

Observatorio



The Political Economy of Taxation in Europe

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Abstract

Political variables play a crucial role in shaping tax systems and tax reforms in Europe. This paper presents new evidence on the relationship between political factors and tax design in European countries. For the period 1995-2012, we find that, when the country's ruling coalition is left-wing, income taxes become more relevant. Moreover, when the largest government party is more powerful, the share of property taxes over GDP increases, while the number of seats held by the second government party is positively associated with the level of consumption taxes over GDP. We also find that a more powerful government is associated with a lower top tax rate of the personal income tax (PIT). Building upon this evidence, we review the main arguments developed by the empirical political economy literature on taxation and discuss the role of political factors in fundamental issues of taxation: redistribution and progressivity; tax design and its impact on growth; tax complexity; tax administration; tax competition; and the need for tax reforms.

Keywords: tax design, tax reforms, party, redistribution, growth.

JEL Classification: H20, P16

1. Introduction

Tax systems are fundamental components of our economies. Taxes are the major instruments used by the government to finance its fundamental goals of providing public goods and services and operating changes in the distribution of income generated by the market. How to design and implement tax systems and how to reform them are very relevant questions at the core of economic policy. Tax systems and tax reforms are also a highly debated topic worldwide and a central issue in the political arena (Profeta and Scabrosetti, 2010). In modern democracies, taxation is shaped by voters' preferences and tax reforms need the support of voters to be implemented. The issue of taxation can attract and influence votes, as fiscal variables represent a major incentive to economic agents'

behaviors. Thus, economic and political variables are intertwined, and they both help to explain why tax systems are the way they are, and what reforms are more likely to be carried out (see Alt *et al.*, 2010). The interplay between economic and political factors suggests a potential role for public policies and reforms, mainly on the side of redistribution through taxation and public spending. Tax reforms can be seen as a response to political constraints (see Hettich *et al.*, 2013, for a comprehensive bibliography on the topic of political economy of taxation).

The level of democratization may turn out to be significantly related to tax pressure, or to the different tax sources, and to be significant in explaining the introduction of tax reforms. Although it is difficult to establish the correct direction of a causal relationship between democratization and policy outcomes (among which taxation), several studies have explained that taxes increase under a democratic regime, to satisfy the needs of the electorate. The structure of taxation may also be affected by the level of democratization, with more direct taxes being associated with more democratic countries (see Profeta *et al.*, 2013).

In European countries, being democracy a mature concept, other political factors play a crucial role in the field of taxation (see Bernardi and Profeta, 2004 and Profeta, 2004). Previous studies have highlighted that the political framework, defined by the composition of executive and legislative institution, matters in tax design and tax reforms (see Castanheira *et al.*, 2012). To capture this aspect, it becomes thus useful to look at political variables referring for example to the power dispersion in the government or the ideological orientation of the government parties.

In this paper, we first present a new empirical analysis, which has the purpose of assessing the relationship between political factors and tax design in European countries. Using data from the Organization for Economic Co-Operation and Development (OECD) and the Database of Political Institutions (DPI) for the period 1995-2012, we find that, when the country's ruling coalition is left-wing, income taxes become more relevant. Moreover, when the largest government party is more powerful, the share of property taxes over GDP increases, while the number of seats held by the second government party is positively associated with the level of consumption taxes over GDP. We also find that a more powerful government is associated with a lower top tax rate of the personal income tax. We use this evidence to review the main arguments developed by the political economy literature on taxation and discuss the role of political factors in fundamental issues of taxation: redistribution and progressivity; tax design and its impact on growth; tax complexity; tax administration; tax competition; and the need for tax reforms. One crucial issue in the case of both tax structure and reforms is the optimal versus the actual design: why there is often a gap between the efficiency and fairness prescriptions based on standard economy theory and the observed tax systems? We argue that political constraints may account for a large part of this gap.

The political economy approach to taxation has a twofold goal: on one side it helps to understand the current systems and the main forces and mechanisms which lead to

what we observe (*i.e.* the interrelation between economic and political factors), and on the other side it may suggest directions for future economically and politically feasible reforms. The traditional equity-efficiency trade-off (Stiglitz, 1987) and the social planner action do not exhaust the theory of taxation and tax reforms. A crucial role is played by collective choice and political institutions, and this is where a political economy approach becomes relevant (Persson and Tabellini, 2000). Collective choice mechanisms and their functioning are central both at the allocative level (how to pay for the service to provide, how much, etc.) and at the redistributive level (the degree of redistribution and how to finance it). From a positive point of view, in democratic countries, voting and the competitive political process (rather than the social planner) determine tax policies and tax systems and shape the equity and efficiency effects of taxation. From a normative point of view, in democracies economic reforms, such as tax reforms, may be adopted and sustained if they enjoy enough political support. The action of pressure and interest groups may also play a significant role in determining fiscal policies and fiscal reforms (Becker, 1983).

This strand of literature was opened by Wicksell (1896) and Lindahl (1919), and carried on by Buchanan (1976) and Brennan and Buchanan (1980) with the goal of understanding how to design institutions of government appropriate to the electorate's preferences, and how to avoid that the action of organized interest groups could have an impact on the functioning and outcome of the electoral processes. Later, the analysis of Brennan and Buchanan (1980) has focused on the role of the electoral process as a constraint to limit the government's power to tax (the Leviathan), and on the design of the most desirable electoral process. Tax design is a question of constitutional design, and tax reform is a matter for constituent assemblies or other groups of taxpayers, not for the government itself. Since then, many contributions have included political economy issues into the traditional optimal taxation theory (see Hettich and Winer, 1999).

More recently, both theoretically and empirically contributions have concentrated on the link between collective choice models and the composition of public revenues in democracies (direct versus indirect taxes, personal or corporate taxes, consumption and wealth transfer taxes, etc.). Other contributions have also focused on non-democratic regimes. Interesting insights come from the empirical research focused on European countries: how are tax systems and tax reforms in European countries influenced by political mechanisms? What is the link between political measures and fundamental issues in taxation, such as redistribution, tax complexity, the relation between taxes and economic growth, the efficiency and effectiveness of tax administration, tax competition? What is the role of political variables in the proposal and implementation of tax reforms? In this paper we propose an answer to these questions based on some new results and on both a review and a discussion of major contributions in this area of research.

The paper is organized as follows: next section describes the data we have collected and the results of our empirical analysis; section three reviews and discusses the role of political factors in major issues of taxation, including redistribution and progressivity; tax design and

2. Empirical evidence on political variables and taxes in Europe

In this section, we present empirical evidence on the role of political variables in tax design in European countries. Our purpose is to understand the relationship between political variables, the level of taxation and the composition of tax structure.

We consider the following political variables, which have been proved to affect tax design and tax reforms by previous studies (see Castanheira *et al.*, 2012): the number of seats held by the largest and the second government party, the presence of a dominant party, the orientation with respect to economic policy of the party of the Prime Minister or President and the level of decentralization of the country. Moreover, we also take into account the role of the electoral cycle. We focus on four different fiscal outcomes: tax revenue and its composition; the structure of personal income tax; the tax burden on labor vs the tax burden on capital; and the internal tax competition.

Our analysis focuses on Europe, a very interesting case to explore. In fact, on one side Europe is a mature democracy, on the other side the political framework is strongly shaped by factors such as the electoral systems, the presence of coalition governments, etc. Thus, focusing on Europe allows us to investigate the role of each of these political factors, rather than the general level of democracy, on tax systems.

2.1 Data description

We collect data from different sources.

First, data on taxation are gathered from OECD Statistics, which are generally more detailed, comprehensive, reliable and up-to-date than other sources anyway available. We consider the sample of European countries, which includes the following countries: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden and United Kingdom. For these countries, we collect data on total and fiscal pressure as percentage of GDP, and on the different components of the taxation structure. More specifically, with reference to the OECD classification, income taxes correspond to categories 1000 (taxes on income, profits and capital gains), 2000 (social security contributions) and 3000 (taxes on payroll and workforce); individual income taxes refer to categories 1100 (taxes on income, profits and capital gains of individuals), 2000 and 3000, while corporate income taxes to category 1200 (taxes on income,

profits and capital gains of corporates). Consumption taxes relate to categories 5000 (taxes on goods and services) and 6000 (other taxes) and property taxes to category 4000 and to its sub-categories respectively focused on taxes on immovable property, net wealth, estate, inheritance, gift, financial and capital transactions and other. All the data on the different components of the tax structure are expressed as percentage of GDP and referred to total government. For the personal income tax (PIT, category 1100) we also collect data on the number of brackets, the minimum and the maximum rate, which are important when we want to assess the complexity of the tax system, and to provide a proxy, although quite limited, of the degree of progressivity. We also gather data on the average tax wedge and the overall statutory tax rates on dividend income, in order to account for the tax burdens on labor and on capital respectively. Finally, we collect data on total tax revenue referred to local government. All these data on taxation will be used as dependent variables in our empirical analysis.

Our second source of data is the Database of Political Institutions (DPI), which contains data on several political indicators. We first focus on the following variables: the number of seats held by both the largest and the second government party, the Herfindahl Index Government (*i.e.* the sum of the squared seat shares of all parties in the government), and the orientation with respect to economic policy of the party of the Prime Minister or President (*i.e.* right, center, left)¹. The number of seats is an indicator of the political power of the party, while the Herfindahl index is a measure of the concentration of the parties, *i.e.* it captures the presence of a dominant party in the government coalition. Furthermore, we look at the electoral cycle, by building a dummy that is equal to 1 in the years of political elections and to zero in all other years. Given that fiscal policy could also be changed before elections, we also consider the pre-electoral cycle dummy, that is the one period lagged electoral cycle dummy (Persson and Tabellini, 2003)². Then, we refer to three more political variables, which focus on the level of decentralization of the country: the presence of a region, area or district that is autonomous or self-governing and constitutionally designated as autonomous, independent or special; the existence of locally elected municipal and state/province governments³. We will use data on political variables as explanatory variables.

Finally, we collect data on a set of socio-economic and demographic variables, which we will use as control variables, as suggested by the literature on the political economy of taxation (see Profeta *et al.*, 2013). These data come from different sources: GDP per working-age population, the population growth rate, the sum of imports and exports on GDP (trade openness), the government debt on GDP and the inflation rate are collected from OECD Statistics; the educational attainment for population aged 15 and over is based on the Barro Lee Dataset; the female labor force participation rate⁴, and the share of elderly people (65 years and above) on total population come instead from the World Bank Open Data.

Summary statistics are reported in Table 1.

Table 1
SUMMARY STATISTICS

Variable	No of obs.	Mean	Std. dev.	Min	Max
<i>Fiscal variables (over GDP)</i>					
Fiscal pressure - total government	347	36.88	5.25	27.38	48.98
Income taxes - total government	347	23.23	4.69	15.12	34.97
Individual income taxes - total government	347	20.37	4.63	11.56	32.11
Corporate income taxes - total government	347	2.74	0.88	0.58	5.92
Consumption taxes - total government	347	11.97	1.66	6.99	17.20
Property taxes - total government	347	1.56	1.03	0.22	7.30
Immovable property taxes - total government	347	0.78	0.70	0.07	3.30
Other property taxes - total government	347	0.78	0.68	0	7.11
Total tax - local government	253	3.58	2.94	0.24	15.18
<i>Structure of personal income tax (PIT)</i>					
Pit brackets	334	4.51	2.84	1	18
Pit minimum rate		334	11.21	8.94	0
Pit top rate	334	39.65	10.24	15	60
<i>Tax burden</i>					
Tax burden on labor	263	42.29	7.34	22.2	57.1
Tax burden on capital	263	43.07	10.02	19	74
<i>Tax administration</i>					
Cost of collection ratio	141	1.09	0.46	0.34	3.06
<i>Political variables</i>					
Seats first government party	347	136.95	107.38	10	418
Seats second government party	347	27.45	36.49	0	222
Herfindahl index government	347	0.66	0.26	0.18	1
Party orientation	347	1.94	1.05	0	3
Electoral dummy	347	0.26	0.44	0	1
Autonomous regions	253	0.49	0.50	0	1
Locally elected municipal governments	253	1.87	0.34	1	2
Locally elected state/province gov.	253	1.26	0.73	0	2
<i>Controls</i>					
GDP/working age population	347	40,919.76	14,794.78	13,666.71	10,7281.1
Trade openness index	347	96.11	50.73	37.03	352.90
Population growth	347	0.37	0.58	-1	3.4
Schooling	347	10.35	1.38	6.69	12.82
Debt/GDP	347	65.83	30.28	6.67	164.16
Old age population	347	15.74	2.25	10.52	21.16
Female labor force participation	347	49.92	6.21	33.4	61.2
Inflation rate	347	3.28	3.44	-4.5	28.3

2.2. Political variables, fiscal pressure and tax structure

We first use our data to understand the relationship between political variables, the level of taxation and the composition of tax structure.

2.2.1. Methodology

For this purpose, we estimate the following equation:

$$Y_{it} = \alpha_i + \beta_t + \gamma \text{political_variables}_{it} + \text{controls}_{it} + \epsilon_{it} \quad [1]$$

where Y_{it} is the fiscal (or total) pressure or a specific tax source over GDP referred to country i in year t , $\text{political_variables}_{it}$ and controls_{it} are respectively the different political indicators and control variables, described in section 2.1, referred to country i in year t , α_i is a country fixed effect, β_t is a year fixed effect, and finally ϵ_{it} is the error term⁵. Since we include in our model country and year fixed effects, we become able to exploit the within-country variation in all the different political measures and correlate it with the dependent (fiscal) variable of interest⁶.

Even after controlling for country fixed effects, the error term might be serially correlated within countries. As a consequence, in order not to wrongly inflate the precision of our estimates, we cluster the standard errors at the country level (see Bertrand *et al.*, 2004). Due to data availability, the time period investigated by the analysis goes from 1995 to 2012⁷.

Our results are shown in Table 2.

2.2.2. Results

Table 2 displays that political variables are related to the level of taxation and to the design of the tax structure. We can summarize our results as follows:

- there is a positive and statistically significant relationship between the number of seats held by the largest government party and the share of property taxes over GDP. By looking at the two different components of property taxes, this relationship seems to be driven by the share of other property taxes rather than by the share of taxes on immovable property;
- there is a positive and statistically significant relationship between the number of seats held by the second government party and the share of consumption taxes;

Table 2
POLITICAL VARIABLES, TAXES AND TAX STRUCTURE

Dependent variable (over GDP)	fiscal_pres- sure	income_ taxes	indivi- dual_in- come_ taxes	corpora- te_inco- me_taxes	consump- tion_taxes	proper- ty_taxes	immo- ble_proper- ty_taxes	other_pro- perty_ taxes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
seats_first_government_party	0.00396 [0.560]	0.000871 [0.154]	0.00253 [0.507]	-0.00175 [-1.012]	0.000147 [0.0431]	0.00251** [2.553]	0.000512 [1.211]	0.00199*** [2.636]
seats_second_government_ party	0.00422 [1.238]	0.000217 [0.0649]	-0.000735 [-0.245]	0.00105 [0.771]	0.00346* [1.949]	0.000468 [0.627]	0.000215 [0.491]	0.000250 [0.434]
Herfindahl_index_government	0.411 [0.286]	0.172 [0.130]	-0.157 [-0.183]	0.306 [0.511]	0.180 [0.249]	0.134 [0.729]	0.128 [0.863]	0.00569 [0.0544]
party_orientation	0.150 [1.144]	0.231** [2.236]	0.153 [1.595]	0.0838* [1.655]	-0.103** [-1.970]	0.0200 [0.673]	0.0138 [1.028]	0.00610 [0.262]
election_dummy	-0.214 [-1.269]	-0.120 [-1.134]	-0.0635 [-1.081]	-0.0773 [-1.162]	-0.141* [-1.801]	0.0405 [0.377]	0.00624 [0.422]	0.0342 [0.357]
pre_election_dummy	-0.0681 [-0.540]	0.0144 [0.150]	-0.0145 [-0.187]	0.0139 [0.262]	-0.0759 [-1.457]	-0.00915 [-0.285]	0.0214 [1.370]	-0.0304 [-0.993]
GDP/working_age_population	-0.000194*** [-2.678]	-7.63e-05 [-1.148]	-0.000101 [-1.480]	2.06e-05 [0.782]	-7.88e-05** [-2.108]	-4.53e-05 [-1.424]	-3.52e-05** [-2.300]	-9.99e-06 [-0.478]
trade_openness_index	-0.0128 [-0.604]	-0.0179 [-1.245]	-0.0199* [-1.735]	0.00580 [1.085]	0.00297 [0.444]	-0.000450 [-0.0996]	-0.00158 [-0.719]	0.00112 [0.305]
population_growth	0.844 [1.552]	0.428 [1.163]	0.177 [0.722]	0.240* [1.707]	0.304** [2.178]	0.107 [1.214]	-0.0412 [-1.354]	0.148* [1.703]
schooling	-0.145 [-0.433]	0.0665 [0.255]	-0.00489 [-0.0203]	0.0690 [0.414]	-0.345** [-2.044]	0.119 [1.227]	0.00871 [0.169]	0.110 [1.342]

Dependent variable (over GDP)	fiscal_pres- sure	income_ taxes	indivi- dual_in- come_ taxes	corpora- te_inco- me_ taxes	consump- tion_taxes	proper- ty_taxes	immo- ble_proper- ty_taxes	other_pro- perty_ taxes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
debt/GDP	0.0205 [1.285]	0.0372*** [2.795]	0.0368*** [3.254]	-2.99e-05 [-0.00536]	-0.00943* [-1.930]	-0.00656 [-1.485]	-0.000635 [-0.264]	-0.00593* [-1.891]
old_age_population	0.553 [1.481]	0.237 [0.845]	0.176 [0.745]	0.0861 [0.792]	0.407*** [2.836]	-0.0879 [-1.084]	-0.0330 [-0.771]	-0.0549 [-0.874]
female_labor_force_partici- pation	0.153 [1.420]	0.156** [1.971]	0.138** [2.413]	0.0194 [0.453]	0.00254 [0.0586]	-0.00484 [-0.243]	0.00453 [0.480]	-0.00937 [-0.620]
inflation_rate	0.0634 [1.027]	0.0241 [0.424]	0.0108 [0.229]	0.0139 [0.870]	0.0239 [1.073]	0.0126 [0.790]	-4.11e-05 [-0.00702]	0.0127 [0.893]
Observations	347	347	347	347	347	347	347	347
R-squared	0.951	0.961	0.973	0.748	0.905	0.880	0.970	0.765
Number of countries	21	21	21	21	21	21	21	21
Country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes

Notes: The table displays the output of fixed effects regressions. Standard errors are clustered at the country level, and the corresponding z-statistics are reported in brackets below each coefficient.
* Significant at 10%; ** Significant at 5%; *** Significant at 1%.

- there is no statistically significant relationship between Herfindahl Index Government and fiscal variables;
- there is a positive and statistically significant relationship between left wing party of the prime minister or president and the share of income taxes over GDP, in particular corporate income taxes;
- there is a negative and statistically significant relationship between left wing party of the prime minister or president and the share of consumption taxes. This result suggests that efficiency issue are more relevant for right wing parties;
- finally, there is a negative and statistically significant relationship between the election dummy and the level of consumption taxes, while fiscal policy does not seem to be changed before elections.

Focusing on control variables, we find a negative and statistically significant relationship between GDP per working age population and consumption and immovable property taxes over GDP. We also find a positive and statistically significant relationship between government debt over GDP and the share of income taxes over GDP. The same seems to be true if we look at the female labor force participation rate. The share of old age population appears instead to be positively related to the level of consumption taxes over GDP.

2.3. Political variables, the structure of the personal income tax and the tax burdens on labor and capital

Since the personal income tax (PIT) is one of the most visible tax, the one which concerns voters more directly, and the fundamental one to determine the level of redistribution, we expect to find significant relationships between political indicators and the main features of this tax. Thus, we look at the number of tax brackets, and the minimum and maximum tax rates, which essentially shape the structure of the personal income tax, and which are important to define its complexity, as well as, at least to some extent, the degree of redistribution of the overall tax system⁸. Moreover, given that reforms of tax rates on labor income could go hand in hand with reforms of capital income tax rates (under a dual tax system) it could be also interesting to look at the tax burdens on labor and capital.

2.3.1. Methodology

To this aim, we estimate the following equation:

$$Y_{it} = \alpha_i + \beta_t + \gamma_{political_variable_{it}} + controls_{it} + \epsilon_{it} \quad [2]$$

where Y_{it} now refers respectively to the number of PIT tax brackets, the PIT minimum rate and the PIT top rate in country i in year t , or the tax burdens on labor and capital in country i in year t ⁹. Differently from equation [1], here political variables are investigated one by one. Even in this case we control for socio-economic and demographic variables, we include in our model country and year fixed effects and we cluster the standard errors at the country level. Due to data availability, in the case of PIT the time period investigated by the analysis goes from 1995 to 2012¹⁰, while in the case of tax burdens from 2000 to 2012.

Our results are in Tables 3-4.

2.3.2. Results

Table 3 shows that political variables are related to the structure of the personal income tax: if the first government party has a larger share of seats, or if there is a dominant party in the government coalition, the maximum rate of the personal income tax is lower. The same happens if the second government party has a lower share of seats. These results together indicate that a more powerful government tend to decrease the PIT top rate, *i.e.* to introduce less redistribution in the tax system. Surprisingly, we do not find evidence neither of a difference between right and left wing governments nor of electoral cycle adjustments. Similarly, political variables do not seem to be related to tax wedge and tax burden on capital (Table 4).

2.4. Political variables and internal tax competition

We finally provide evidence on the relationship between total tax revenue collected at the local level of government and political variables.

2.4.1. Methodology

To this end we estimate the following equation:

$$Y_{it} = \alpha_i + \beta_t + \gamma \text{political_variables}_{it} + \text{controls}_{it} + \epsilon_{it} \quad [3]$$

where Y_{it} is now the level of total tax revenue over GDP referred to local government in country i in year t . Moreover, due to the fact that we are now focusing on internal tax competition issue, our set of political variables also includes the three political indicators on federalism described above in section 2.1. Even in this case, the time period investigated by the analysis goes from 1995 to 2012¹¹.

Table 3
POLITICAL VARIABLES AND THE STRUCTURE OF THE PERSONAL
INCOME TAX (PIT)

Dependent variable	PIT_brac- kets (1)	PIT_min_ rate (2)	PIT_top_ rate (3)	Dependent variable	PIT_brac- kets (1)	PIT_min_ rate (2)	PIT_top_ rate (3)
seats_first_government_party	-0.00750 [-1.552]	-0.0166 [-1.064]	-0.0507** [-2.499]	seats_second_government_party	0.00586 [1.418]	0.00639 [0.772]	0.0270** [2.345]
GDP/working_age_population	-4.49e-05 [-0.529]	-0.000490** [-2.171]	-0.000125 [-0.466]	GDP/working_age_population	-4.42e-05 [-0.532]	-0.000491** [-2.175]	-0.000126 [-0.479]
trade_openness_index	-0.0558*** [-3.173]	0.0205 [0.628]	-0.173** [-2.525]	trade_openness_index	-0.0568*** [-3.332]	0.0200 [0.574]	-0.176*** [-2.695]
population_growth	-0.795* [-1.692]	-0.112 [-0.126]	-0.171 [-0.175]	population_growth	-0.764 [-1.598]	-0.0656 [-0.0684]	-0.00215 [-0.00194]
schooling	-0.884 [-1.185]	2.605*** [2.578]	-1.999 [-0.882]	schooling	-0.893 [-1.286]	2.687*** [2.685]	-1.863 [-0.756]
debt/GDP	0.0164 [1.249]	-0.0705* [-1.722]	0.0839 [1.408]	debt/GDP	0.0161 [1.167]	-0.0727* [-1.810]	0.0789 [1.165]
old_age_population	-0.0359 [-0.0864]	-0.0143 [-0.0139]	-0.279 [-0.244]	old_age_population	-0.0764 [-0.189]	-0.0187 [-0.0196]	-0.390 [-0.313]
female_labor_force_participation	-0.0662 [-0.391]	-0.442*** [-2.709]	0.131 [0.247]	female_labor_force_participation	-0.0739 [-0.425]	-0.458*** [-2.861]	0.0793 [0.143]
inflation_rate	0.0260 [0.450]	-0.0534 [-0.314]	0.0476 [0.243]	inflation_rate	0.0149 [0.282]	-0.0577 [-0.325]	0.0113 [0.0602]
Observations	334	334	334	Observations	334	334	334
R-squared	0.823	0.939	0.882	R-squared	0.823	0.938	0.875
Number of countries	21	21	21	Number of countries	21	21	21
Country fixed effects	yes	yes	yes	Country fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes	Year fixed effects	yes	yes	yes

(Continued)

Dependent variable	PIT_brackets	PIT_min_rate	PIT_top_rate	Dependent variable	PIT_brackets	PIT_min_rate	PIT_top_rate	Dependent variable	PIT_brackets	PIT_min_rate	PIT_top_rate
	(1)	(2)	(3)		(1)	(2)	(3)		(1)	(2)	(3)
Herfindahl_index_government	-0.875 [-0.827]	-2.875* [-1.890]	-7.660** [-2.217]	party_formation	-0.0312 [-0.156]	0.0254 [0.0966]	0.184 [0.385]	election_dummy	0.0219 [0.204]	0.168 [1.105]	-0.254 [-0.680]
GDP/work	-4.57e-05 [-0.537]	-0.000490** [-2.266]	-0.000129 [-0.449]	GDP/working_age_population	-4.83e-05 [-0.605]	-0.000493** [-2.134]	-0.000129 [-0.511]	pre_election_dummy	0.0286 [0.228]	0.259 [1.406]	-0.340 [-0.849]
king_age_population	-0.0548*** [-3.130]	0.0230 [0.677]	-0.166** [-2.389]	trade_openness_index	-0.0555*** [-3.237]	0.0218 [0.631]	-0.168** [-2.470]	GDP/work_king_age_population	-4.72e-05 [-0.573]	-0.000497** [-2.136]	-0.000133 [-0.494]
trade_openness_index	-0.771 [-1.604]	-0.0452 [-0.0494]	0.0168 [0.0157]	population_growth	-0.790 [-1.626]	-0.0838 [-0.0868]	-0.0654 [-0.0565]	trade_openness_index	-0.0553*** [-3.167]	0.0216 [0.611]	-0.170** [-2.564]
growth	-0.798 [-1.051]	2.801*** [2.676]	-1.406 [-0.554]	schooling	-0.788 [-0.967]	2.772*** [2.710]	-1.541 [-0.600]	population_growth	-0.782 [-1.584]	-0.0700 [-0.0701]	-0.124 [-0.110]
schooling	0.0159 [1.172]	-0.0701* [-1.823]	0.0835 [1.278]	debt/GDP	0.0142 [0.932]	-0.0738* [-1.863]	0.0756 [1.058]	schooling	0.0148 [1.002]	-0.0735* [-1.741]	0.0717 [1.017]
debt/GDP	-0.0180 [-0.0427]	0.00664 [0.00686]	-0.193 [-0.159]	old_age_population	-0.00992 [-0.0226]	0.0718 [0.0715]	0.0158 [0.0122]	debt/GDP	-0.000417 [-0.000939]	0.0644 [0.0656]	-0.0407 [-0.0321]
old_age_population	-0.0568 [-0.317]	-0.403** [-2.441]	0.228 [0.424]	female_labor_force_participation	-0.0725 [-0.411]	-0.459*** [-2.745]	0.0753 [0.135]	old_age_population	-0.0737 [-0.418]	-0.460*** [-2.814]	0.0839 [0.149]
female_labor_force_participation	0.0187 [0.369]	-0.0847 [-0.462]	-0.0299 [-0.144]	inflation_rate	0.0306 [0.545]	-0.0362 [-0.194]	0.108 [0.554]	female_labor_force_participation	0.0331 [0.586]	-0.0362 [-0.202]	0.0917 [0.457]
inflation_rate	334 0.821	334 0.939	334 0.878	Observations	334 0.820	334 0.938	334 0.871	inflation_rate	334 0.820	334 0.938	334 0.871
Observations	21	21	21	R-squared	21	21	21	Observations	21	21	21
R-squared	yes	yes	yes	Number of countries	yes	yes	yes	R-squared	yes	yes	yes
Number of countries	yes	yes	yes	Country fixed effects	yes	yes	yes	Number of countries	yes	yes	yes
Country fixed effects	yes	yes	yes	Year fixed effects	yes	yes	yes	Country fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes					Year fixed effects	yes	yes	yes

Notes: The table displays the output of fixed effects regressions. Standard errors are clustered at the country level, and the corresponding z-statistics are reported in brackets below each coefficient.

* Significant at 10%; ** Significant at 5%; *** Significant at 1%.

Table 4
POLITICAL VARIABLES AND THE TAX BURDEN ON LABOR AND CAPITAL

Dependent variable	Tax_burden_		Dependent variable	Tax_burden_	
	labor	capital		labor	capital
	(1)	(2)		(1)	(2)
seats_first_government_party	-0.00702 [-0.948]	-0.0128 [-0.719]	seats_second_government_party	0.00517 [0.640]	0.000889 [0.0693]
GDP/working_age_population	-0.000235*** [-2.606]	-0.000135 [-0.531]	GDP/working_age_population	-0.000232*** [-2.579]	-0.000147 [-0.596]
trade_openness_index	0.0241 [1.242]	-0.125* [-1.842]	trade_openness_index	0.0210 [1.045]	-0.130* [-1.955]
population_growth	-0.550** [-2.147]	-0.307 [-0.480]	population_growth	-0.533** [-2.150]	-0.258 [-0.407]
schooling	-0.139 [-0.213]	0.220 [0.137]	schooling	-0.116 [-0.167]	0.506 [0.307]
debt/GDP	0.0282* [1.693]	0.0856 [1.454]	debt/GDP	0.0276* [1.677]	0.0841 [1.422]
old_age_population	-0.0726 [-0.175]	-0.987 [-1.135]	old_age_population	-0.141 [-0.315]	-0.910 [-0.909]
female_labor_force_participation	0.188* [1.764]	-0.540 [-1.136]	female_labor_force_participation	0.172 [1.479]	-0.567 [-1.210]
inflation_rate	0.115 [1.124]	0.602*** [3.268]	inflation_rate	0.122 [1.198]	0.623*** [3.405]
Observations	263	263	Observations	263	263
R-squared	0.980	0.896	R-squared	0.980	0.895
Number of countries	21	21	Number of countries	21	21
Country fixed effects	yes	yes	Country fixed effects	yes	yes
Year fixed effects	yes	yes	Year fixed effects	yes	yes

(Continued)

Dependent variable	Tax_burden_labor		Tax_burden_capital		Dependent variable	Tax_burden_labor		Tax_burden_capital	
	(1)	(2)	(1)	(2)		(1)	(2)	(1)	(2)
Herfindahl_index_government	-1.196 [-0.724]	0.361 [0.115]			party_orientation	0.175 [0.856]	0.329 [0.616]	-0.103 [-0.715]	-0.117 [-0.314]
GDP/working_age_population	-0.000233** [-2.537]	-0.000152 [-0.610]			GDP/working_age_population	-0.000234** [-2.502]	-0.000133 [-0.555]	-0.000242** [-2.575]	-0.000147 [-0.581]
trade_openness_index	0.0222 [1.116]	-0.130* [-1.934]			trade_openness_index	0.0213 [1.034]	-0.131* [-1.942]	0.0214 [1.059]	-0.130* [-1.923]
population_growth	-0.544** [-2.199]	-0.249 [-0.395]			population_growth	-0.477* [-1.732]	-0.172 [-0.279]	-0.520** [-2.040]	-0.265 [-0.415]
schooling	-0.0110 [-0.0179]	0.544 [0.356]			schooling	-0.0373 [-0.0592]	0.402 [0.272]	0.0254 [0.0415]	0.527 [0.346]
debt/GDP	0.0273 [1.601]	0.0841 [1.421]			debt/GDP	0.0322* [1.694]	0.0933 [1.619]	0.0279* [1.698]	0.0833 [1.403]
old_age_population	-0.0963 [-0.226]	-0.866 [-0.916]			old_age_population	0.0336 [0.0914]	-0.790 [-0.935]	-0.0209 [-0.0536]	-0.885 [-1.032]
female_labor_force_participation	0.188* [1.767]	-0.571 [-1.167]			female_labor_force_participation	0.158 [1.379]	-0.597 [-1.187]	0.173 [1.468]	-0.563 [-1.199]
inflation_rate	0.118 [1.181]	0.627*** [3.243]			inflation_rate	0.148 [1.344]	0.664*** [4.019]	0.125 [1.210]	0.620*** [3.429]
Observations	263	263			Observations	263	263	263	263
R-squared	0.980	0.895			R-squared	0.980	0.896	0.980	0.895
Number of countries	21	21			Number of countries	21	21	21	21
Country fixed effects	yes	yes			Country fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes			Year fixed effects	yes	yes	yes	yes

Notes: The table displays the output of fixed effects regressions. Standard errors are clustered at the country level, and the corresponding z-statistics are reported in brackets below each coefficient.

* Significant at 10%; ** Significant at 5%; *** Significant at 1%.

In the first column of Table 5 we report our results when we include in our estimating equation only political variables at local level, while the second column of Table 5 refers to the regression output when we include all political variables.

Table 5
POLITICAL VARIABLES AND INTERNAL TAX COMPETITION

Dependent variable (over GDP)	total_tax_local_ government	total_tax_local_ government
	(1)	(2)
seats_first_government_party	-	-0.00252 [-0.678]
seats_second_government_party	-	0.00396 [1.160]
Herfindahl_index_government	-	1.562 [1.119]
party_orientation	-	0.0258 [0.310]
election_dummy	-	-0.0365 [-0.773]
pre_election_dummy	-	0.0883 [1.389]
autonomous regions	-0.0850 [-0.309]	-0.265 [-0.651]
locally elected municipal governments	-2.510*** [-3.921]	-2.532*** [-4.050]
locally elected state/province governments	0.270 [1.460]	0.299 [1.425]
GDP/working_age_population	-0.000108* [-1.706]	-0.000116** [-2.026]
trade_openness_index	-0.0129 [-1.165]	-0.0167 [-1.377]
population_growth	-0.0319 [-0.341]	-0.0272 [-0.263]
schooling	0.0724 [0.489]	-0.0585 [-0.459]
debt/GDP	-0.00412 [-0.426]	-0.00412 [-0.490]
old_age_population	0.0948 [0.510]	0.0139 [0.0647]

(Continued)

Dependent variable (over GDP)	total_tax_local_ government	total_tax_local_ government
	(1)	(2)
female_labor_force_participation	0.0613 [1.184]	0.0301 [0.721]
inflation_rate	-0.0301 [-1.000]	-0.0214 [-0.644]
Observations	253	253
R-squared	0.966	0.968
Number of countries	21	21
Countries fixed effects	yes	yes
Year fixed effects	yes	yes

Notes: the table displays the output of fixed effects regressions. Standard errors are clustered at the country level, and the corresponding z-statistics are reported in brackets below each coefficient.

** Significant at 10%; ** Significant at 5%; *** Significant at 1%.*

2.4.2. Results

Table 5 shows that political variables capturing the level of fiscal federalism are significantly related to the total taxes of local government. More precisely, we find that when municipal governments are locally elected, rather than appointed, total revenues at local level decrease.

3. Fundamental issues of political economy and taxation

In this section, we concentrate on the empirical studies, which have addressed the role of political factors on taxation in European countries. We will also refer, when necessary, to the main theoretical methods which have been used by the vast literature on this topic. Finally, our review will also highlight what are the issues which have been relatively unexplored so far.

3.1. Redistribution and progressivity

One of the main goal of taxation is to redistribute income. Progressive taxation on personal income is introduced quite for this reason. Personal income taxes are a relevant source of revenues in European countries, a fact which does not only depend on economic factors (level of income, inequality etc.) but also on political ones. The results of our empirical analysis presented in section 2 show that in European countries more left-wing governments tend to increase income taxes, which are often used to achieve redistributive aims. We have

also found that more powerful governments tend to reduce the PIT top rate, which is a way to smooth redistribution.

The emergence of redistributive taxation in modern democracies is predicted by the well-known median voter model (Romer, 1975; Roberts, 1977; Meltzer and Richard, 1981 and 1983), which has been used to study what single proportional tax rate imposed to finance a public good will emerge in equilibrium when individuals have preferences for both the public good and the output of the private economy, and the tax rate is chosen by majority rule. The standard result applies: if all preferences are single-peaked, the equilibrium tax rate is the one which maximizes the welfare of the median voter. The model predicts that, the more right skewed is the income distribution among voters, as measured by the ratio of mean to median income, the higher the tax rate (and the size of government), as tax revenue is redistributed away from those with above average income. Clearly, extending the franchise to poorer citizens and to women (initially less independent financially) can thus explain why the equilibrium tax rate increased continuously over time (Bertocchi, 2007). Several studies have tried to test this prediction. Meltzer and Richard (1983) tested, and apparently validated, their model based on the evolution of government size over the period 1938-1976 in the U.S. Their main explanatory variable is the ratio of the income of the median earner to that of the average earner, which is a measure for inequality. However, what they find is mainly a correlation. A better test consists in using panel data, which allow for comparisons both over time and across countries. In this case, the model generally fails the test, as the effect of income inequality is often insignificant or takes the wrong sign (see e.g. Perotti, 1993 and 1996; Bénabou, 1996; Gouveia and Masia, 1998; Bassett *et al.*, 1999; Borck, 2007). More recent studies have looked directly at the redistributive effects of tax systems by comparing incomes for different quantiles of the earning distribution, using data of the Luxembourg Income Survey (LIS). Milanovic (2000) shows that redistribution is large. However, the author is not able to find that the median voter benefits from this overall redistribution scheme: the median typically loses from these transfers.

Failure of the empirical tests of median voter theorem may depend on the fact that actual tax systems are non-linear and transfers are not uniform, which makes the problem fundamentally multidimensional. Roemer (1999) developed a new equilibrium concept for political games, based on factional conflicts within parties. In this context, the author shows the existence of Nash equilibria of the two-party game, where the policy space consists of all quadratic income tax functions (bi-dimensional). The author also shows that in these equilibria both parties propose progressive income taxation, which is a realistic prediction.

Other approaches have dealt with multidimensionality. In the real world, tax structure is inherently multidimensional, including tax bases, rates' structures and several special provisions, and specific people or sectors can be targeted differently (Kenny and Winer, 2006; Winer, 2001). It is well-known that in a multidimensional issue space Nash equilibrium of a majoritarian voting game may fail to exist. The literature provides alternative solutions: structure-induced equilibrium, probabilistic voting, the Leviathan model, the bargaining game, interest groups, factional conflict (see Profeta, 2004, for a review of all these models).

A set-up which has been widely used in the context of taxation is probabilistic voting (Lindbeck and Weibull, 1987; Dixit and Londregan, 1998), which assumes that voters choose between parties on the basis of the policies proposed by the parties, and of an ideological component, which follows a certain distribution. This approach implies that a small change in a policy platform will not lead to a total change of the support from the incumbent to the opposition, but it only leads to a change in the probability of support. Therefore, an equilibrium exists even if the tax system is multidimensional. This allows to deal with complex tax systems. The equilibrium is a balance of opposing interests in the electorate, with some interests being more political influential than others. Parties have an incentive to offer lower tax rates to the groups that are electorally more mobile. A consequence is that more intense political competition, under some conditions, induces parties to give up more efficiency in order to achieve better targetability.

In this context, complex tax schemes may be analysed, which include non-linear taxes, allowances, deductions. The level of progressivity of the personal income tax is in fact reached by using tax brackets, deductions and tax allowances. Recently, there is a common trend in Europe towards a reduction of the top marginal tax rates. We argue that, on top of economic reasons (efficiency requires a lower tax rates on top incomes), political constraints also play a crucial role behind these trends (see Galli, 2002). In particular, the reduction of the top marginal tax rates, as a measure of the reduction of progressivity, may depend on political elements. As shown in Table 3, the power dispersion in the government is particularly significant: competition among parties in a coalition government results in higher progressivity than in the case of a single-party or dominant party in the government.

3.2. Tax design and its impact on growth

As data in section 2 show, political variables are more related to the tax mix in European countries than to the total fiscal pressure. Left-wing governments tend to be associated with more relevance of income taxes, while right-wing governments support consumption taxes.

The tax mix, i.e. the distribution of overall tax revenue across different tax sources, is a highly debated topic in European tax systems. In Europe, we observe a general trend towards a shift of taxes away from labor (European Commission, 2015), with a parallel increase in indirect taxes, property or environmental taxes. The general justification of this shift is that it will improve the market performance and the efficiency of the system and will enhance growth.

According to the European Commission (2006), the shift away from labor taxes is beneficial to employment because of a stronger labor demand, and thus it is growth enhancing. However, the relationship between the tax mix and the economic growth is not so obvious. Arnold *et al.* (2011) show that for a sample of OECD countries over the period 1971-2004 a shift from direct to indirect taxes is positively and significantly correlated with GDP per

capita. A similar result is obtained for wealth taxes. However, the role of political variables in this context remains to be determined.

The shift away from labor taxes has drawn the attention to other sources of revenues. Political variables influence which alternative sources will be more strongly used. Environmental taxes, for example, tend to be stronger in countries where the pressure of interest groups (such as the environmentalists) are stronger (as for example in the Netherlands). At the same time, wealth taxes, both on the ownership and the transfer of wealth, are recently attracting more and more attention by scholars and policy makers. Piketty (2014) claims that the progressivity of wealth taxation should be enhanced in order to deal with the structural problem of inequality. In partial contrast to the Mirrlees Review (Institute for Fiscal Studies, 2011), Piketty and Saez (2012, 2013) suggest that in an optimal tax design there is room for both inheritance and capital income taxation. In fact, the underlying stylized fact regarding taxation of wealth transfers (estate, inheritance and gift taxes) is that there has been a steady decline relative of their share to GDP for the last three/four decades (Profeta *et al.*, 2014). Figure 1 shows the trend in the yearly averages of the shares of wealth taxes over GDP referred to the 21 EU countries we investigate in our empirical analysis for the period 1965-2014.

Our simple exercise in section 2 has shown that the level of property taxes is positively associated to strongest government parties. The role of political variables in the decline of wealth taxes and a possible reversal trend remain to be fully explored. In fact, the wealth tax does not appear to be politically feasible as a way to substantially reduce inequality.

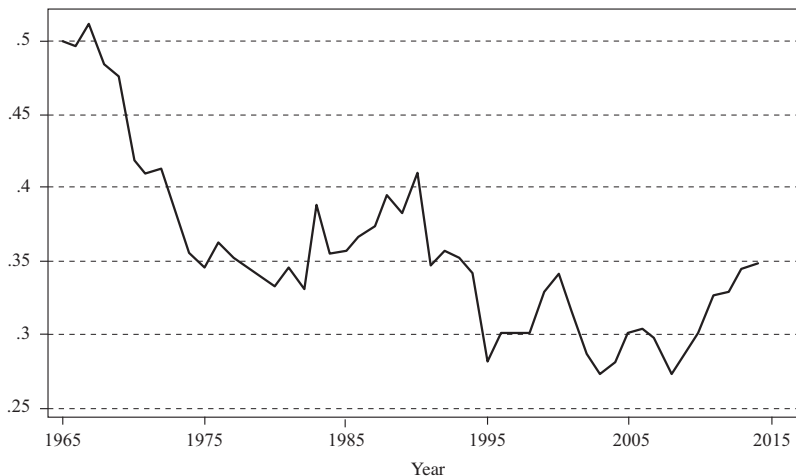


Figure 1. Tax design: the evolution of wealth taxes over GDP (average values)

Note: Wealth taxes correspond to categories 4200 (Recurrent taxes on net wealth) and 4300 (Estate, inheritance and gift taxes) of the OECD classification. The figure shows the yearly averages referred to the 21 EU countries under investigation. Source: Our calculations from OECD Statistics.

3.3. Tax complexity

Another fundamental aspect of tax systems is their complexity. Political factors are linked to tax complexity not only because the level of complexity is relevant for redistribution and progressivity, but also because complexity itself is influenced by political factors.

In European countries we observe a general common declared intention of increasing simplicity in the income tax, mainly through a reduction in the number of brackets (see Figures 2a and 2b).

However, although the flat-rate or broad-based tax seems to be very popular in the political debate as a way to simplify the income tax regime, a flat tax is considered not politically feasible, unless the society is characterized by groups of voters rather homogeneous in income, size and political power. In fact, the implemented changes do not really seem to reach this objective of simplicity, since deductions, exemptions, special cases multiply.

Political factors may help explain this inconsistency. In a democracy, the political competition requires complexity, *i.e.* many tax rates to carefully discriminate among heterogeneous voters (Warskett *et al.*, 1998) and thus to maximize the support that each party expects to receive in the next election. In the limit, each taxpayer should be taxed with a different tax rate, to better respond to its preference. However, when the system becomes well developed, public expenditures and taxation raise and this requires an increase in the complexity of regimes and raises the administration costs, which make such a complicated tax structure too expensive, and force to reduce complexity and to group the individuals together. This justifies the reduction of tax brackets. The optimal number of brackets, how to assign individuals to brackets, and how to choose the rate of taxation applied to each group is a political decision, because it has to take into account party's political objectives. A trade-off is implicit in the choice of the number of brackets: on one side, decreasing the number of brackets implies a larger loss in expected support, since it is no longer possible to equalize marginal political costs or oppositions to taxation across individuals. On the other side, decreasing the number of brackets implies lower administration costs, and thus higher revenue and the possibility to spend more on public goods, which can be converted into additional support. In presence of administration costs, information costs may induce an even stronger simplification, if taxpayers self-select and choose to earn a reduced income in order to be eligible for a lower tax rate. This suggests that a well-developed system may be at a point where costs are so high that the need to simplify is predominant. At this point, special provisions arise as a way to reintroduce the differentiation required by political optimality, in a broadly defined simplified tax structure (see Hettich and Winer, 1988, for a comprehensive model on this process; and Galli and Profeta, 2009). It may however also be the case that waves of increasing and decreasing complexity over time and space appear.

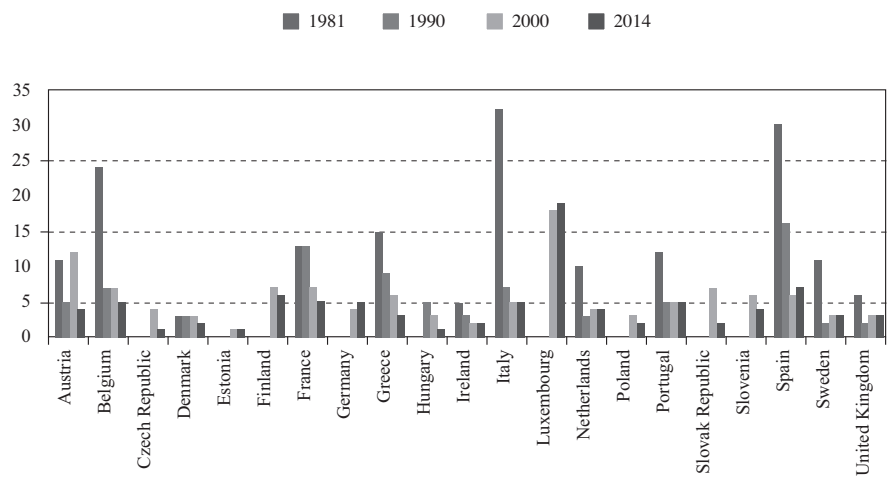


Figure 2a. Tax complexity: the evolution of the number of PIT brackets

Source: Our calculations from OECD Statistics.

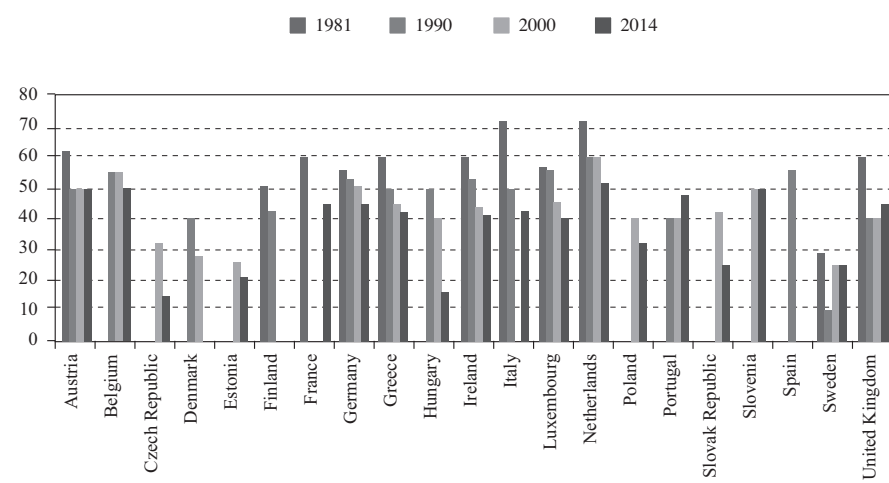


Figure 2b. Tax complexity: the evolution of PIT top tax rate

Source: OECD Statistics.

3.4. Tax administration

Tax compliance, tax administration and tax enforcement have also been investigated. Tax evasion is a clear challenge for modern tax systems. Recent data show a reduction in the

average size of the shadow economy referred to the 28 EU-countries: it was 22.6% of GDP in 2003 and it stops at 18.3% of GDP in 2015 (Schneider, 2015). However, the evolution of the unofficial economy in the different European countries was not uniform. In particular, the eastern, central European countries and the new EU members generally show higher levels of shadow economy than the old European countries. At the same time in Central and Western Europe unofficial economy is lower than in South Europe. The revenue losses due to underground economy account for a relevant percentage of public revenues and expenditures in EU member states. In most of them they would cover the annual state budget deficit (Murphy, 2012).

Survey data are generally used to assess the role of well-designed institutions for voluntary compliance, tax morale and corruption across European countries. Frey and Torgler (2007) provide evidence for European countries that when the institutional quality is high, tax morale is higher and tax evasion is lower. Hibbs and Piculescu (2010) concentrate on large firms around the world and their governance to show that corruption and underground activity arise when firms perceive taxes as not “worth paying”.

The efficiency and effectiveness of tax administration can be also proxied by the cost of collection ratio computed by dividing the annual costs of administration of revenue collection to the total revenue collected in a fiscal year. Figure 3 shows the evolution of the yearly means of this indicator referred to the 21 EU countries under investigation in our empirical analysis in the period 2005-2013. As well explained in the OECD report on Tax Administration, given that there are a lot of “indirect” factors that can influence the evolution of this measure over time, a declining trend has to be interpreted with caution as an improvement in efficiency (reduction of administration costs) and effectiveness (increase in tax compliance and revenue collection) (OECD, 2015).

Empirical research in political economy of taxation based on Europe has so far not been very concentrated on the aspect of tax administration. Assessing the role of political variables in designing an efficient tax administration and enforcement in European countries is thus a promising area of research. We tried to make a first attempt on this by estimating the equation [1] described above, where Y_{it} is now the cost of collection ratio in country i in year t ¹². Our preliminary results, reported in Table 6, suggest that, among the political variables on which we focus on, only party orientation seems to have a positive and statistically significant relationship with this index.

3.5. Tax competition, internal and international

As suggested by Table 5, political variables are important when we consider also the level of both internal and international tax competition. A crucial issue in the European tax policy debate is the combined trend towards more competitive and decentralized tax systems and the effects of globalization and harmonization into the European Union. More specifically, on one side, there is a general trend towards more competitive tax systems, leading to a

reduction of taxes on financial and corporate capital with the purpose of attracting investments. At the same time, we observe a general trend towards decentralization of the tax policy process. Similar political reasons may explain this combination of competition and decentralization: competitive political process may generate information in a decentralized system. Decentralization is required by the complexity of current systems, and may be a solution for the information problems and the high administrative costs. Political reasons may also be crucial in decentralization, as at a local level, politicians may better reflect voters' preferences about taxation.



Figure 3. Tax administration: the evolution of cost of collection ratios (average values)

Note: Cost of collection ratios are computed as follows: administrative costs for tax administration/net revenue collected. The figure shows the yearly averages referred to the 21 EU countries under investigation.

Source: Our calculations from OECD (2015).

Political factors behind decentralization have been tested by Ashworth and Heyndels (1997) for the Flemish case. Politicians, who have the objective of maximizing expected votes, decide the tax rates taking into account their beliefs about the political cost (in term of loss of votes) associated with the tax rate and their attitudes towards taxation in general. The authors show that at a local level, both these factors depend closely on the voters' preferences and oppositions.

However, decentralization has also several problems. Tax competition among jurisdictions in a decentralized world may have a detrimental impact on the efficiency of public goods' supply and redistribution. Feld (1997) argues that participation in the political process, elections, political parties, demonstrations (voice) may be another mechanism, alternative to the Tiebout one (exit), for the voters to express their opposition to the government in

Table 6
POLITICAL VARIABLES AND TAX ADMINISTRATION

Dependent variable	cost_of_ collection_ratio (1)	cost_of_ collection_ratio (2)	cost_of_ collection_ratio (3)	cost_of_ collection_ratio (4)	cost_of_ collection_ratio (5)
seats_first_government_party	0.00234 [1.227]	0.00181 [0.802]	0.00148 [0.520]	0.00180 [0.627]	0.00191 [0.648]
seats_second_government_party	-	-0.00110 [-0.977]	-0.000870 [-0.903]	-0.000719 [-0.721]	-0.000709 [-0.716]
Herfindahl_index_government	-	-	0.146 [0.342]	0.0833 [0.202]	0.0869 [0.213]
party_orientation	-	-	-	0.0305* [1.756]	0.0311* [1.709]
election_dummy	-	-	-	-	-0.00719 [-0.159]
pre_election_dummy	-	-	-	-	0.0315 [0.823]
GDP/working_age_population	1.14e-05 [0.612]	1.11e-05 [0.595]	1.03e-05 [0.519]	9.38e-06 [0.464]	9.17e-06 [0.442]
trade_openness_index	-0.00317 [-0.846]	-0.00298 [-0.756]	-0.00293 [-0.729]	-0.00303 [-0.766]	-0.00314 [-0.789]
population_growth	-0.0456 [-0.771]	-0.0419 [-0.678]	-0.0419 [-0.665]	-0.0320 [-0.516]	-0.0321 [-0.508]
schooling	-0.0351 [-0.290]	-0.0478 [-0.360]	-0.0530 [-0.377]	-0.0629 [-0.494]	-0.0701 [-0.543]
debt/GDP	0.00332 [1.054]	0.00375 [1.153]	0.00394 [1.200]	0.00464 [1.448]	0.00475 [1.514]

(Continued)

Dependent variable	(1)		(2)		(3)		(4)		(5)	
	cost_of_ collection_ratio		cost_of_ collection_ratio		cost_of_ collection_ratio		cost_of_ collection_ratio		cost_of_ collection_ratio	
old_age_population	0.00686 [0.0963]		0.0197 [0.278]		0.0303 [0.399]		0.0328 [0.466]		0.0318 [0.440]	
female_labor_force_participation	-0.0201 [-0.629]		-0.0151 [-0.431]		-0.0143 [-0.393]		-0.0135 [-0.420]		-0.0142 [-0.438]	
inflation_rate	-0.0222 [-1.112]		-0.0227 [-1.149]		-0.0224 [-1.162]		-0.0206 [-1.173]		-0.0196 [-1.097]	
Observations	141		141		141		141		141	
R-squared	0.894		0.896		0.896		0.898		0.899	
Number of countries	21		21		21		21		21	
Country fixed effects	yes		yes		yes		yes		yes	
Year fixed effects	yes		yes		yes		yes		yes	

Notes: The table displays the output of fixed effects regressions. Standard errors are clustered at the country level, and the corresponding z-statistics are reported in brackets below each coefficient.

* Significant at 10%; ** Significant at 5%; *** Significant at 1%.

a democracy and may have effect on allocative and distributional outcome, such as tax competition. Moreover, at a decentralized level, pressure groups may be more powerful to exert their influence and politicians are induced to favor them without taking into account the implications for all voters. This leads to a political market failure with the government creating actions that deviate from Pareto efficiency. This case has been characterized by Rodrik (1992) as “subordinate government”.

Political factors are also important for tax competition (for review of the main effects of tax competition see Zodrow and Mieszkowski, 1986; Wilson, 1986). Tax competition may be desirable, even if it creates distortions, if these distortions are small compared to the large inefficiency due to the unproductive public expenditures which would emerge in absence of competition (Wellisch, 2000; Eggert, 2001). Focusing on capital income taxation, Persson and Tabellini (1992) show that, if governments choose their fiscal policies according to the electoral mechanism, *i.e.* taking into account the voting behavior of the citizens, the competition across countries does not lead to an extreme reduction of the equilibrium tax rates on capital income. This is because voters know that an increase of the tax rate in their country will be partly compensated by a correspondent increase in the foreigner country (as the optimal strategies of the governments in two competing countries are strategic complement), while the governments over-estimate the amount of capital that would be induced to migrate due to a change in their fiscal policy. As a consequence, in a symmetric equilibrium, the median voter in each country votes for a government with a capital endowment lower than its own capital, and thus the tax rates on capital are higher than what would be obtained without considering the voting mechanism. Janeba and Schjelderup (2002) study the effect of increasing capital mobility (or globalization) both in terms of fiscal externalities and political distortions arising from selfish policymakers. They show that increasing competition is likely to improve voter utility. They also highlight the different political response to increasing tax competition between Europe and the U.S.: while in Europe there is a long debated issue of coordination or harmonization of tax policies (not really achieved, but at least pursued by rules and agreements), in the U.S. competition among states is positively considered as a key element of the federal system. They argue that these differences may be explained by the different political and budgetary institutions of Europe and the U.S. (Persson and Tabellini, 2000): parliamentary democracies, which are common in Europe, provide a more cohesive government responsible of the entire government budget, which turns out to be associated with higher taxes, higher public goods provision and higher government waste than presidential-congressional democracies, like the U.S., where the budget making process is made by committee with separated powers.

3.6. Tax reforms

The political economy literature on tax reforms is vast. While we have already discussed the role of political variables in fundamental tax issues, which may predict adjustments of the equilibrium tax systems, here we refer to the specific role of institutions in structuring

and preventing changes¹³. Theoretically, reforms are introduced to improve the existing situation, i.e. to change the status quo. Introducing tax reforms is not an easy task. Politicians have to propose convincing reforms and voters have to approve them. This process leads to uncertainty, and it typically creates losers and winners.

The literature emphasizes the existence of a status quo bias, i.e. voters oppose changes because they do not see the benefits of the reform, while costs are clear (Fernandez and Rodrik, 1991). To circumvent this problem, the government may decide to introduce gradualism in reforms, i.e. splitting the reform in different steps and targeting different groups at different times (Dewatripont and Roland, 1995). Empirical studies have shown that these reforms are more likely in proportional representation systems and when there exists a strong ruling coalition. If instead opposition is strong and it comes from several groups, the government may prefer to rely on external constraints that make the reform unavoidable, or to group a sub-optimally large range of reforms at once.

Another important way to gain political support to tax reforms is through the use of targeted reforms. Policymakers may have an incentive to introduce targeted reforms, even when broad reforms may be more efficient, because it is easier to build political consensus towards targeted reforms (as predicted by the probabilistic voting model mentioned before).

Another important political mechanism which delivers tax reforms is the incentive of the politicians when there is asymmetric information. Information asymmetries between the political elite and the electorate may imply that a given reform proposal can be opposed by the population if it emanates from a party who is felt to be biased in favor of the reform. In that case, parties with positions closer to the median voter (typically centrist parties) may face less opposition than other parties (left or right-wing). Politicians may need to rely on strategies that hide some redistribution patterns, so as not to lose support from those who do not benefit from redistribution. Similarly, the debate may be focused on tax cuts, rather than in changing the tax thresholds, whose effects are more difficult to observe. In this context, politicians' incentives are typically affected by the rules of the game, defined by the country's institutions and constitution. One may for instance expect taxes to be lower in presidential and in majoritarian systems than in parliamentary or in proportional representation systems. A crucial consequence of information is on the timing of reforms. Politicians have incentives to cut taxes before elections (especially more transparent taxes) and to delay the most difficult reforms. Tax reforms may also be influenced by reforms in neighboring jurisdictions, which induce tax mimicking behaviors, as it is well known in the literature of yardstick competition (Besley and Case, 1995).

A comprehensive test of the relevance of political factors in tax reforms focused on income taxation is provided by Castanheira *et al.* (2012). Using LABREF, a database on labor tax reforms in the EU27 for the years 2000-2007, they show that political variables have more explanatory power than economic factors in explaining the probability that a reform in labor taxation occurs in a given European country in a given year. High unemployment or a more negative output gap –for instance– are not associated to more reforms. In contrast,

political variables have a systematic impact on the probability to reform. For instance, coalition governments appear to reform more the broader the coalition. This effect is reinforced when one party dominates the coalition in terms of parliamentary seats. When instead different population groups are represented by different parties, the opposition is better able at blocking reforms. Importantly, the timing of reforms appears immune to the political business electoral cycle: reforms are as likely to happen in the beginning or at the end of the parliament's term of office. This result is in line with what we obtained in table 2. The authors also show that targeted reforms are more common than broad reforms. In explaining targeted reforms, economic variables are no longer significant while political variables are the only significant ones. These reforms, which do not need broad political support, are used by all parties (right or left-wing) to win the support of specific voter groups. There is also evidence of reform gradualism: targeting different groups at different times allows them to get around some of the oppositions to reform.

4. Concluding remarks

Building upon our evidence on taxation in Europe in the period 1995-2012, we have reviewed and discussed the links between political factors and tax systems and reforms. Political constraints help explain the existence of redistribution, the progressivity of the tax systems, the tension between complex tax systems and simplification concerns, and between central and decentralized governments, the problems in tax administration, and the characteristics of more widespread tax reforms (such as for example gradualism and targeting).

Other political variables have been shown to be relevant for the equilibrium of tax systems. Among them, political stability and the degree of polarization between the alternating governments (Cuckierman *et al.*, 1992). At any given moment of time, the existing tax system represents a constraint on the choice of tax rates, which may be welcome by politicians who oppose the current governments. This is more likely to happen in countries with more unstable and polarized political systems. Thus, political instability and political polarization may be associated with an inefficient tax system, which facilitates tax evasion and imposes high collection costs.

Figures 1 and 2 highlight two aspects which we consider particularly promising for future research on the role of political variables in taxation: the evolution of the personal income tax and the evolution of wealth taxes. Despite the relevant changes of these two taxation items in the last decades, the role played by political variables in these contexts is relatively unexplored. Additionally, we have highlighted that the role of political variables in explaining the link between tax mix and growth, as well as the performance of tax administration would deserve more investigation.

Both the political landscape and the tax systems are in continuous evolution in Europe. Research on the mechanism according to which political factors are related to taxation in Europe is certainly one of the most fascinating and relevant area of the study in this field.

Notes

1. Notice that the index takes a value of 1 for right, 2 for center and 3 for left wing party.
2. Data on the electoral cycle come from the Global Database on Elections and Democracy released by IDEA (<http://www.idea.int/db/search-adv.cfm>)
3. These variables are coded as follows: 0 if neither local executive nor local legislature are locally elected; 1 if the local executive is appointed, but the local legislature is locally elected; 2 if both local executive and local legislature are locally elected.
4. Notice that female labor force participation could be related with the relative size of the informal sector of the economy for each country in each year and thus could be also used as a proxy for the size of the shadow economy (Profeta *et al.*, 2013).
5. In the first column of Table 2 we decided to show our results for fiscal pressure. However, our results for total pressure are exactly the same. It could be reasonable to use a one-period lag for the political, socio-economic and demographic variables we include as explanatory variables in our specification, since, if any, the relationships between those variables and taxation are likely not to be immediate. Thus, we replicate our estimates with a one-lag period and we find that our results reported in Table 2 still hold.
6. We are aware of the possible endogeneity concerns related to our regression model. The inclusion of country fixed effects would absorb time-invariant factors at the country level, but omitted variable bias might still be an issue, to the extent that those unobserved factors vary across time within a given country.
7. Notice that data for Denmark goes from 2003 to 2012; data for Ireland from 1998 to 2012; data for Luxembourg from 2006 to 2012; and data for Slovenia from 2001 to 2012.
8. We are aware that the structure of the personal tax rate is only a partial indicator of progressivity.
9. In particular, we are referring to the tax burden as percentage of labor costs for single persons at 100% of average earnings, no children, and to the overall (PIT and CIT) statutory tax rates on dividend income, both from OECD Stats.
10. Notice that data for Denmark goes from 2003 to 2012; data for Estonia from 2000 to 2012; data for Ireland from 1998 to 2012; data for Luxembourg from 2006 to 2012; and data for Slovenia from 2001 to 2012. Only in the case of PIT brackets and PIT minimum rate data for both Finland and Germany goes from 2000 to 2012.
11. Notice that data for Denmark goes from 2003 to 2012; data for Finland from 2001 to 2012 and data for Ireland from 1998 to 2012. Moreover, missing data forced us to excluded from our dataset the following six countries: Austria, Belgium, Czech Republic, Estonia, Luxembourg and Slovenia.
12. <http://www.oecd.org/tax/forum-on-tax-administration/database/>
13. On the difference between “tax change” and “tax reform” (as a pattern of tax change) see Hettich and Winer (2006).

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Resumen

En Europa, las variables políticas desempeñan un papel crucial tanto en el diseño de los sistemas fiscales como en sus reformas. Este trabajo presenta nueva evidencia acerca de la relación entre factores políticos y diseño fiscal en los países europeos. Para el periodo 1995-2012, hallamos que, cuando la coalición de gobierno es de izquierdas, los impuestos sobre la renta devienen más relevantes. Adicionalmente, cuanto más poderoso es el partido mayoritario en el gobierno, el porcentaje de los impuestos sobre la propiedad se incrementa; mientras que el número de diputados del segundo partido de gobierno se asocia positivamente con el nivel de los impuestos sobre el consumo en relación con el PIB. También encontramos que cuanto más poderoso es el gobierno, menor es el tipo marginal máximo del impuesto sobre la renta. A partir de la evidencia empírica puesta de relieve, evaluamos los principales argumentos desarrollados por la literatura empírica de la Economía política de la imposición y discutimos el papel que desempeñan los factores políticos en cuestiones fundamentales de la imposición: redistribución y progresividad; diseño fiscal y su impacto sobre el crecimiento; complejidad fiscal; administración tributaria; competencia fiscal; y la necesidad de reformas fiscales.

Palabras clave: Diseño fiscal, reformas fiscales, partido político, redistribución, crecimiento.

Clasificación JEL: H20, P16