

Do political incentives matter for tax policies? Ideology, opportunism and the tax structure

by

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Abstract: This paper investigates the importance of political ideology and opportunism in the choice of the tax structure. In particular, we examine the effects of cabinet ideology and elections on the distribution of the tax burden across factors of production and consumption for 21 OECD countries over the period 1970-2000 by employing four alternative cabinet ideology measures and by using the methodology of effective tax rates. There is evidence of both opportunistic and partisan effects on tax policies. More precisely, we find that left-wing governments rely more on capital relative to labor income taxation and that they tend to increase consumption taxes. Moreover, we find that income tax rates (but not consumption taxes) tend to be reduced in pre-electoral periods and that capital effective tax rates (defined broadly to include taxes on self-employed income) are reduced by more than effective labor tax rates.

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1. Introduction

Theoretical and empirical research in political economy has linked policy making to electoral (opportunistic) and ideological (partisan) incentives (see e.g. Drazen, 2000, Persson and Tabellini, 2000 and Mueller, 2003, for reviews of this literature). Opportunistic motives reflect the incumbent party's desire to win the elections and stay in office for as long as possible, while the partisan motives arise from assuming that voters have different preferences (e.g. over public goods), which leads to different policy platforms adopted by political parties that target the welfare of their constituency.

One strand in this literature has examined the effects of political ideology on the choice of the tax structure, as defined here by the distribution of the tax burden across factors of production and consumption (see e.g. the contributions by Persson and Tabellini, 1992 and 1994, Haufler, 1997 and Lockwood and Markis, 2006 and the survey paper by Winer and Hettich, 2003). The general conclusion from this body of work is that left-wing parties would, other things equal, prefer to tax capital income more relative to labor income, when compared to right-wing parties. Although this is an intuitive prediction and does conform to anecdotal evidence, we are not aware of an empirical investigation that examines whether political preferences affect the capital, labor and consumption tax rates differently.¹ We are also not aware of an empirical investigation that examines whether opportunistic motives affect the capital, labor and consumption tax rates differently.² This research is useful both in formally testing the predictions of theoretical models and in generating stylized facts regarding the political motives behind the choice of tax rates, with the hope of motivating new theoretical developments.

¹ The existing empirical research has mainly examined whether there are partisan effects on the fiscal size of the government (i.e. on fiscal spending as a share of GDP and on the overall tax burden, as the latter is approximated by the share of tax revenue over GDP) and specific fiscal spending and/or tax-revenue categories (see e.g. Alesina et al., 1997, Cusack, 1997, Volkerink and de Haan, 2001a, Perotti and Kontopoulos, 2002 and Bräuninger, 2005 for the OECD and Kneebone and McKenzie, 2001 for Canadian provinces). Regarding empirical work on ideology effects on tax rates, we note the study on local property statutory tax rates for Dutch municipalities by Allers et al. (2001) and on the implicit income tax rate in the U.S. states by Reed (2006). Although the work by Reed (2006) is the closest to ours, we note that he does not examine differential effects on labor and capital income and does not consider opportunistic effects. Finally, Tavares (2004) and Mierau et al. (2007) suggest that political variables also matter for fiscal policy adjustment decisions.

² Note that the standard political business cycle literature (see e.g. the work by Nordhaus, 1975, Linbeck, 1976 and Rogoff, 1990) implies that the incumbent party has the incentive to decrease the tax burden before elections, so as to increase the probability of being re-elected. However, the – theoretical and empirical – literature has not examined the potentially different effects on the different tax rates.

Motivated by the above, in this paper we examine the importance of political ideology and opportunism in the choice of the tax structure. We use the standard measures of political ideology as in the aforementioned literature. In particular, we use measures of cabinet orientation developed and used by Castles and Mair (1984), Cusack (1997), Tavares (2004), and Budge et al. (1993) as updated by Woldendorp et al. (1998) that are based on expert surveys and locate parties on an ideological left-right scale. We capture electoral effects as in the literature, by constructing pre-electoral dummies. In order to approximate the tax rates on labor income, capital income and consumption, we use the ECFIN effective tax rates reported in Martinez-Mongay (2000). These are based on the Mendoza et al. (1994) approach, which basically consists of defining the tax rate as a ratio between the tax revenues from a particular tax base and the corresponding tax base. This is important, because the government is able to affect that tax rates by determining - through tax legislation - both the statutory tax rate and the tax base differentially for each source to be taxed. These effective tax rates have not been used so far in the relevant literature. Our dataset consists of a panel of 21 OECD countries over the period 1970-2000. We use the annual data but we also look at 5-year averages, as institutional and political barriers may make it difficult for policy makers to immediately implement their policy preferences.

Our main finding is that there exists evidence for effects of both political ideology and pre-electoral opportunism on the income tax rates for the OECD economies. In particular, left-wing governments tax capital more relative to labor income. In addition, governments reduce the income tax rates before elections. These findings are generally robust to the measures of political ideology used, to the measures of effective tax rates used and to the use of annual or 5-year averaged data. Importantly, these findings are consistent with a large body of theoretical research in political economy, as discussed above. However, these theoretical predictions had not so far received empirical support, as the data on effective average tax rates that we use here had not been exploited in the past by the relevant empirical literature.

Using effective tax rates to capture the tax burden on the factors of production and consumption also reveals some further interesting political effects. Firstly, it seems that the role of the income of the self employed is important in examining the effects of ideology on the tax rates. In particular, it is the taxation of the income of employed labor that the left-wing governments mainly try to reduce relative to the taxation of the income

from capital and self employment. This finding is expected, as long as left-wing parties view income from self employment as income from entrepreneurial activity and not labor income. Secondly, we find that the partisan effects are easier to uncover when looking at the “gross” capital tax rates, although this finding is less robust. Such a result suggests that left-wing governments increase the tax burden on capital by essentially broadening the capital tax base, by being less willing to provide tax exemptions for depreciated capital. Both findings discussed above underlie the usefulness of using effective tax rates, as they can capture political effects on both the statutory tax rates and the tax base and carefully distinguish between different tax bases.

Thirdly, it seems that it is in the capital income (especially when it includes the income of the self employed) that the reduction in taxation is bigger in pre-electoral periods. This is not straightforward to explain, based at least on the current theoretical literature, but it might indicate an increase in lobbying activities in the form of increased tax avoidance/evasion from the firms in pre-electoral periods, as labor (wage) income provides fewer opportunities for tax evasion. Fourthly, we find that although income tax rates are reduced in pre-electoral periods, consumption taxes are not, possibly indicating that the political cost of the latter is smaller. Finally, we uncover an empirical regularity that appears puzzling, at least when viewed in the context of the current theoretical research. In particular, left-wing governments are associated with increases in the consumption taxes. Explanations to this finding can potentially be obtained by looking at the relationship between political ideology and the government budget as a whole, which is an issue we do not examine in this paper.

The rest of the paper is organized as follows. Section 2 presents the data and the empirical methodology. Section 3 investigates the link between ideological motives and tax structure. Section 4 investigates the link between electoral motives and tax structure. Section 5 concludes.

2. Data and empirical methodology

2.1 Tax rates

An important issue in our empirical study of the determinants of the tax structure (and one that distinguishes this work from existing studies in the relevant literature) is how to approximate the tax rates. The simple measures of statutory tax rates cannot capture the

complexity of the tax system nor provide a clear indicator of the implied tax policy. Since the overall tax burden does not depend solely on the statutory tax rates, but also on what is defined - by the tax legislation - as the tax base, we are in need of some more complicated tax measures that take into account changes in the tax base (e.g. changes in allowances or deductions). The approach of calculating effective average tax ratios, based on the Mendoza et al. (1994) approach, basically consists of defining the tax rate as a ratio of the tax revenues from a particular tax base to the corresponding tax base (for a critical comparison of alternative effective tax rate methodologies, see e.g. Volkerink and de Haan, 2001b). Hence, the main advantage of the average effective tax ratios is exactly that they carefully define the tax base from which the tax revenue is extracted and hence provide a more accurate description of the tax burden that falls on each factor input. Tax revenue as a share of GDP fails to capture the potentially different burdens across factors of production, or indeed, consumption, as again it does not use the correct tax base. Therefore, effective tax rates are a better proxy for policy changes on the tax structure, because the government is able to affect that tax rates by determining - through tax legislation - both the statutory tax rate and the tax base differentially for each source to be taxed.

Previous empirical studies that examined the effect of partisan ideology and/or electoral opportunism on tax policies have employed tax revenue as a share of GDP as dependent variable (see e.g. Alesina et al., 1997, Perotti and Kontopoulos, 2002; Kneebone and McKenzie 2001) or statutory tax rates (e.g. Allers et al., 2001). However, as discussed above, tax revenue data and statutory tax rates are not adequate proxies of the tax burden as compared to more sophisticated measures like effective average tax rates. As far as we know, effective tax rates have not been used so far in empirical analysis of political effects of tax policy. An exception is Reed (2006), who looks at tax revenue over personal income in U.S. states, but does not break down this implicit tax rate in capital, labor income and consumption tax rates. Therefore, previous studies have not examined the effect of ideology on the distribution of the tax burden across factors of production and consumption, which is defined here as the tax structure. Ashworth and Heyndels (2002) have examined the effect of political incentives on the tax structure, but they approximate the latter by a tax structure turbulence indicator.³ Hence, in this paper,

³ The index for tax structure turbulence measures the extent to which a country tax structure in a year differs from the tax structure in the previous year. In order to calculate this tax structure turbulence

we make use of the advantages of the effective average tax rates to examine the effects of political incentives on the tax structure.

In particular, we use the ECFIN effective tax rates reported in Martinez-Mongay (2000) (see the Appendix for more details on these data), which are available for 21 OECD countries for the 1970-2000 period.⁴ We use the effective tax rates on labor (denoted as *litr* and *letr*), the effective tax rates on capital (*kitn*, *kitg*, *ketn* and *ketg*) and the effective tax rate on consumption (*citr* and *cefr*). The difference between the classification in *litr* and *kitn* or *kitg* compared to *letr* and *ketn* or *ketg* is that in the latter case, the income of self employed is treated as labor income, whereas in the former case the labor income includes only the income of employed labor. The difference between *kitn* and *ketn*, compared to *kitg* and *ketg* is that in the latter case capital depreciation is included in the tax base. We shall use the above tax rates to examine whether they are influenced by political variables, but we shall also consider the ratios of labor to capital tax rates in order to gauge the potential political effects on the relative income tax burden. In particular, we construct the variables *ratio1*, *ratio2*, *ratio3* and *ratio4*, obtained as *litr/kitn*, *litr/kitg*, *letr/ketn* and *letr/ketg* respectively.

2.2 Political data

The measurement of differences in policy positions of parties has attracted extensive attention in the literature (see e.g. Budge, 2001). In the present study we rely on four alternative party family categorization measures that have been widely employed in order to analyze the impact of partisan politics on public policy and finance (see e.g. Tavares, 2004, Volkerink and de Haan, 2001a and Mierau et al., 2007). All of these measures are based on expert surveys that locate parties on an ideological left-right scale (see e.g. Castles and Mair, 1984, Budge et al., 1993 and Woldendorp et al., 1998).

More precisely, we employ: (i) the Budge et al. (1993) cabinet ideology index as updated by Woldendorp et al. (1998) (denoted as *ideowold*), (ii) the Tavares (2004) cabinet ideology measure (denoted as *ideotav*), (iii) the Castles and Mair (1984) cabinet ideology measure (*ideocm*) and (iv) the cabinet ideology measure developed by Cusack

indicator Ashworth and Heyndels (2002) employ data of tax revenues as a share of GDP which are grouped to six main categories (i.e. taxes on income, profits and capital gains, social security contributions, taxes on payroll and workforce, taxes on goods and services, taxes on property and other taxes).

⁴ The countries in our sample are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK, USA.

(1997) (*ideocus*).⁵ Both Woldendorp et al. (1998) and Tavares (2004) cabinet ideology indices locate cabinet ideology on a 1 to 5 political spectrum with higher values denoting more extreme left-wing governments. On the other hand, Cusack (1997) and Castles and Mair (1984) measures locate government ideology on a min-max range with higher values denoting more extreme right-wing government.⁶

Finally, opportunistic effects are captured by a dummy variable (denoted as *elections*) which equals one in years in which a national election was held and zero in non-elections years. Data for *elections* are obtained by Cusack (1997).

2.3 Empirical methodology

We wish to estimate the effects of political ideology and opportunism on the tax structure, in a panel of 21 OECD countries observed over 1970-2000. In order to examine the effects of ideology on the tax structure, we mainly focus on 5-year periods and calculate data averages for the six 5-year periods between 1970 and 2000.⁷ The reason for preferring 5-year periods to annual data to analyze the effects of ideology on policy decisions is that institutional and political barriers may make it difficult for policy makers to immediately implement their policy preferences. In working with 5-year averages we follow the relevant literature (see e.g. Reed, 2006). However, as a robustness check, we also use the annual data as such. In order to examine electoral effects on tax-policy choices, we focus on the annual data, as this is in accordance with the natural timing of elections and also the usual approach in the related literature (see e.g. Kneebone and McKenzie, 2001).

We define the tax structure as the distribution of the tax burden across factors of production and consumption. In order to examine the effect of political factors in the choice of the tax structure, we look at the effect of political ideology and pre-election

⁵ It is worth noting that these alternative cabinet ideology measures are based on two broad party family classifications. The first one is that developed by Budge et al. (1993) and followed by Woldendorp et al (1998) and Tavares (2004) whereas the second is that of Castles and Mair (1984) also followed by Cusack (1997). Thus, we expect *ideowold* to be more related to *ideotav* and *ideocm* to *ideocus*.

⁶ Castles and Mair (1984) generate their ideological scores from a questionnaire survey of more than 115 political scientists in Western Europe and United States. Each expert was asked to place parties holding seats in the national legislature on a left-wing political spectrum ranging from 0 (extreme left-wing) to 10 (extreme right-wing, with 2.5, 5 and 7.5 representing moderate left, the center and moderate right, respectively. Cusack (1997) developed his measure of cabinet ideology based on the Castles and Mair ideological scores. *Ideocus* is coded on a 1 to 5 scale with higher values denoting more extreme right-wing governments.

⁷ The averages are calculated for the 5-year periods 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995 and 1996-2000.

motives at the levels of the labor, capital and consumption tax rates, using the political and tax data described above. Focusing on the allocation of the tax burden between the labor and capital production inputs, which has attracted most of the interest in the theoretical literature, we also examine the effect of the political variables on the ratio of labor to capital tax rates. The advantage of this approach is that it looks at the *relative* burden. For instance, left-wing governments might prefer to increase both tax rates on capital and labor, relative to right-wing governments, so that by looking at the ideology effects on levels might not easily reveal a preference for left-wing governments to increase the tax burden on capital relative to labor. However, looking at the ratio of the tax rates, we could capture such ideology effects on the tax structure.

The equations we estimate are of the form:

$$tax_{it} = \alpha_0 + \alpha_1 tax_{it-1} + \alpha_2 pol_{it} + X_{it} \beta + u_{it} \quad (1)$$

where tax_{it} is the measure of tax rate or of the ratio of labor to capital tax rates of country i at time period t (t being the 5-year period or the year), pol_{it} is a measure of political ideology or pre-electoral motives, and X_{it} includes control variables usually included in regressions for fiscal policy measures (see below). Note that the regression includes the lagged value of the tax_{it} measure, to account for persistence in tax policies. We also allow for country and time specific effects (denoted respectively as c_i and v_t), so that the error term is written as:

$$u_{it} = c_i + v_t + \varepsilon_{it} \quad (2)$$

where ε_{it} is assumed to be *i.i.d.* In what follows, we control for country effects by either fixed effects estimation or by first differencing. We also control for time effects by including dummies for each time period in our regressions.

Our interest here lies in estimating α_2 , the effect of political variables. We assume throughout this analysis, following the literature, that measures of political ideology and opportunism are exogenous in estimating models of the form of (1) – (2). However, dynamic panel data models as the above do not satisfy the strict exogeneity assumption,

because of the presence of the lagged dependent variable as a regressor. In addition, certain variables in X_{it} may only be predetermined or even endogenous in (1) – (2) (see e.g. Wooldridge, 2002, ch. 11, on panel data models without the strict exogeneity assumption). Ignoring the above, generally results in biases in the estimated coefficients.

It can be shown (see e.g. the references above) that the size of the inconsistency introduced by the fixed effects estimator when strict exogeneity is not satisfied decreases by the time dimension of the panel. Therefore, as fiscal and political data are in general available for many years for many countries, the literature (see the papers referred to above) has used this result to estimate equations like (1) – (2) by fixed effects. Here, when we use the annual data, the same arguments apply, as we have data for 26-29 time periods, depending on the political variables and tax measures we use. Therefore, for the annual dataset we present results from fixed effects estimation (this has the additional advantage of making our results more easily comparable to those of the relevant literature). However, for the dataset in 5-year averages, we have data for 4 time periods only, when we take into account the requirements of lagging the data and taking first differences. Hence, for this dataset, we explicitly allow for predetermined variables in (1) – (2) and present results by using the Arellano and Bond (1991) GMM estimator.⁸

Regarding the variables included in X_{it} we follow the literature on the determinants of national tax structure (see e.g. Devereux et al. 2007, 2008; Winner, 2005).⁹ The literature is generally looking at determinants of the overall size of the government or of proxies for the level of the tax rates. In this study, we run regressions for the level of the tax rates, but we also look at the ratio of labor to capital tax rates. This has not been examined in the literature. Hence, for these regressions, existing research does not help to create a clear expectation for the effect of the variables in X_{it} on the dependent variable.

We first include in X_{it} the GDP per capita (denoted as *gdppc*). This is obtained from the World Bank Development Indicators (2004) (hereafter WDI (2004)) and for the 5-year period dataset it is the value of the year before the 5-period (i.e. for the period 1981-1985 it is the value of 1980), while it is the value of the previous year for the annual

⁸ We also report that estimating the equations for the 5-year dataset with fixed effects and the equations for the annual dataset with GMM as in Arellano and Bond (1991), does not change the main qualitative results discussed below, regarding the coefficients of the key variables of interest - the political measures.

⁹ More details on the data used are in the Data Appendix.

dataset. According to Wagner' law, we would expect *gdppc* to be positively related with measures of the overall size of the government, but there is no ex ante theoretical reason for a positive or negative relationship with the ratios of the tax rates. As a country gets richer, it may need to rely more or less on labor versus capital taxation or on direct versus indirect taxation. An additional economic variable that can be related with the tax structure is the level of government spending. Government spending is expected to be positively related with taxation, but again higher government spending may require more or less labor versus capital taxation or direct versus indirect taxation. To control for the effects of government spending on the tax structure, we present results using government expenditure as a share of GDP, available from WDI, denoted as *govexp* and averaged over the 5-year periods for the dataset in 5-year averages.¹⁰

We also include some standard demographic variables: the proportion of the economically dependent population (denoted as *agedep*), the total population (*population*) and the urbanization rate (denoted as *urban*) (i.e. the proportion of population living in urban areas). Data for these variables are obtained from WDI (2004). *Agedep* is expected to be positively related with taxation since higher proportion of economically dependent population generate fiscal needs which in turn increase tax rates. However, there is no clear theoretical reason for a positive or negative relation with the ratios of labor to capital tax rates. On the other hand, *population* and *urban* are expected to be negatively related with taxation. This is because these measures capture potential economies of scale in the provision of public goods (Alesina and Wacziarg, 1998). Larger economies of scale induce lower per capita cost of public goods and consequently lower levels of taxation. Again, there is no ex ante theoretical reason for a positive or negative relationship with measures of the tax structure. Finally, we employ the capital market international integration measure constructed by Quinn (1997) (denoted as *capopenness*). *Capopenness* is coded on a 0 to 100 scale with higher values denoting weaker international capital mobility restrictions and thus more integrated capital market. According to the tax competition theory (see e.g. Bucovetsky and Wilson, 1991) *capopenness* is expected to be positively related with labor tax rates and negatively with

¹⁰ This is the total expenditure of the central government (see the Data Appendix for more details). We report that the basic results do not change if we use total expenditures of the general government, available from GFS. In fact, the *z-statistics* and *t-statistics* for the political variables of interest in Tables 1 and 4 get higher and the *z-statistics* and *t-statistics* for the capital tax rates in Tables 2 and 5 get also bigger. We present results using the WDI variable (*govexp*) because there are more observations available for this.

capital tax rates.¹¹ We use the 5-year average of these variables for the dataset in 5-year averages.

3. Ideology and the tax structure

In this section we examine whether the data suggest a relationship between the ideology of the party in government and tax policy choices. We first present results using 5-year averages and then present results using the annual dataset.

3.1 Results using 5-year averages for the tax ratios

We first examine whether the ideological orientation of the government matters for the tax structure, as approximated by the ratio of labor to capital effective tax rates. We estimate (1) – (2), with the control variables discussed in section 2.3, by using the Arellano and Bond (1991) GMM estimator, where the lagged dependent variable is instrumented by all the available lags. In addition, we allow in these regressions for non-exogeneity of $gdppc$ and $govexp$. In particular, $gdppc$ may only be predetermined, as contemporaneous correlation with the error term can be ruled out (since we use the lagged value of per capita GDP), but strict exogeneity need not hold, because the error term can be correlated with future values of $gdppc$. Regarding $govexp$, we want to allow for potential endogeneity, as, for instance, governments may react to exogenous negative shocks by changing both government spending and the allocation of the tax burden. Hence, in the GMM regressions, we treat $gdppc$ as predetermined and $govexp$ as endogenous and use lagged values as instruments (we use a maximum of two lagged values as instruments).

Results for the ratios of the labor to capital tax rates are presented in Table 1. When we take into account the requirements of lagging the data and taking first differences, the sample period for estimation is the four 5-year periods in 1980-2000. Time dummies are included for each period in all equations. Two specification tests are also reported. The m_2 statistic, proposed by Arellano and Bond (1991) to test for second

11 According to the benchmark tax competition model (Zodrow and Mieszkowski, 1986) tax competition among different regions leads to suboptimally low capital tax rates and an inefficiently low level of public goods. Allowing for a second tax instrument (i.e. a labor tax), the local governments find it optimal to rely more on labor taxation to finance the public good (Bucovetsky and Wilson, 1991).

order serial correlation in the residuals of the first-differenced equations, and the Sargan test statistic of over-identifying restrictions, to test for the validity of the instruments.

[Table 1 here]

Table 1 presents the results for the effects of the four measures of political ideology on the four labor-to-capital tax ratios. In all cases, the coefficients of the political variables indicate similar qualitative results. Namely, left-wing governments tend to rely more on capital taxation relative to labor taxation. More precisely, the coefficient of *ideowold* bears a negative sign and is statistically significant, at least for the three first ratios (for the fourth ratio it is marginally insignificant at 10% level). Similar results, regarding the sign, are obtained also for the coefficient of *ideotav*, which appears to be statistically significant for the first and the third ratio. The coefficient on *ideocm* bears a positive sign and is statistically significant for all four ratios, whereas the coefficient on *ideocus* is positive and is statistically significant for the first two ratios. Note that the implications of *ideocm* and *ideocus* are similar to the ones of the previous measures (*ideowold* and *ideotav*), since the positive sign of these coefficients is simply due to the opposite way that *ideocm* and *ideocus* classify left-wing and right wing cabinets relative to *ideowold* and *ideotav* (see Section 2.2 for details).

Our first result is therefore that left-wing governments increase the taxation of capital, *relative* to that on labor. It is interesting to note that this result is more robust when we look at *ratio1* and *ratio2*. In addition, note that the estimated coefficients are generally bigger for the regressions for *ratio1* and *ratio2* compared to those for *ratio3* and *ratio4*. Recall that in the first two ratios the numerator is *litr*. As explained above, the difference between *litr* and *letr* (the numerator in *ratio3* and *ratio4*) is that the income of the self-employed is not treated as labor income in *litr*. Hence, the data suggest that left-wing political ideology is likely to decrease the tax burden on the income of employed labor relative to income from capital and self employment.

Regarding the explanatory variables, the coefficients of *govexp* and *agedep* are positive when they are statistically significant, whereas *capopenness* and *urban* enter with negative and statistically significant coefficients in some cases. Moreover, we observe that *gdppc* and *population* are insignificant in all the estimations. As we have already pointed out, there are not clear theoretical predictions regarding the estimates for

the control variables in the regressions where the dependent variables are ratios of labor to capital tax rates.¹² In any case, the results seem to suggest that when governments are faced with budgetary pressures, in the form of increased expenditure or adverse demographic evolutions, they tend to increase labor taxes more than capital taxes. In addition, the negative sign obtained for the coefficient of *urban* could indicate that in more urbanized societies, workers have more lobbying power on governmental decisions. However, this interpretation is not robust as we shall see below. Finally, we observe that the estimated coefficients of the lagged ratios change sign across regressions with different dependent variables, but also across regressions with different political determinants, for the same dependent variable. Hence, although there seems to be persistence in the choice of the tax system, there is no robust pattern across different tax ratios.

Concerning the specification tests, there are two cases in Table 1, for the regressions using the *ideocm* measure for *ratio2* and *ratio4*, where the specification tests reject the nulls, but the overall picture is good with – generally – high *p-values*.

3.2 Results using 5-year averages for the level of tax rates

Table 1 shows that left-wing governments prefer a lower ratio of labor to capital taxation than right wing governments. But is this realized by decreases in the labor tax rate or increases in the capital tax rate? A lower labor to capital ratio can also be obtained if the government increases both taxes, but increase capital taxation by more relative to labor; or, if the government decreases both taxes, but decreases capital taxation by less relative to labor. We now try to answer this question.

[Tables 2 and 3 here]

In Tables 2 and 3 we present results from regressions where the *levels* of the effective average tax rates are regressed on the political measures and the control variables described before, using the Arellano and Bond (1991) GMM estimator, as for

¹² An exception is *capopenness*. As we have already noted, according to the tax competition theory this capital market integration measure would be expected to be positively related with the ratio of labor to capital tax rates. However, our empirical findings suggest a negative relationship between *capopenness* and most of the labor to capital tax ratios. This puzzling result, which is mainly driven by the positive effect of *capopenness* on the levels of capital tax rates (see Table 2), will be discussed below with the results of Table 2.

the regressions in Table 1. In Table 2, we present the results for the regressions where *ideowold* is the political variable, whereas in Table 3, to save on space, we only report the estimated coefficients of political variables obtained from similar regressions where these variables are used as a measure of ideology.

Three basic results emerge. Firstly, there seems to be no effect of ideology on the labor tax rates, as all four alternative ideology proxies are not significant in the regressions where *litr* and *letr* are the dependent variables. Although this could indeed indicate that there are no ideology effects on the level of the labor income tax rates, we need to be careful as partisan motives may work in labor income taxation through the progressivity of the tax system, which the effective *average* tax rates fail to capture.

Secondly, more left-wing governments tend to increase the tax burden on capital. This result is clear in the cases of the “gross” rates (i.e. where *kitg* and *ketg* are the dependent variables) but also holds in some of the estimations where *ketn* and *kitn* are the dependent variables. The finding that partisan effects are easier to uncover when looking at the “gross” capital tax rates is interesting as it highlights the advantages of looking at the effects of ideology on both the statutory tax rates and the tax base, as indeed captured by the effective tax rates. In particular, the above results suggest that left-wing governments increase the tax burden on capital by essentially broadening the capital tax base. The latter takes place as left-wing governments are less willing to provide tax exemptions for depreciated capital.

Finally, there is clear evidence that left-wing governments tend to also increase consumption taxes. In most the regressions where *citr* and *cetr* are the dependent variables, political ideology measures bear statistically significant coefficients. This is an interesting and somewhat puzzling finding, as one might expect that right-wing governments would prefer to tax consumption more than left-wing governments, given that consumption taxation is regressive with respect to income. One potential explanation for our finding here is that left-wing parties are likelier to prefer a larger government, but note that government expenditure has a negative sign in these regressions, once ideology is controlled for. Another potential explanation would be that left-wing governments might prefer to use the consumption tax income to decrease accumulated debt, whereas right-wing governments might be more willing to live with larger debts (see e.g. Alesina and Tabellini (1990) and Lockwood et al. (1996) for the role of ideology on public debt accumulation). A careful examination of political ideology on the dynamics of the

government budget could provide useful empirical findings regarding the robustness and explanation of this relationship, but this is beyond the scope of this paper.

Regarding the control variables, *gdppc* is insignificant in most regressions, while *govexp* is positive and statistically significant in the regressions where *litr* and *letr* are the dependent variables but is negative in most of the remaining regressions, indicating that increases in fiscal spending are financed primarily by increases in labor income taxation.¹³ *Population* and *agedep* are not significant, whereas *capopenness* enters with positive sign in most of the regressions where capital tax rates are the dependent variable. The puzzling positive relationship between *capopenness* and capital tax rates could be attributed to the “tax cut cum base broadening” strategy followed by most of the OECD economies as a response to international market integration.¹⁴ In any case, this result is not robust to using the annual data, as we shall see below.

We also present, in Table 2, the specification tests we presented in Table 1; they are all supportive of the model specification. We report that similar results are generally obtained for the regressions in Table 3.¹⁵

3.3 Results using the annual dataset

In this sub-section, we examine the robustness of the previous results when we use the annual data. Therefore, we re-estimate the equations in (1)-(2), using the annual data from 1970 to 2000. In order to account for country-specific and time-specific unobservable factors we estimate the regressions by fixed effects allowing for time

¹³ We note that these results are not robust (see Table 5 and Table 7) and thus we do not proceed further with this. The same (non-robustness) applies to the estimated positive effect of urban in the regressions with the labor tax rates.

¹⁴ Although in most OECD countries statutory tax rates on capital have fallen sharply over the past few decades, the tax bases have been broadened through reduced allowances and deductions. Tax reforms have followed the so-called “tax cut cum base broadening” strategy, leaving the effective tax rate on capital fairly stable or even increasing. This “tax cut cum base broadening” strategy can be best explained by focusing on the operation of multinational enterprises (MNE), and especially on the practice of profit shifting among the subsidiary and its parent. This practice –followed by MNE–of transferring part of taxable profits in countries with low statutory tax rates has led national governments to compete for (paper) profits by lowering their statutory tax rates. This downward trend of statutory tax rates has been accompanied by a corresponding broadening of the tax base (though reduced allowances and deductions), which left the corporate effective tax rates fairly stable or even increasing. For two very good surveys on corporate income tax reforms in OECD countries see Devereux et al. (2002) and Griffith and Klemm (2004).

¹⁵ The *p-values* for the serial correlation and the Sargan tests are in general high for all the regressions in Table 3, with the exception of the Sargan statistic for the *ideocus* regression for *letr*, where the *p-value* is approximately 10%, and the serial correlation statistic for the *ideocm* regression for *letr*, where the *p-value* is at 9%.

dummies in all equations. Results for the ratios of the labor to capital tax rates are presented in Table 4, while results for the levels of the tax rates are in Tables 5 and 6.

[Table 4 here]

Table 4 presents the results for the effects of the four measures of political ideology on the four labor to capital tax ratios. As can be seen, our empirical findings remain qualitative intact although deteriorate in terms of statistical significance, mainly for *ratio3* and *ratio4*, which is again consistent with our previous speculation that left-wing governments target primarily the income of employed labor. Note also that the estimated coefficients are twice as big or bigger for the regressions for *ratio1* and *ratio2* compared to those for *ratio3* and *ratio4*.

Generally, as before, the coefficients of all four alternative political variables indicate that left-wing governments tend to rely more on capital relative to labor taxation. More precisely, the coefficient of *ideowold* bears a negative and statistically significant for *ratio1* and *ratio2* whereas appears to be marginally insignificant for *ratio3*. Similar results, regarding the sign, are obtained also for the coefficient of *ideotav* which appears to be statistically significant for the first three ratios. *Ideocm* enters with a positive and statistically significant coefficient in the cases of *ratio2* and *ratio4*, whereas the coefficient on *ideocus* is positive and is statistically significant for the first two ratios.

Concerning the explanatory variables, our results are qualitative similar to those presented in Table 1 regarding the coefficients of *capopenness* and *urban*. In particular, they remain negative, although *capopenness* is not significant in most regressions. The coefficients of *govexp* and *agedep* are not significant. It is worth noting that, as expected, there is much more persistence in the annual tax rates, as is verified by the high coefficients and *t-ratios* for the lagged dependent variables in Table 4.

[Tables 5 and 6 here]

In Tables 5 and 6 we present results from regressions where the *levels* of the effective average tax rates are regressed on the political measures and the control variables described before, using the two-way error component fixed effect estimator and the annual dataset, as for the regressions in Table 4. More precisely, in Table 5, we present

the results for the regressions where *ideowold* is the political variable, whereas in Table 6, to save on space, we report the estimated coefficient of all four political variables obtained from similar regressions.

Generally, the results are consistent with those presented in the previous section. In particular, none of the coefficients of the political variables measures appears to be significant in regressions where *litr* or *letr* are the dependent variables. This implies that there seems to be no effect of ideology on the effective *average* labor tax rates. On the other hand, in most of the estimations where capital tax rates are the dependent variables, the political ideology proxies suggest that left-wing governments tend to increase the tax burden on capital. Nevertheless, the *t-ratios* for the political ideology coefficients are generally lower compared to Table 3, which explains the lower *t-ratios* for the political ideology coefficients in Table 4. Finally there is again clear evidence that left-wing governments tend also to rely on indirect taxation. In all the estimations where *citr* and *ceptr* are the dependent variables, the political ideology measures enter with highly significant coefficients.

Regarding the control variables our results remain qualitative similar. *Gdppc*, and *govexp* are positive in those regressions where they are statistically significant, whereas *capopenness*, *population* and *agedep* are not insignificant. *Urban* is now significant in the regressions for the capital tax rates, which is consistent with its negative sign in Tables 1 and 4. Finally, the lagged level of the tax rates is always highly significant.

4. Electoral cycles and the tax structure

In this section we examine whether the data indicate electoral effects on tax policy choices. The literature has documented a negative effect of pre-electoral periods on taxation (see e.g. Kneebone and McKenzie, 2001) which is consistent with the implications of the theoretical literature of political business cycles, i.e. that incumbent policy makers try to decrease that tax burden before elections in an effort to increase their probability for re-election (see e.g. Nordhaus, 1975, Linbeck, 1976 and Rogoff, 1990). It is useful, however, to examine whether labor or capital taxes decrease more in pre-electoral periods.

We present results using the annual dataset and, following the literature, we use a dummy for pre-election periods to capture electoral motives. We use the same set of

control variables described above. Again, given the long time series dimension of the panel, we estimate our equations by fixed effects. Results are reported in Table 7. For each dependent variable in this Table, we run two regressions, one that includes a political ideology variable (*ideowold*) in addition to the electoral dummy, and one where the only political variable is the electoral dummy.

[Table 7 here]

We first look at the levels of the effective tax rates, where the presence of opportunistic effects on tax policy is strikingly apparent. The coefficient of the election dummy is negative and highly significant in the regressions where *litr* and *letr* are the dependent variable indicating that governments tend to reduce the tax burden on labor in pre-electoral periods. Similar effects are verified also in most of the cases where capital tax rates are employed as dependents. In particular, *election* enters with a negative and statistically significant coefficient in the regressions where *kitn*, *kitg* and *ketg* are dependent variables highlighting the negative effect of electoral uncertainty on the tax burden on capital. However, the presence of opportunistic effects is not clear in the regressions where consumption taxes are employed as dependent variables. In particular, the estimated coefficients for *elections* are in this case only marginally significant and very sensitive to the inclusion of the political ideology proxy.

The above results suggest that the governments tend to decrease the income tax rates before elections, but not necessarily the consumption tax rates. This implies that the income tax rates (are perceived to) have a bigger impact on voters' choices compared to consumption taxes. Although such an explanation seems intuitive, we are not aware of theoretical research that would support such a prediction.

To further investigate the effects of electoral opportunism on the income tax rates, we examine whether there is evidence to suggest that governments reduce labor or capital tax rates by more before elections. As can be seen in Table 7, *elections* enter with a positive and statistically significant coefficient in the estimations where *ratio1* and *ratio2* are the dependent variables once we control for partisan effects. This result suggests that although in pre-electoral periods both the tax burdens on labor and capital are reduced, the ratio of the tax rates on capital fall by more, at least when we control for ideology effects on the relative tax rates (this is also confirmed when we look at the coefficients of

elections in the regressions for *kitn* and *kitg* versus *litr*). Recall also that the numerator in *ratio1* and *ratio2* is the tax rate on employed labor. This implies that the reduction in the labor to capital taxes in pre-electoral periods is clearer when we include the income of the self-employed in the capital taxes. Therefore, it seems that in pre-electoral periods not only the capital tax rates but (primarily) the tax revenue collected from the self employed is reduced. Given that capital income and the income from self employment is the most difficult to tax, our findings here are consistent with increased tax avoidance/evasion in pre-electoral periods (see also Angelopoulos and Economides, 2008, for a theoretical model and empirical evidence that rent seeking activities related to the government budget increase in pre-electoral periods).

5. Conclusions

We examined the effects of political ideology and pre-electoral opportunism on the tax rates and found that there is evidence of both for the OECD economies. In particular, our main finding regarding the income tax rates is that left-wing governments tax capital more relative to labor income and that governments reduce the income tax rates before elections. Although these findings are consistent with the theoretical research in political economy, they had not so far received empirical support, as the data on effective average tax rates that we use here had not been exploited in the past by the relevant empirical literature.

Moreover, using effective tax rates to capture the tax burden on the factors of production and consumption has also revealed some further interesting political effects. Firstly, it is the taxation of the income of employed labor that the left-wing governments mainly try to reduce relative to the taxation of the income from capital and self employment. Secondly, the results suggest that left-wing governments increase the tax burden on capital by essentially broadening the capital tax base, by being less willing to provide tax exemptions for depreciated capital. Both findings discussed above underlie the usefulness of using effective tax rates, as they can capture political effects on both the statutory tax rates and the tax base and carefully distinguish between different tax bases. Thirdly, it seems that it is in the capital income (especially when it includes the income of the self employed) that the reduction in taxation is bigger in pre-electoral periods. Fourthly, we found that although income tax rates are reduced in pre-electoral periods,

consumption taxes are not, possibly indicating that the political cost of the latter is smaller. Finally, left-wing governments are associated with increases in the consumption taxes.

A limitation of working with effective average tax rates is that we cannot capture ideology effects on the progressivity of the tax system. Provided that adequate measures of tax progressivity can be constructed, it would be interesting to examine whether such effects exist. In addition, it would be a useful addition to the empirical literature on the political determinants of fiscal policy to examine the effects of ideology and opportunism on the composition of government spending and the government budget more generally.

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Appendices

Appendix A: ECFIN effective tax rates in more detail

The ECFIN effective tax rates on labor (denoted as *litr* and *letr*), on consumption (*citr* and *ceptr*) and on capital (*kitn*, *kitg*, *ketn* and *ketg*) used in this paper are all taken from Martinez-Mongay (2000). Martinez-Mongay calls *litr*, *citr*, *kitn* and *kitg* as “implicit” tax rates and *letr*, *ceptr*, *ketn* and *ketg* as “effective” tax rates.¹⁶ All these alternative tax rates are based on the same principle of “effective taxation”. The methodology of effective tax rates, following Mendoza et al. (1994), basically consists of defining the tax rate as a ratio between the tax revenues from particular taxes and the corresponding tax base (for a critical comparison of different methodologies, see Volkerink and de Haan, 2001b).

Concerning the effective tax rate on labor, Martinez-Mongay provides two different tax indicators: *letr* can be viewed as a more general measure of tax on labor income while *litr* better proxies the tax burden faced by the employed labor (thus excludes the taxation of the imputed wage of self-employed labor). Although differences between the two rates are minor in the case of more advanced economies, there are countries (e.g. Greece and Portugal) where the two rates differ significantly in terms of level. This is because in these countries the share of self-employed labor to the total employment is larger. However, despite divergences in level, the evolution of *litr* and *letr* over time seem to be common (correlation coefficients between the five-year average levels of *litr* and *letr* range from 91% in the nineties to 97% in the late seventies).

Following the general concept of effective tax rates, the effective tax rate on consumption should be the ratio of tax revenues from consumption taxes to the pre-tax value of consumption. Thus the effective tax rate on consumption is the difference between the consumer price (post tax price) and the producer price (pre tax price) expressed as a percentage of producer price (*ceptr*) or the consumer price (*citr*). It is clear from the above that *citr* and *ceptr* are equivalent in terms of evolution over time or between countries, although *citr* is always smaller in terms of level (in the case of the euro area and EU-15 the difference is of 5 to 6 percentage points). Both correlation coefficients between the five years average levels of *citr* and *ceptr* are equal to one (see Martinez-Mongay, pp.37-38)

¹⁶ It is worth noting that the *letr*, *citr*, and *ketg* variables are closer to the standard Mendoza et al. (1994) methodology of effective tax rates.

Finally, concerning the taxation of capital income, Martinez-Mongay provides four alternative tax indicators. The inclusion or the exclusion of the imputed wage income of self-employed labor on the capital tax base is a first issue concerning the definition of capital tax base. A second issue is whether the capital income should include or exclude depreciation. *ketg* and *ketn* are based on the assumption that wage of self-employed income is not concerned as capital income where the former includes depreciation in the tax base and the latter does not. On the other hand, *kitg* and *kitn* are based on the assumption that the whole income of self-employed labor is concerned as capital income where the former views depreciation as part of capital tax base and the latter does not. As expected, some differences exist between alternative indicators for the tax burden of capital income. However, such differences are not always large. For instance, it seems that the inclusion (*kitg*, *ketg*) or the exclusion (*kitn*, *ketn*) of depreciation from the tax base does not induce significant changes in the conclusions regarding the relative burden across countries and the ordering (correlation coefficients between the five-year average levels of *kitg* and *kitn* range from 90% in the nineties to the 99% in the late seventies while *ketg* and *ketn* also seem to be highly correlated).

Appendix B: Data sources and descriptive statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min	max	Source
<i>ratio1</i>	Ratio of effective tax rate on labor to effective tax rate on capital (= <i>litr/kitn</i>)	496	1.242	0.666	0.47	4.08	Own calculations based on Martinez-Mongay (2000)
<i>ratio2</i>	Ratio of effective tax rate on labor to effective tax rate on capital (= <i>litr/kitg</i>)	496	1.839	0.744	0.70	4.79	Own calculations based on Martinez-Mongay (2000)
<i>ratio3</i>	Ratio of effective tax rate on labor to effective tax rate on capital (= <i>letr/ketn</i>)	496	0.809	0.302	0.13	1.79	Own calculations based on Martinez-Mongay (2000)
<i>ratio4</i>	Ratio of effective tax rate on labor to effective tax rate on capital (= <i>letr/ketg</i>)	496	1.647	0.599	0.36	4.08	Own calculations based on Martinez-Mongay (2000)
<i>litr</i>	Labor effective tax rate	496	33.211	9.601	11.70	54.20	Martinez-Mongay (2000)
<i>letr</i>	Effective tax rate of employed labor	496	30.527	10.173	9.80	54.10	Martinez-Mongay (2000)
<i>kitn</i>	Capital implicit tax rate as a share of net operating surplus	496	31.710	12.732	6.50	62.70	Martinez-Mongay (2000)
<i>kitg</i>	Capital implicit tax	496	19.834	6.232	5.30	31.70	Martinez-Mongay

	rate as a share of gross operating surplus						(2000)
<i>ketn</i>	Capital effective tax rate as a share of net operating surplus	496	42.749	18.297	8.50	131.10	Martinez-Mongay (2000)
<i>ketg</i>	Capital effective tax rate as a share of gross operating surplus	496	19.836	6.100	6.80	38.00	Martinez-Mongay (2000)
<i>citr</i>	Consumption “implicit” tax rate	496	19.188	5.141	9.10	31.40	Martinez-Mongay (2000)
<i>ctr</i>	Consumption effective tax rate	496	24.243	7.968	10.00	45.7	Martinez-Mongay (2000)
<i>elections</i>	Election Dummy	528	0.303	0.460	0.00	1.00	Cusack (1997)
<i>ideowold</i>	Cabinet Ideological Index	515	2.458	1.604	1.00	5.00	Woldendorp et al. (1998)
<i>ideotav</i>	Cabinet Ideological Index	608	2.629	1.569	1.00	5.00	Tavares (2004)
<i>ideocm</i>	Cabinet Ideological Index	439	5.049	1.529	2.00	8.40	Castles and Mair (1984)
<i>ideocus</i>	Cabinet Ideological Index	503	3.053	0.782	2.00	4.00	Cusack (1997)
<i>gdppc</i>	GDP per capita (constant 1995 US \$)	650	22220.87	9239.791	4980.00	58464.00	World Bank Development Indicators (2004)
<i>govexp</i>	Total Government Spending (% GDP)	590	33.204	10.521	13.00	55.80	World Bank Development Indicators (2004)
<i>capopeness</i>	Capital Market Integration Index	597	77.449	19.551	37.50	100	Quinn (1997)
<i>population</i>	Total Population	651	3.67e+07	5.47e+07	340000	2.82e+08	World Bank Development Indicators (2004)
<i>agedep</i>	Proportion of economically dependent population (% Total Population)	651	0.524	0.056	0.44	0.74	World Bank Development Indicators (2004)
<i>urban</i>	Proportion of Population living in urban areas (% Total Population)	651	73.536	13.703	25.91	97.34	World Bank Development Indicators (2004)

Table 1: The effect of ideology on the tax structure: Ratios of tax rates, 5 year averages for 1970-2000 (GMM estimation)

	ratio1	ratio1	ratio1	ratio1	ratio2	ratio2	ratio2	ratio2	ratio3	ratio3	ratio3	ratio3	ratio4	ratio4	ratio4	ratio4
ideowold	-0.040 (-2.51)				-0.051 (-2.25)				-0.019 (-1.78)				-0.040 (-1.59)			
ideotav		-0.027 (-1.73)				-0.036 (-1.60)				-0.021 (-1.94)				-0.028 (-1.17)		
ideocm			0.047 (3.63)				0.082 (3.55)				0.022 (2.03)				0.048 (1.86)	
ideocus				0.080 (3.18)				0.143 (3.18)				0.037 (1.39)				0.068 (1.10)
lag ratio	-0.395 (-1.99)	-0.218 (-1.01)	0.563 (4.70)	-0.055 (-0.24)	-0.173 (-0.83)	-0.116 (-0.56)	0.545 (3.99)	-0.006 (-0.03)	0.033 (0.22)	0.060 (0.41)	0.192 (1.27)	0.257 (1.29)	-0.474 (-2.27)	-0.453 (-2.20)	-0.279 (-1.39)	-0.589 (-2.52)
gdppc	-0.004 (-0.25)	-0.001 (-0.12)	0.021 (1.00)	-0.018 (-1.31)	0.027 (1.20)	0.023 (1.03)	0.041 (1.10)	0.011 (0.48)	0.013 (1.23)	0.011 (1.15)	0.014 (0.87)	0.012 (1.10)	0.041 (1.64)	0.387 (1.55)	0.033 (0.77)	0.034 (1.32)
govexp	-0.011 (-1.28)	-0.005 (-0.51)	0.015 (1.96)	-0.022 (-0.31)	-0.004 (-0.38)	-0.027 (-0.23)	0.016 (1.30)	0.003 (0.29)	0.012 (2.11)	0.010 (2.13)	0.016 (1.96)	0.011 (2.29)	0.039 (3.63)	0.038 (3.57)	0.011 (0.85)	0.039 (3.43)
capopeness	-0.004 (-1.18)	-0.005 (-1.54)	-0.005 (-2.14)	-0.001 (-0.43)	-0.006 (-1.18)	-0.006 (-1.31)	-0.012 (-2.65)	-0.004 (-1.01)	-0.005 (-2.09)	-0.005 (-2.11)	-0.003 (-1.50)	-0.003 (-1.34)	-0.010 (-2.13)	-0.011 (-2.18)	-0.010 (-1.94)	-0.010 (-1.86)
population	-1.454 (-0.35)	-1.479 (-0.35)	-23.91 (-0.86)	1.843 (0.51)	-1.441 (-0.24)	-0.739 (-0.12)	-33.21 (-0.65)	2.617 (0.47)	-0.567 (-0.19)	-0.210 (-0.07)	-0.003 (-1.50)	0.450 (0.15)	1.209 (0.18)	1.980 (0.29)	35.003 (0.59)	2.309 (0.33)
agedep	2.995 (2.71)	2.283 (2.01)	0.336 (0.42)	1.427 (1.30)	3.238 (1.95)	2.779 (1.65)	0.687 (0.47)	1.652 (0.98)	-0.423 (-0.70)	-0.451 (-0.76)	-0.708 (-1.34)	-0.663 (-1.06)	-0.421 (-9.31)	-0.453 (-0.33)	2.026 (1.58)	-0.335 (-0.23)
urban	-0.019 (-2.61)	-0.019 (-2.65)	-0.058 (-2.44)	-0.030 (-3.18)	-0.008 (-0.85)	-0.010 (-1.07)	-0.013 (-0.31)	-0.025 (-1.87)	-0.015 (-2.96)	-0.016 (-3.22)	-0.031 (-1.51)	-0.027 (-3.60)	-0.004 (-0.34)	-0.005 (-0.50)	0.165 (3.83)	-0.000 (-0.03)
m_2	-0.46 (0.54)	-0.328 (0.74)	-1.433 (0.15)	0.809 (0.42)	0.185 (0.85)	0.013 (0.98)	-2.174 (0.03)	0.707 (0.48)	0.303 (0.76)	0.715 (0.47)	0.84 (0.93)	-0.025 (0.98)	-0.52 (0.61)	-0.752 (0.45)	-0.949 (0.34)	-0.471 (0.64)
Sargan	25.60 (0.27)	27.45 (0.19)	28.59 (0.17)	23.00 (0.40)	23.85 (0.36)	26.03 (0.25)	33.25 (0.06)	23.30 (0.38)	22.79 (0.41)	23.30 (0.38)	22.91 (0.41)	20.50 (0.55)	24.67 (0.31)	26.11 (0.25)	38.58 (0.02)	24.52 (0.32)
obs.	62	63	47	59	62	63	47	59	62	63	47	59	62	63	47	59

Notes: 1. The estimates are obtained using the Arellano – Bond (1991) one-step GMM estimator. 2. The sample period used for estimation is the four 5-year periods in 1980-2000. 3. Time dummies are included for each period in all equations. 4. *gdppc* is treated as predetermined and two lags are used as instruments. *govexp* is treated as endogenous and up to two lags are used as instruments. 34 instruments are used in total for each estimation. 5. *z-statistics* are reported below the estimated coefficient. 6. m_2 is the statistic proposed by Arellano and Bond (1991) to test for second order serial correlation in the residuals of the first-differenced equations. This is distributed as standard normal. The *p-value* is reported in parenthesis below the test statistic. 7. The Sargan statistic tests for over-identifying restrictions. This is distributed as χ^2_{22} , where the degrees of freedom are given as the number of instruments minus the number of regressors. The *p-value* is reported in parenthesis below the test statistic.

Table 2: The effect of *ideology* on the *tax structure*: Levels of tax rates, 5 year averages for 1970-2000 (GMM estimation)

	letr	litr	ketn	kitn	ketg	kitg	cetr	citr
ideowold	0.133 (0.71)	0.055 (0.27)	1.221 (1.93)	0.540 (1.53)	0.431 (1.82)	0.402 (2.07)	0.368 (1.81)	0.271 (2.12)
lag tax rate	0.344 (1.72)	0.299 (1.56)	0.338 (0.23)	0.182 (1.01)	-0.032 (0.16)	0.236 (1.16)	0.523 (2.55)	0.692 (3.35)
gdppc	0.227 (1.72)	-0.075 (-0.40)	-1.704 (-2.63)	0.349 (0.94)	-0.627 (-2.71)	-0.235 (-1.11)	0.030 (0.14)	0.036 (0.24)
govexp	0.167 (2.00)	0.177 (1.98)	-0.075 (-0.28)	0.181 (1.07)	-0.195 (-2.01)	-0.009 (-0.10)	-0.214 (-2.10)	-0.126 (-1.95)
capopeness	-0.005 (-0.12)	-0.023 (-0.52)	0.278 (2.18)	0.099 (1.43)	0.140 (3.24)	0.078 (2.12)	0.035 (0.86)	0.023 (0.92)
population	1.740 (0.03)	3.775 (0.07)	196.67 (1.15)	-10.87 (-0.11)	-52.38 (-0.87)	-19.09 (-0.36)	-13.37 (-0.24)	2.672 (0.08)
agedep	-9.256 (-0.91)	-7.904 (-0.73)	-10.45 (-0.32)	-6.827 (-0.34)	2.329 (0.18)	1.112 (0.08)	-0.172 (-0.02)	-1.033 (-0.15)
urban	0.165 (1.92)	0.182 (2.04)	0.346 (1.18)	0.155 (0.95)	0.067 (0.65)	0.051 (0.56)	-0.023 (-0.22)	-0.056 (-0.83)
m_2	0.417 (0.68)	1.012 (0.31)	-0.587 (0.56)	0.121 (0.90)	-0.642 (0.52)	0.067 (0.95)	-0.879 (0.38)	-0.778 (0.44)
Sargan	26.20 (0.24)	26.30 (0.24)	20.76 (0.53)	26.96 (0.21)	24.38 (0.33)	26.66 (0.22)	29.19 (0.13)	27.23 (0.20)
obs.	62	62	62	62	62	62	62	62

Notes: See notes in Table 1.

Table 3: The effect of different measures of *ideology* on the *tax structure*: Levels of tax rates, 5 year averages for 1970-2000 (GMM estimation)

	letr	litr	Ketn	kitn	Ketg	kitg	cetr	citr	obs.
ideowold	0.133 (0.71)	0.055 (0.27)	1.221 (1.93)	0.540 (1.53)	0.431 (1.82)	0.402 (2.07)	0.368 (1.81)	0.271 (2.12)	62
ideotav	0.049 (0.27)	-0.034 (-0.17)	1.143 (1.78)	0.548 (1.48)	0.297 (1.32)	0.376 (1.96)	0.415 (2.05)	0.270 (2.13)	63
ideocm	-0.202 (-0.86)	-0.139 (-0.58)	-0.973 (-1.21)	-0.731 (-1.65)	-0.627 (-2.59)	-0.672 (-3.09)	-0.377 (-1.55)	-0.263 (-1.80)	47
ideocus	0.219 (0.47)	0.460 (0.92)	-1.609 (-0.98)	-0.650 (-0.72)	-0.976 (-1.77)	-0.867 (-1.83)	-1.082 (-2.15)	-0.783 (-2.50)	59

Notes: Below each tax rate, we report the coefficient of the measure of ideology obtained from a regression of the form of the relevant column in Table 2.

Table 4: The effect of *ideology* on the *tax structure*: Ratios of tax rates, annual data 1970-2000 (fixed effects estimation)

	ratio1	ratio1	ratio1	ratio1	ratio2	ratio2	ratio2	ratio2	ratio3	ratio3	ratio3	ratio3	ratio4	ratio4	ratio4	ratio4
ideowold	-0.014 (-3.24)				-0.016 (-2.81)				-0.005 (-1.38)				-0.006 (-1.05)			
ideotav		-0.012 (-2.92)				-0.013 (-2.46)				-0.006 (-1.69)				-0.006 (-1.02)		
ideocm			0.005 (1.42)				0.013 (2.21)				0.002 (0.64)				0.017 (2.53)	
ideocus				0.017 (1.73)				0.022 (1.70)				0.003 (0.44)				0.004 (0.30)
lag ratio	0.771 (23.28)	0.790 (25.04)	0.833 (26.56)	0.774 (20.76)	0.816 (26.65)	0.821 (29.02)	0.841 (27.02)	0.822 (23.80)	0.712 (19.87)	0.736 (21.77)	0.703 (16.54)	0.713 (17.87)	0.800 (24.85)	0.816 (27.73)	0.808 (20.34)	0.829 (23.26)
gdppc	-0.001 (-0.81)	0.001 (0.76)	-0.001 (-0.38)	-0.001 (-0.94)	0.001 (0.18)	0.001 (1.33)	0.001 (0.71)	0.001 (0.05)	0.001 (0.30)	0.001 (1.24)	-0.001 (-0.60)	-0.001 (-0.39)	0.001 (1.42)	0.001 (1.99)	0.001 (1.14)	0.001 (1.01)
govexp	0.001 (0.64)	0.003 (1.39)	0.001 (0.62)	0.001 (0.28)	0.001 (0.67)	0.003 (1.14)	0.001 (0.16)	0.001 (0.32)	0.001 (0.33)	0.001 (0.76)	0.002 (1.08)	-0.001 (-0.42)	-0.001 (-0.56)	-0.001 (-0.55)	-0.001 (-0.20)	-0.004 (-1.30)
capopeness	-0.001 (-0.07)	-0.001 (-1.02)	-0.001 (-1.14)	-0.001 (-0.65)	-0.001 (-0.47)	-0.001 (-1.44)	-0.002 (-1.75)	-0.001 (-1.02)	-0.001 (-1.29)	-0.001 (-1.94)	-0.001 (-0.72)	-0.001 (-1.50)	-0.001 (-1.56)	-0.002 (-2.31)	-0.002 (-1.97)	-0.001 (-1.86)
population	0.001 (0.75)	0.001 (1.01)	-0.001 (-0.40)	0.001 (0.37)	0.001 (0.50)	0.001 (0.78)	-0.001 (-0.05)	0.001 (0.15)	0.001 (0.23)	0.001 (0.35)	0.001 (1.20)	-0.001 (-0.07)	0.001 (-0.08)	0.001 (0.16)	0.001 (1.41)	-0.001 (-0.42)
agedep	0.241 (0.88)	0.166 (0.67)	0.013 (0.06)	0.364 (1.26)	0.177 (0.48)	0.064 (0.20)	0.002 (0.01)	0.365 (0.94)	-0.119 (-0.53)	-0.136 (-0.68)	-0.400 (-1.95)	-0.012 (-0.05)	0.006 (0.02)	-0.157 (-0.48)	-0.323 (-0.90)	0.218 (0.57)
urban	-0.010 (-3.67)	-0.006 (-2.71)	0.002 (0.34)	-0.011 (-2.67)	-0.007 (-2.22)	-0.004 (-1.40)	0.004 (0.53)	-0.010 (-1.82)	-0.007 (-3.47)	-0.005 (-2.82)	-0.012 (-2.20)	-0.007 (-2.12)	-0.006 (-1.72)	-0.003 (-1.12)	0.013 (1.23)	-0.009 (-1.59)
R²	0.91	0.94	0.84	0.89	0.93	0.95	0.91	0.90	0.79	0.85	0.32	0.77	0.91	0.92	0.36	0.88
obs.	387	420	313	372	387	420	313	372	387	420	313	372	387	420	313	372

Notes: 1. The estimates are obtained by fixed effects estimation. 2. The sample period used for estimation is 1971-2000. 3. Time dummies are included for each period in all equations. 4. *t*-statistics are reported below the estimated coefficient.

Table 5: The effect of *ideology* on the *tax structure*: Levels of tax rates, annual data 1970-2000 (fixed effects estimation)

	letr	litr	ketn	kitn	ketg	kitg	cetr	citr
ideowold	-0.005 (0.13)	-0.037 (-0.79)	0.366 (1.21)	0.194 (2.16)	0.046 (0.77)	0.079 (1.68)	0.140 (2.84)	0.091 (3.03)
lag tax rate	0.819 (26.87)	0.855 (28.88)	0.521 (11.62)	0.748 (21.24)	0.752 (23.56)	0.798 (24.60)	0.770 (23.55)	0.768 (23.88)
gdppc	0.001 (1.61)	0.001 (0.51)	-0.001 (-1.35)	0.001 (2.54)	-0.001 (-1.57)	0.001 (0.65)	0.001 (0.46)	0.001 (0.41)
govexp	0.082 (3.87)	0.075 (3.41)	0.051 (0.36)	0.043 (1.00)	0.037 (1.34)	0.036 (1.68)	-0.037 (-1.60)	-0.018 (-1.28)
capopeness	-0.002 (-0.38)	-0.002 (-0.33)	0.041 (0.80)	0.015 (1.01)	0.014 (1.43)	0.012 (1.61)	0.001 (0.08)	0.002 (0.50)
population	-0.001 (-0.46)	-0.001 (-0.19)	-0.001 (-0.73)	-0.001 (-1.43)	-0.001 (-1.02)	-0.001 (-0.84)	-0.001 (-1.50)	-0.001 (-1.34)
agedep	-0.357 (-0.13)	1.047 (0.36)	12.193 (0.64)	-0.614 (-0.11)	-0.513 (-0.14)	-1.032 (-0.35)	2.876 (0.91)	1.201 (0.63)
urban	0.031 (1.12)	0.023 (0.81)	0.339 (1.77)	0.113 (2.02)	0.113 (3.01)	0.046 (1.59)	0.029 (0.94)	0.012 (0.63)
obs.	387	387	387	387	387	387	387	387

Notes: See notes in Table 4.

Table 6: The effect of different measures of *ideology* on the *tax structure*: Levels of tax rates, annual data 1970-2000 (fixed effects estimation)

	letr	litr	ketn	kitn	Ketg	kitg	cetr	citr	obs.
ideowold	-0.005 (0.13)	-0.037 (-0.79)	0.366 (1.21)	0.194 (2.16)	0.046 (0.77)	0.079 (1.68)	0.140 (2.84)	0.091 (3.03)	387
ideotav	0.011 (0.25)	-0.005 (-0.13)	0.358 (1.27)	0.164 (1.96)	0.087 (1.54)	0.073 (1.66)	0.145 (3.01)	0.091 (3.08)	420
ideocm	0.006 (0.11)	0.036 (0.64)	-0.251 (-0.65)	-0.195 (-1.69)	-0.132 (-1.96)	-0.126 (-2.23)	-0.197 (-3.26)	-0.122 (-3.40)	313
ideocus	-0.069 (-0.75)	-0.035 (-0.36)	-0.525 (-0.78)	-0.368 (-1.86)	-0.116 (-0.89)	-0.175 (-1.71)	-0.221 (-2.03)	-0.145 (-2.18)	372

Notes: Below each tax rate, we report the coefficient of the measure of ideology obtained from a regression of the form of the relevant column in Table 5.

Table 7: The effect of *electoral uncertainty* on *tax-spending policies* – annual data 1970-2000 (fixed effects estimation)

	litr	litr	Kitn	kitn	kitg	kitg	letr	letr	ketn	ketn	ketg	ketg	citr	citr
elections	-0.384 (-2.84)	-0.373 (-2.82)	-0.462 (-1.78)	-0.515 (-2.01)	-0.299 (-2.28)	-0.312 (-2.41)	-0.366 (-2.93)	-0.368 (-3.01)	-0.674 (-0.75)	-0.795 (-0.91)	-0.338 (-1.94)	-0.233 (-1.21)	-0.098 (-1.11)	-0.147 (-1.66)
ideowold	-0.046 (-0.99)		0.183 (2.04)		0.071 (1.53)		-0.013 (-0.32)		0.351 (1.15)		0.038 (0.64)		0.089 (2.95)	
lag dependent	0.858 (29.26)	0.853 (29.92)	0.750 (21.36)	0.770 (22.99)	0.800 (24.81)	0.817 (27.70)	0.820 (27.22)	0.820 (28.24)	0.521 (11.63)	0.537 (12.30)	0.753 (23.69)	0.746 (22.19)	0.768 (23.90)	0.798 (25.74)
gdppc	0.001 (0.47)	0.001 (0.29)	0.001 (2.49)	0.001 (2.32)	0.001 (0.60)	0.001 (0.40)	0.001 (1.57)	0.001 (1.59)	-0.001 (-1.36)	-0.001 (-1.27)	-0.001 (-1.61)	-0.001 (-1.26)	0.001 (0.39)	0.001 (0.09)
govexp	0.079 (3.63)	0.080 (3.70)	0.047 (1.10)	0.059 (1.38)	0.039 (1.83)	0.043 (2.02)	0.086 (4.08)	0.089 (4.26)	0.058 (0.41)	0.103 (0.73)	0.041 (1.49)	0.048 (1.59)	-0.017 (-1.20)	-0.007 (-0.55)
capopeness	-0.002 (-0.34)	-0.002 (-0.37)	0.148 (1.00)	0.014 (0.96)	0.012 (1.61)	0.011 (1.57)	-0.002 (-0.40)	-0.002 (-0.36)	0.040 (0.80)	0.044 (0.88)	0.014 (1.42)	0.016 (1.53)	0.002 (0.49)	0.000 (0.18)
population	-0.001 (-0.09)	-0.001 (-0.22)	-0.001 (-1.37)	-0.001 (-1.05)	-0.001 (-0.76)	-0.001 (-0.52)	-0.001 (-0.36)	-0.001 (-0.37)	-0.001 (-0.71)	-0.001 (-0.52)	-0.001 (-0.95)	-0.001 (0.84)	-0.001 (-1.31)	-0.001 (-0.89)
agedep	1.083 (0.38)	1.097 (0.39)	-0.538 (-0.10)	-1.058 (-0.19)	-0.947 (-0.33)	-0.732 (-0.25)	-0.307 (-0.12)	-0.572 (-0.22)	12.230 (0.64)	7.489 (0.40)	-0.475 (-0.13)	-0.372 (-0.09)	1.204 (0.63)	0.560 (0.29)
urban	0.018 (0.65)	0.014 (0.54)	0.107 (1.91)	0.080 (1.50)	0.041 (1.46)	0.029 (1.06)	0.025 (0.96)	0.019 (0.76)	0.331 (1.72)	0.276 (1.50)	0.109 (2.91)	0.028 (0.72)	0.010 (0.56)	0.004 (0.22)
R²	0.98	0.98	0.93	0.95	0.94	0.95	0.98	0.98	0.58	0.64	0.81	0.81	0.97	0.97
obs.	387	395	387	395	387	395	387	395	387	395	387	395	387	395

Notes: 1. The estimates are obtained by fixed effects estimation. 2. The sample period used for estimation is 1971-2000. 3. Time dummies are included for each period in all equations. 4. *t-statistics* are reported below the estimated coefficient.

Table 7 (continued): The effect of *electoral uncertainty* on *tax-spending policies* – annual data 1970-2000 (fixed effects estimation)

	cetr	cetr	ratio1	ratio1	ratio2	ratio2	ratio3	ratio3	ratio4	ratio4
Elections	-0.192 (-1.32)	-0.263 (-1.82)	0.026 (2.13)	0.019 (1.49)	0.029 (1.80)	0.022 (1.28)	0.011 (1.07)	0.008 (0.76)	0.016 (0.98)	0.006 (0.36)
Ideowold	0.136 (2.75)		-0.013 (-3.11)		-0.015 (-2.70)		-0.004 (-1.31)		-0.005 (-0.97)	
lag dependent	0.771 (23.60)	0.794 (25.11)	0.771 (23.42)	0.773 (22.71)	0.817 (26.75)	0.819 (26.46)	0.713 (19.90)	0.694 (19.36)	0.801 (24.87)	0.798 (24.25)
gdppc	0.001 (0.43)	0.001 (0.16)	-0.001 (-0.77)	-0.001 (-0.69)	0.001 (0.22)	0.001 (0.20)	0.001 (0.32)	0.001 (0.53)	0.001 (1.44)	0.001 (1.20)
govexp	-0.034 (-1.50)	-0.020 (-0.86)	0.001 (0.50)	0.000 (0.13)	0.001 (0.55)	0.000 (0.24)	0.000 (0.25)	0.000 (0.04)	-0.001 (-0.64)	-0.001 (-0.68)
capopeness	0.000 (0.07)	-0.001 (-0.18)	-0.000 (-0.06)	0.000 (0.09)	-0.000 (-0.47)	-0.000 (-0.32)	-0.000 (-1.28)	-0.000 (-1.13)	-0.001 (-1.56)	-0.001 (-1.55)
population	-0.001 (-1.46)	-0.001 (-1.08)	0.001 (0.68)	0.001 (0.39)	0.001 (0.45)	0.001 (0.19)	0.001 (0.19)	0.001 (0.12)	-0.001 (-0.11)	-0.001 (-0.16)
agedep	2.872 (0.91)	1.771 (0.56)	0.238 (0.87)	0.268 (0.91)	0.173 (0.47)	0.204 (0.52)	-0.119 (-0.54)	-0.118 (-0.52)	0.003 (0.01)	-0.028 (-0.08)
urban	0.027 (0.86)	0.016 (0.52)	-0.009 (-3.56)	-0.008 (-3.04)	-0.007 (-2.12)	-0.006 (-1.86)	-0.007 (-3.39)	-0.007 (-3.51)	-0.006 (-1.66)	-0.002 (-0.54)
R²	0.96	0.97	0.92	0.94	0.94	0.94	0.78	0.79	0.92	0.93
obs.	387	395	387	395	387	395	387	395	387	395