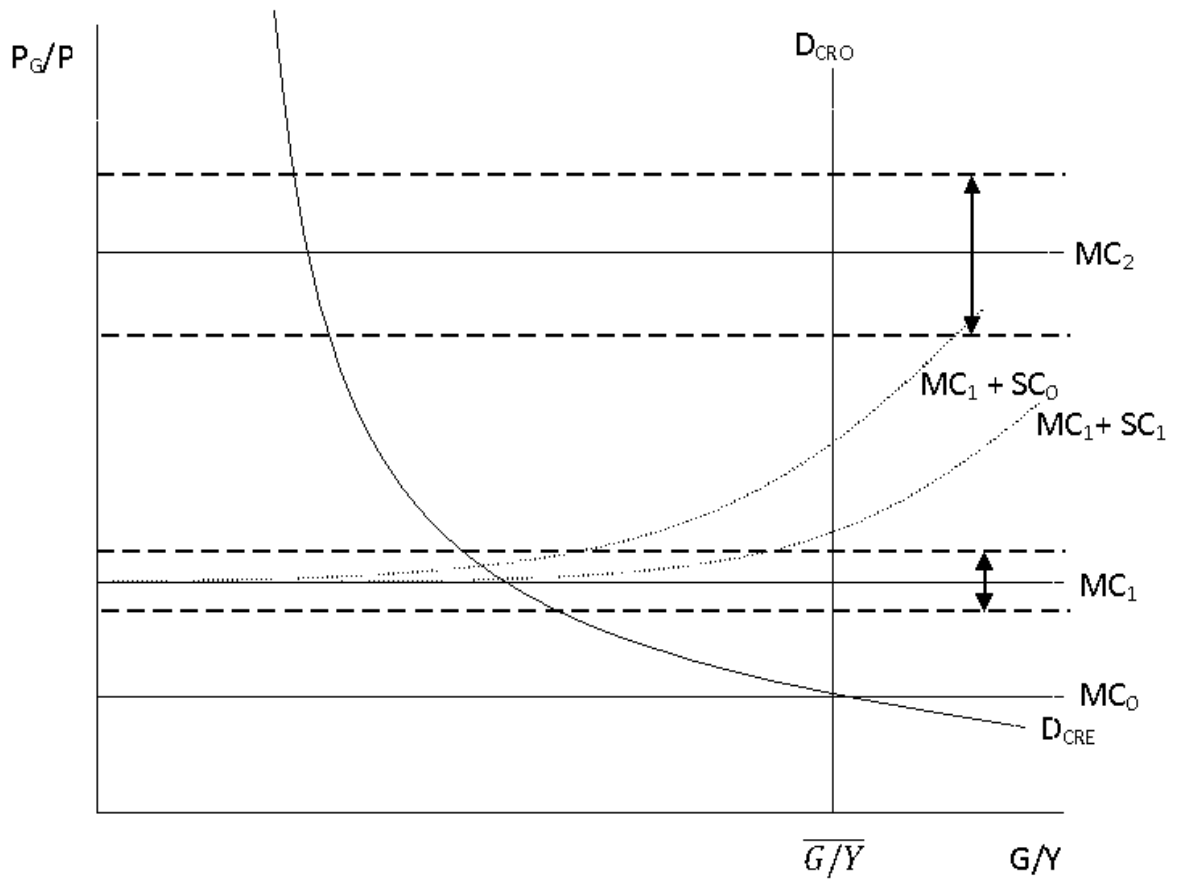


Figure 2: The Demand and Supply of Government

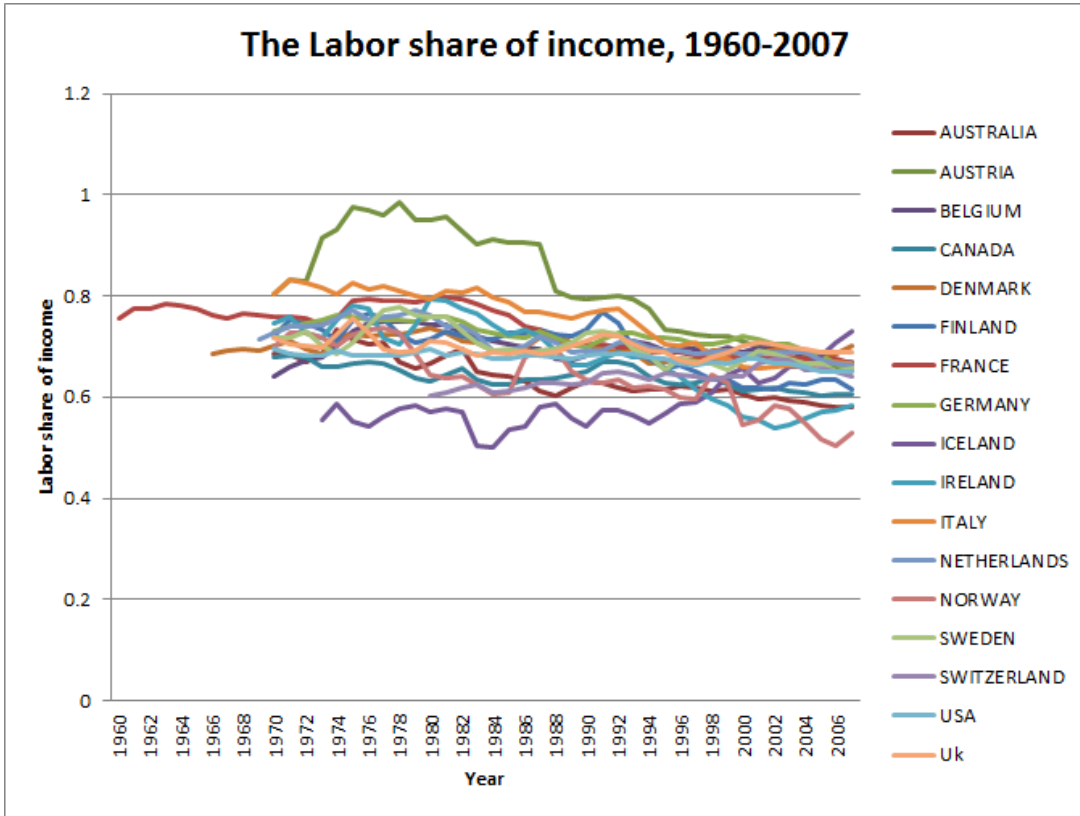


Figure 3: The Labor Share of income 1960-2007

	(1a)	(1b)	(2a)	(2b)
<i>L.Outlays</i>	0.882 (0.022) ^{***}		0.852 (0.024) ^{***}	
<i>Y</i>	0.054 (0.034)	0.454 (0.323)	0.078 (0.036) [*]	0.527 (0.279) [*]
<i>share</i>	13.91 (5.438) ^{**}	117.7 (35.1) ^{***}	28.46 (3.529) ^{***}	192.7 (28.96) ^{***}
<i>fp</i>	-0.020 (0.026)	-0.170 (0.222)	-0.049 (0.030)	-0.332 (0.222)
Obs	642		569	
No. Countries	17		15	
R^2 (within)	0.91		0.92	

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, and OIL_IM as control variables described in Persson and Tabellini (2003), and ideology *ideo* and its interaction with income as used in PR. *L.Outlays* is the lagged dependent variable. *Y* is income per capita in \$000s of 2005 prices (PPP), *fp* is the female labor force participation rate amongst 15-64 year olds. Robust standard errors are shown in parentheses. *share* is the labor share of income. Columns (1b) and (2b) contain ‘long-run’ parameter estimates, with standard errors estimated by the delta method. *, **, and *** respectively denote significance levels at 10%, 5% and 1%.

	(1a)	(1b)	(2a)	(2b)
<i>L.Outlays</i>	0.885 (0.026)***		0.874 (0.031)***	
<i>Y</i>	0.093 (0.081)	0.808 (0.751)	0.122 (0.084)	0.966 (0.723)
<i>share</i>	10.12 (5.66)*	88.13 (43.01)*	21.27 (5.378)***	168.5 (46.05)***
<i>fp</i>	-0.019 (0.024)	-0.166 (0.207)	-0.048 (0.026)*	-0.378 (0.212)*
Obs	642		569	
No. Countries	17		15	
R^2 (within)	0.94		0.95	

Table 2: Dynamic panel estimation with fixed and time effects

Notes: As for Table 1.

	(1a)	(1b)	(2a)	(2b)
<i>L.Outlays</i>	0.886 (0.020)***		0.864 (0.024)***	
<i>Y</i>	0.044 (0.191)	0.386 (1.686)	0.156 (0.172)	1.143 (1.299)
\overline{ideo}	-10.67 (2.459)***	-93.85 (23.26)***	-10.48 (2.789)***	-76.83 (23.66)***
$\overline{ideo*Y}$	0.437 (0.106)***	3.840 (1.145)***	0.489 (0.107)***	3.583 (1.058)***
<i>share</i>	9.374 (9.945)	82.43 (87.12)	25.40 (7.898)***	186.2 (59.68)***
$\overline{share*ideo_ave}$	142.1 (25.45)***	1249.2 (369.7)***	94.19 (28.39)***	690.7 (273.3)**
<i>share * Y</i>	0.080 (0.288)	0.703 (2.530)	-0.094 (0.270)	-0.686 (1.988)
<i>fp</i>	-0.0077 (0.029)	-0.068 (0.257)	-0.039 (0.030)	-0.293 (0.241)
Obs	642		569	
No. Countries	17		15	
R^2 (within)	0.91		0.92	

Table 3 Dynamic panel estimation with fixed effects and including interaction terms.

Notes: As for Table 1.

	(1)	(2)
<i>L.Outlays</i>	0.903 (0.022)***	0.871 (0.020)***
<i>Y</i>	-0.303 (0.265)	-0.228 (0.261)
\overline{ideo}	-6.346 (4.962)	-8.162 (5.268)
$\overline{ideo*Y}$	0.345 (0.208)*	0.434 (0.216)**
<i>share</i>	0.149 (8.987)	14.57 (8.999)
$\overline{share*ideo_ave}$	136.5 (32.19)***	92.62 (37.52)**
<i>share * Y</i>	0.634 (0.392)	0.489 (0.382)
Obs	642	569
No. Countries	17	15

Table 5 Bias corrected least square dummy variable estimates

Notes: All estimates are the Bias Corrected Least Squares Dummy Variable estimator proposed by Kiviet (1995) and extended by Bruno (2005). Bootstrap standard errors in parentheses. Estimates are initialized by the Andersen-Hsiao estimator and then corrected such that the maximum bias is $O\left(\frac{1}{NT^2}\right)$. Other notes as for Table 1.

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