



**HELLENIC
OBSERVATORY**
European Institute

Democratisation and tax structure: Greece versus Europe from a historical perspective

Pantelis Kammass and Vassilis Sarantides

GreeSE Paper No.108

Hellenic Observatory Papers on Greece and Southeast Europe

MAY 2017

TABLE OF CONTENTS

| | |
|--|------------|
| ABSTRACT | iii |
| 1. Introduction | 1 |
| 2. Data and Summary Statistics | 8 |
| 2.1. Fiscal Data | 8 |
| 2.2. Data on the political regime | 11 |
| 2.3. A brief history of rural taxation in Greece | 14 |
| 2.4. Changes in the composition of taxation due to decreases in rural taxation | 16 |
| 2.4.1 Changes in indirect taxation | 16 |
| 2.4.2 Changes in urban taxation | 18 |
| 3. Empirical Specification | 19 |
| 4. Results | 22 |
| 5. Fiscal Effects of Democratisation in Europe | 30 |
| 6. Discussion | 39 |
| References | 41 |

Acknowledgments:

We are grateful to George Dertilis for helping us with the data as well as for many useful comments and suggestions. We thank Gerasimos Notaras and the Historical Archives of National Bank of Greece, of the Greek Parliament and of National and Kapodistrian University of Athens for providing access to the Fiscal Accounts of the Greek State. We have benefited from comments and suggestions by Manthos Delis, Christos Kotsogiannis, Nikos Mylonidis, Argyris Sakalis, Karl Taylor, Eugenia Vella, and the conference participants at the Economic History Society Annual Conference 2017 and the 6th International Ioannina Meeting on Applied Economics and Finance (IMAEF). Last but not least, we also want to thank an anonymous reviewer for many helpful comments and suggestions which led to substantial improvements in the paper. Any remaining errors are ours.

Democratisation and tax structure: Greece versus Europe from a historical perspective

Pantelis Kammas[#] and Vassilis Sarantides^{*}

ABSTRACT

Building on a unique dataset that contains 13 different tax categories of the Greek state over the period 1833-1933, this paper studies the effect of democratisation on the size and the composition of tax revenues. Empirical analysis suggests that the radical reform that enfranchised all adult males in Greece in 1864 did not affect the level of taxation, but did exert a significant impact on its structure. Universal male suffrage was accompanied by an amazing reduction in rural taxes (e.g., taxes on land) and remarkable increases in indirect taxes – mostly in custom and excises duties. These findings clearly indicate that there were political economy motives behind this shift in the implemented fiscal policy. In particular, the Greek governments changed the structure of taxation in order to satisfy the large majority of the electorate, who were peasants and farmers, ensuring a minimum level of social cohesion. Using also a sample of 12 Western European countries over the same period, we show that the phase of economic development induced a differentiated effect of democratisation on the size and the structure of taxation.

Keywords: democracy, tax structure, fiscal capacity

[#]Department of Economics, University of Ioannina, P.O. Box 1186, 45110 Ioannina, Greece.
kammas@cc.uoi.gr

^{*}Department of Economics, University of Sheffield, 9 Mappin Str, Sheffield S1 4DT, UK.
v.sarantides@sheffield.ac.uk

Democratisation and tax structure: Greece versus Europe from a historical perspective

1. Introduction

Conventional theory suggests that extending the voting franchise to the poorer segments of society increases the demand for redistributive public spending and fiscal expansion (see, e.g., Meltzer and Richard, 1981), since competing political parties are expected to shift their policy platforms to respond to the preferences of the hitherto disenfranchised voters¹. A large number of studies employing historical data have placed the spotlight on the empirical investigation of the relationship between democratisation and fiscal policy (see, e.g., Lindert, 2004). In particular, these studies examine whether the so-called “first wave of democratisation” (Huntington, 1991), which took place from 1828 to 1926, affected the level and pattern of government spending (Lindert, 1994; Aidt et al., 2006) or of taxation (Aidt and Jensen, 2009a)².

In broad terms, most of these studies have highlighted the importance of various intermediating factors that make the relationship between

¹ This poses the question, though, of why powerful elites decided to dilute power by offering voting rights to the poorer segments of society. Recent research has stressed income inequality (Justman and Gradstein, 1999; Acemoglu and Robinson, 2000; Boix, 2003) and conflicting interests within the elite (Lizzeri and Persico, 2004; Llavador and Oxby, 2005) as potential reasons of why voting rights were granted in Western Europe during the 19th century. However, in all alternative cases, scholars share the prediction that full enfranchisement should increase the size of the government. For an excellent review of alternative theories of franchise extension, see Przeworski (2009).

² A parallel strand of this literature investigates the relationship between democratization and fiscal policy by employing modern data for a large set of developed and developing countries (see Mulligan et al., 2004; Profeta et al., 2013; Acemoglu et al., 2015). These empirical studies focus on the more recent waves of democratization (i.e., the second and the third waves) and investigate whether they have affected the implemented fiscal policy.

democratisation and fiscal policy much more complex (see, e.g., Aidt et al., 2010). One significant factor seems to be the phase of economic development and the consequent structure of the domestic economy (see e.g., Boix 2003; Aidt and Jensen, 2009b). In particular, economic history suggests that industrialised economies were in need of increased fiscal revenues that would ensure provision of specific public goods, such as health and education. The accumulation of physical capital in the process of industrialisation raised the importance of human capital in the growth process, reflecting the complementarity between capital and skills³. However, since the pure laissez-faire policy failed to develop a proper educational system, citizens demanded that the authorities need to provide this public good (see Galor, 2005). At the same time, domestic migration of the working population from the countryside to the urban centres generated severe problems of increased urban mortality and morbidity that should have been addressed by investments in health-related amenities (see e.g., Szreter, 1997; Szreter and Mooney, 1998)⁴.

A parallel literature demonstrates that the demand for revenues to finance these public goods eventually will manifest in implemented policies when the poorer segments of society participate in the electoral process (see, Justman and Gradstein, 1999; Lizzeri and Persico, 2004; Aidt et al., 2010). Simultaneously, the provision of public education can complement this effect, since an increase in the literacy rate of the

³ Evidence for the complementarity between technological progress (or capital) and skills is provided by Goldin and Katz (1998).

⁴ The standard of living issue in the era of the industrial revolution has been investigated by a large number of scholars (see e.g., Hobsbawm, 1975). For instance, Szreter and Mooney (1998), focusing on the largest industrial British cities, show that life expectancy at birth was lower in 1871 than in 1821, despite rising real wages, attributing this decline to the deteriorating urban environment.

domestic population works to improve the tax collection capacity of the state and the reliance on direct forms of taxation (see Aidt and Jensen, 2009b), allowing for fiscal expansion in democratic regimes over time⁵. This outcome of democratisation on the size and composition of tax revenues – in favour of direct taxes – might not necessarily be the case for developing economies and even more so for a newly democratised agrarian economy. This is because, in such a case, the tax collection capacity of the state is definitely low, whereas public investment in human capital, which could help alleviate this problem over time, is not as urgent as in an industrialised economy⁶. Therefore, when democratisation takes place at an early phase of economic development, this may lead to patterns of taxation that deviate substantially from the predictions of the conventional theory.

Our analysis employs a unique dataset of the Greek state in order to explore the effects of democratisation on the size and the composition of the tax structure in an agrarian economy in the 19th century. Notably, Greece established universal male suffrage in 1864 during a period where

⁵ Specifically, Aidt and Jensen (2009b) suggest that the cost of collecting income and other direct taxes relative to the cost of collecting indirect taxes fell as literacy and numerical skills of the potential taxpayers improve. Related to that, Besley and Persson (2011; 2013) show that developed countries rely to a greater extent on income taxes as opposed to indirect taxes (e.g., customs) than developing countries do. A fundamental reason for this is that it is much harder for developing countries to collect direct taxes, which require major investments in fiscal capacity, namely in enforcement and compliance structures throughout the entire economy.

⁶ Two reasons that can justify the lower level of public investment in human capital in a developing/agrarian economy are the following: (1) The complementarity between human capital and land is very low in the production process and definitely much lower than in the case of an industrialised economy (see Galor, 2005 for more details on this). On top of this, it should not be overlooked that landed elites do not benefit from public investment in human capital, since universal public education will increase the cost of labor beyond the increase in average labor productivity in the agricultural sector, reducing in this way the return of land (Galor et al., 2009); (2) The priorities of a government for internal stability at this early stage of development can significantly affect the allocation of the public budget in favour of security expenditures and against health and education expenditures (see, Aidt et al., 2006).

76% of the population was living in agricultural areas - defined as the percentage of population living in cities of less than two thousand people (see Figure 1). We use this variable, as provided by Dertilis (1993), to proxy for size of the agricultural sector in Greece, since population statistics first became available in 1828 whereas occupational statistics in 1861. Therefore, using this proxy allows us to avoid extrapolation of occupational data back in 1833 -the first year of our sample⁷. Our dataset covers the period 1833-1933 and contains information for 13 different tax categories (e.g., land tax, income tax, etc.), based on the methodology introduced by Flora et al. (1983), thereby allowing us to discern tax revenues into four major tax categories: (1) rural taxes; (2) urban taxes; (3) customs taxes; and (4) market taxes. Urban taxes are decomposed further into income taxes, trade and corporation taxes, and capital taxes.

Our second contribution is that we use an identical classification of tax instruments for a sample of 12 Western European countries to investigate if the effect of democratisation on the size and the composition of taxation depends on the phase of economic development, as proxied by the prevalence of the agricultural sector. In contrast to Greece, these European countries, drifted also by the “first wave of democratisation”, had narrower agricultural sectors. In particular, their average figure of the workforce occupied in the agriculture sector in the year of democratisation - according to Boix et al.’s (2013) classification – is half

⁷ Moreover, when using the census of 1861 we found that the percentage of the core occupations in agriculture -landowners, farmers and peasants- account for 63% of the total labour force, whereas taking also into account other occupations related to the agricultural sector (e.g., muleteers or merchandisers) this figure increases above 70% and very close to 74.48% - the estimated percentage of the agricultural population in 1861.

that of Greece, namely about 38% (see Figure 2).⁸ More importantly, the variation we observe from case to case motivates this exercise, since it allows us to test for a differentiated effect of democracy conditional on the phase of economic development.

Our empirical analysis for Greece clearly indicates no effect of democratisation on the level of taxation (% of GDP), though it does identify a significant impact on the composition of taxes. More precisely, universal male suffrage was accompanied by an amazing decrease in rural taxes (i.e., land and assessed taxes) and increases in specific categories of indirect taxes – mostly taxes related to custom duties and excises duties. Apparently, the reduction in taxes on land was in favour of the small peasants and farmers who lived in rural areas⁹. However, somehow paradoxically, the increases in indirect taxes were also in favour of the rural population and, at the same time, at the expense of the urban population. This occurred because during that period Greek economy was a subsistence agriculture economy –especially in the countryside– and the rural population was able to evade indirect taxes through self-consumption (see Dertilis, 1993, pp.159-164). In contrast, the population in urban regions, including its poorer segments, was considerably harmed, since local or imported basic goods (wheat, textiles, and energy producing raw materials) were burdened by indirect taxes (see Dertilis, 2015, pp.794-799; pp.806-808)¹⁰.

⁸ We defer a more detailed discussion of Figures 1 and 2 until Section 5.

⁹ During that period, Greece was an agrarian economy characterized by a large number of small farmers and a relatively equal distribution of land. See below for more details on this issue.

¹⁰ Tables 4.2 and 4.2a in Dertilis (2015, pp.1169-1171) present data concerning imports and exports during that period.

Following the rationale in Dertilis (1993, pp.41-43; 2015, pp. 819-829) and Palairret (1979), our analysis suggests that there were political economy motives behind this change in the pattern of taxation. To be more precise, the extension of voting franchise to all males above the age of 21, in 1864, established the rural population as the unambiguous political majority, and resulted in a shift of tax policy in favour of this population group. Losses in tax revenues were mostly covered by increases in indirect taxes that were not harmful in political terms, since the large majority of the agricultural population could evade indirect taxes through self-consumption. According to Dertilis (2015, pp 789-790), the major priority of the elected governments (but also of the Crown), at least during the first decades after independence, was to legitimize their authority. To this end, they mainly focused on policies that aimed to ensure a minimum level of social consensus and to convince the citizens of the young Greek state – the vast majority of whom were living in rural areas – that the public demands of the war of independence, i.e., “social justice”, “democracy”, and “equality of political rights”, would be satisfied. Moreover, the policy decision to increase indirect taxes was compatible with the weak administrative capabilities and the narrow tax collection capacity of the Greek state during that period¹¹.

¹¹ In other words, our analysis does not suggest that the Greek governments decided to increase custom duties solely due to political economy reasons. Countries characterized by poor fiscal capacity and low administrative capabilities tend to rely heavier on international trade taxes, since the latter are a more easy-to-collect-tax (see e.g., Besley and Persson, 2011, 2013). This argument is valid for the case of the Greek economy during the first decades after independence. However, this rationale, which does not consider political economy motivation, fails to provide a clear-cut explanation for the decision of the Greek governments to reduce land taxes in the first place. After all, even though land taxes were a more difficult-to-collect tax, there is no economic argument suggesting their amazing reduction after democratisation.

For comparison purposes, we also explore the effect of democratisation on taxation for a sample of 12 other European countries. Our empirical findings suggest that total tax revenues (% of GDP) are positively correlated with democratisation, along the lines of the Meltzer and Richard (1981) model, but only when the agricultural sector is significantly low. Concerning the effect of democracy on the composition of tax revenues, democratisation is negatively correlated with the share of direct (i.e., income taxes) to indirect taxes (i.e., custom duties and excises duties) when the percentage of workforce occupied in agriculture is close to the case of Greece (~70%). This effect is reversed gradually and becomes positive and significant when the agricultural sector drops below a certain threshold (~38%). These findings for Europe are compatible with previous empirical studies investigating similar issues (see e.g., Aidt and Jensen, 2009b). In line with our theoretical priors, the demand for investment in human capital as the level of development increases, along with the effect of this investment on the tax collection capacity of the state, allows democratically elected governments to gradually rely more heavily on direct forms of taxation and to increase the level of government taxation.

The rest of the paper is organised as follows. Section 2 describes the data and presents a brief history of taxation in Greece. Section 3 presents the empirical specification. Section 4 discusses the empirical results for Greece and Section 5 presents the corresponding empirical findings for the sample of 12 Western European countries. Finally, Section 6 summarizes the main points.

2. Data and Summary Statistics

2.1. Fiscal Data

Dertilis (1993, pp.105-297) was the first to attempt development of a detailed historical tax database for Greece. After 10 years of personal research, Dertilis tracked 89 fiscal accounts of the Greek state for the period 1833-1933. His research concluded with 12 missing accounts for the following years: 1850, 1851, 1856, 1857, 1863, 1907, and 1914-1919. Moreover, it should be noted that for the years 1845-1849, 1860, and 1867, Dertilis (1993, pp.105-297) employed data from provisional fiscal accounts (i.e., *Genikoi Logarismoι*), instead of final fiscal accounts (i.e., *Apologismoι*) of the Greek state, since the latter were missing. In turn, Dertilis (1993, pp.125-171) applied a methodology along the lines of Flora et al. (1983) in order to classify the obtained 275 different types of taxes into the following 13 broad categories: (1) land tax, (2) assessed tax, (3) trade tax, (4) corporation tax, (5) income tax, (6) property tax, (7) inheritance tax, (8) extraordinary tax, (9) other direct tax, (10) customs tax, (11) excise tax, (12) turnover tax, and (13) other indirect tax¹². According to this classification, direct taxes include categories (1) to (9), whereas indirect taxes include categories (10) to (13)¹³. All fiscal data are based on central government accounts. This is not a major shortcoming, since during that period local governments were underdeveloped.

¹² For more details about the classification of the obtained 275 different types of taxes into the 13 broad tax categories, see Dertilis (1993), pp. 189–203. It is worth noting that income taxes (i.e., category (5)) can be further decomposed into payroll and non-payroll taxes.

¹³ All variables are expressed in Drachma, the currency of Greece during the 19th and 20th centuries, in Pounds Sterling and as a percentage of total taxation. In order to make available for future research the original archival material, George Dertilis has donated two complete sets of photocopies to the Historical Archives of the University of Athens and of the National Bank of Greece.

Moreover, it allows us to compare the case of Greece with that of 12 other European countries that were democratised during the 19th or early 20th centuries, for which more data are available at the central rather than the general government level (see Flora et al., 1983).

In a subsequent period, Prontzas et al. (2011) managed to track all the final fiscal accounts of the Greek state for the period under consideration, except for the year 1860. We tracked down the account for that year in the Historical Archives of the National Bank of Greece. For the newly tracked final fiscal accounts, we applied the methodology followed by Dertilis (1993, pp.125-171) so as to cover the missing observations in Dertilis' (1993) database, and/or to replace tax data calculated through provisional fiscal accounts. Therefore, our final tax database contains homogeneous information from the final fiscal accounts of the Greek state during the full period of 1833-1933.

Our analysis seeks to investigate the effects of democratisation on the size and the composition of tax revenues in Greece during the 19th and the beginning of the 20th centuries. To this end, we develop the variable *total tax*, which is defined as the sum of all tax categories (i.e., (1) to (13)) as a percentage of GDP. Data for GDP are taken from Kostelenos et al. (2007), who managed to compose reliable estimates of the magnitude of the Greek economy for the period of 1830-1939. Next, we construct the variable *direct/indirect*, which is defined as the ratio of direct taxes (i.e., categories (1) to (9)) to indirect taxes (i.e., categories (10) to (13)) and captures issues related to the pattern of taxation.

To further investigate the distributional implications of democratisation through tax burdens, following the methodology of Dertilis (1993, pp.125-171), we develop the following variables, all expressed as a percentage of total taxes. First, the variable *rural taxes* is defined as the summation of land taxes and assessed taxes (i.e., categories (1) and (2)). This classification is based on the fact that both tax categories were imposed on land and/or earnings from agricultural and livestock production. Second, the variable *urban taxes* is the summation of the remaining direct tax instruments (i.e., categories (3) to (9)). Third, we attempt to obtain more detailed information regarding the composition of *urban taxes* by developing the following four sub-categories. We separate tax revenues levied on personal income (i.e., category (5)) into: (i) *payroll taxes*, which include tax revenues from labour income, and (ii) *non-payroll taxes*, which reflect revenues from other forms of income taxation. Moreover, we define the summation of tax categories (3) and (4) as *trade and corporation taxes* and the summation of tax categories (6) and (7) as *capital taxes*. The former tax category consists of taxes on earnings of small firms and the profits of enterprises affecting mostly the non-agricultural income in urban areas, whereas the latter is composed of taxes on property, legacies, and donations that mostly affected high income agents. As denoted by its title, we expect *urban tax instruments* to burden more heavily or entirely the citizens of urban centres. Of course, we cannot exclude the possibility that some of the rural taxes can burden urban citizens, or vice versa. For instance, residents of the cities who owned land in rural areas were also paying rural taxes. Bearing this caveat in mind, it is important to note that the distinct separation of the rural and

urban population over the period 1833-1933 results only in limited cases that fall within this category. Finally, concerning indirect taxation, we construct the variable *customs taxes* (i.e., category (10)) and the variable *market taxes* as the summation of excise taxes, turnover taxes, and other indirect taxes (i.e., categories (11) to (13)).

2.2. Data on the political regime

The main explanatory variable of our study is a dichotomous variable developed by Boix et al. (2013) that takes the value of 1 if Greece is categorized as democratic and 0 otherwise. The key political factors that Boix et al. (2013) considered in order to codify a period as democratic are: (1) popular elections of the executive and legislature; (2) multiple parties competing in the election; (3) unconsolidated incumbent advantage; and (4) at least half of the male electorate is enfranchised. According to these criteria, Greece is classified as democratic over the periods 1864-1914 and 1926-1933, and as autocratic in the periods 1833-1863 and 1915-1925.

During the first decade after independence (1833-1843), the political regime was a *monarchy under the reign of King Otto*¹⁴. Only after the insurrection of 1843, which was led by Athenian garrisons backed by the demands of the Greek oligarchy, was the ruler compelled to adopt a constitution establishing a political regime of constitutional monarchy. Remarkably, Greece was among the first three countries of the world who granted voting rights to almost all adult males aged 25 years old and

¹⁴ Actually, until Otto reach the majority of age (June 1, 1835), his sovereign rights in Greece were exercised by the so-called regency, which was made up of three councils appointed by the Bavarian king.

over¹⁵. However, the case of Greece differs from that of the other European countries that also extended the voting franchise during the 19th century, for at least two reasons. Primarily, despite the adoption of universal male suffrage, the new constitution was monarchical, with all executive and legislative powers vested in the King. Second, this massive franchise reform did not occur as a result of the threat of revolution from the masses, as a large strand of the relevant literature suggests (see e.g., Acemoglu and Robinson 2000; Aidt and Jensen, 2014), but it was basically the result of the absence of a dominant, cohesive elite faction that would be able to impose a clear-cut authoritarian solution. More precisely, the political environment consisted of evenly balanced elite factions – all with privileged access to the rural population through patronage networks – that viewed enfranchisement of the illiterate rural population (~90%) as a good system of adjudicating their conflicts, while restricting the power of the King, who was the most powerful actor up to that point (see Alivizatos, 2011; Kalyvas, 2015, pp.50-52)¹⁶.

In 1862, King Otto was overthrown by a rising of the guard and the people of Athens. A series of events led to the appointment of a new monarch, George I, and after long debates the new constitution in 1864 established a *democracy under a King* with universal suffrage for all males aged 21 years old and over. According to the new constitution, instead of a ballot,

¹⁵ Only paying guests or apprentices were excluded from this right. The other two countries that adopted universal male suffrage before Greece were France and Liberia (see Przeworski, 2009). In France, it was introduced with the constitution of 1793, but it never went into effect and no elections were held under it. Although Liberia proceeded in universal male suffrage in 1839, voting rights were restricted again in 1847.

¹⁶ According to Przeworski (2006), a political environment of evenly balanced elite factions is a *sine qua non* for a stable, self-enforcing democratic regime. In other words, democracy survives only when all the political forces that could overthrow it agree that democratic elections are a good system of adjudicating their conflicts or at least are preferable over the feasible alternatives.

voters could cast a small lead ball into one of the ballot boxes allocated to each one of the candidates standing for elections. This innovation facilitated voting by illiterate agents, who were the vast majority of the population during that period, without the intervention of local actors (Alivizatos, 2011). After 1864, gradually, two broad political tendencies were formed, the liberal and the conservative. Moreover, despite some incidents of political instability, parliamentary governments functioned regularly for many decades. In 1911, after the military movement of 1909 that brought Eleftherios Venizelos in office, a liberal constitutional reform took place. The new constitution was characterised by greater protection of human rights, the rule of law, and the modernisation of institutions.

Thus, although Greece has been classified as being an autocratic regime during 1833-1863, the constitutions of 1864 and 1911 allowed Greece to be transformed during 1864-1914, developing institutional characteristics identical to those of other democratic countries of that period. However, disagreements between King Constantine, who succeeded King George after his assassination in 1913, and the Prime Minister Eleftherios Venizelos initiated a prolonged period of political instability. According to the Boix et al. (2013) classification, Greece has been categorized as being autocratic during the period of 1915-1925. This categorization is based on Greece's experience of a deep *National Schism* and two military coups in 1922 and 1925, each lasting two years. From 1926 until 1933, the remaining years of our sample, political stability was restored and Greece once again is classified as democratic. As an alternative proxy of democracy, we also employ the variable *polity2* as obtained from the *Polity IV Project* (Marshall and Jaggers, 2010).

2.3. A brief history of rural taxation in Greece

Although after the war of independence the tax system of the new-born Greek state was modified, its most basic characteristics were similar to those established by the Ottoman Empire (see e.g., Shaw, 1975; McGowan, 1981). First, the basic component of *rural taxation*, the so-called *dekati*, which was a 10% tax on gross agricultural and livestock production, remained untouched¹⁷. In many cases, this tax was paid in kind (i.e., by providing agricultural goods) instead of cash, since the Greek economy was an agrarian, almost barter, economy (especially in the rural areas). A second characteristic of the tax system was the delegation of tax collection through tax auctions. According to this practice, incumbents kept the monopoly of the “power to tax”, but they delegated to local elites the right to collect physical tax revenues (i.e., in kind revenues) and in turn to merchandise obtained agricultural goods in order to obtain cash (see Petmezas, 2003)¹⁸. In this way, tax renters ensured tax revenues in cash to the Greek authorities¹⁹.

During the first years after independence (1833-1844), as already mentioned, the peasantry was paying 10% of their gross agricultural and

¹⁷ However, it should be noted that a large number of Ottoman lump sum taxes on peasants and farmers (such as *ispence* and *avariz*) were abolished. For a detailed analysis of the taxation in Ottoman Empire, see McGowan (1981).

¹⁸ For the majority of the agricultural goods, *dekati* was paid in kind. However, for some specific types of agricultural goods (such as cotton, tobacco, and vines) that could be exported to international markets, *dekati* was paid in cash and consequently there was no need for tax auctions. For most of these goods, starting in 1845, Greek governments replaced *dekati* with the so called *stremmatiki forologia*, which was based on the extent of the cultivated land (see Dertilis, 1993; Petmezas, 2003).

¹⁹ During the war of independence (1822-1833) rich members of local notables were competing in auctions by offering amounts of money to the authorities as payments in advance. The winners had the right to collect the physical tax revenues that were agricultural goods, and in turn to sell them to the domestic market and mostly in urban areas. After independence, the structure of tax auctions changed significantly to that described above and payments in advance reduced.

livestock production as tax (*dekati*), whereas an additional 15% of their gross production was going to rents if the cultivated land was granted by the Greek state (the so-called *epikarpia*)²⁰. Moreover, if public lands were used without permission from the Greek governments, they were obliged to pay an additional 15% of gross agricultural production as *epikarpia*. Thus, the overall tax burden on land was ranging between 25-40% of gross agricultural and livestock production. (1993, pp.41-43; 2015, pp 819-829) suggests that the gradual reduction of the tax burden fallen on land, that started in 1845 and became more radical after 1864, can be attributed to the franchise extensions that took place during that period and increased the political power of the rural population.

More precisely, after the insurrection of 1843, and the constitution of 1844, a new tax law was voted in 1845. According to the new tax legislation, land rent paid for public lands (*epikarpia*) was reduced to a level of 10%, irrespective of whether public lands were cultivated with or without permission from the Greek state. Therefore, the overall tax burden on land was decreased to a level of 20%. For this reason, as can be seen in Table 1, the percentage of *rural taxes* decreased from 66.44% the period of 1833-1843, to 57.2% for the period after the reform and before the new constitution of 1864 was voted in. Moreover, after 1864, both *dekati* and *stremmatiki forologia* (i.e., taxation based on the extent of the cultivated land) reduced significantly. It must be noted that during the

²⁰ After independence, in practice, Greek governments nationalized the great bulk of lands that belonged to Ottoman landowners. More precisely, although the Treaty of Constantinople had protected the land property rights of Ottoman individuals and institutions, in practice, Greek governments tolerated transactions and practices that were detrimental to these rights. Eventually, Greece nationalized these lands as a temporary measure, but it took almost half century before the first extensive land redistribution in 1871.

same period there were also significant efforts from the Greek governments aiming to fully abolish *dekati*, which finally took place in 1880²¹. Following a similar political rationale, from 1880 until the first two decades of the 20th century, most of the Greek governments implemented tax reforms that were based on reductions of several direct taxes paid by the agricultural population (see e.g., Sideris, 1931), dramatically decreasing the percentage of *rural taxes* at levels below 25%, as can be seen in Table 1.

Table 1. Tax revenues of the Greek state over four time periods

| | (1) | (2) | (3) | (4) | (5) | (6) |
|------------------|--------------------|------------------------|--------------------|--------------------|---------------------|---------------------|
| Period | <i>total taxes</i> | <i>direct/indirect</i> | <i>rural taxes</i> | <i>urban taxes</i> | <i>custom taxes</i> | <i>market taxes</i> |
| 1833-1843 | 15.21 | 2.18 | 66.44 | 1.76 | 24.31 | 7.50 |
| 1844-1863 | 11.48 | 1.50 | 57.20 | 2.18 | 27.09 | 13.53 |
| 1864-1915 | 12.99 | 0.46 | 23.67 | 6.22 | 39.33 | 30.78 |
| 1916-1933 | 17.70 | 0.41 | 9.74 | 18.66 | 32.64 | 38.97 |

2.4 Changes in the composition of taxation due to decreases in rural taxation

2.4.1 Changes in indirect taxation

Decreases in rural taxation that took place from 1843 to 1880 were accompanied by amazing increases in indirect taxes. Thus, although total tax revenues (as a share of GDP) remained relatively constant during that period, the composition of tax revenues altered significantly^{22,23}. Until

²¹ In 1860, Koumoundouros, the minister of finance of the Greek state, proposed a tax law, according to which *dekati* would be fully replaced by a tax system based on the extent of the cultivated land. A similar reform was proposed by Sotiropoulos, a subsequent finance minister, in 1867. Both tax laws failed to become laws of the Greek state (see Sideris, 1931), since they were blocked mainly by the politically powerful group of tax renters who had the right to collect in kind revenues and merchandise through the obtained agricultural goods (Kostis, 2006).

²² To be more precise, from 1833 to 1863 total tax revenues (% of GDP) decreased from about 15% to 11.5%, and in turn from 1864 to 1915 they remained relatively constant at a level of about 12-13%.

1884, most of these indirect taxes were basically *custom taxes* and other indirect taxes (e.g., stamp duty on legal documents). Then, in 1884, Charilaos Trikoupis implemented a tax reform that introduced a large number of excises duties – actually taxes on consumption – and at the same time significantly increased the revenues from state monopolies (see e.g., Kostis, 2006, pp.312-313). As can be easily verified in columns (5) and (6) of Table 1, the summation of *custom taxes* and *market taxes* increased significantly in the years after the first big political reform in 1844, and even more rapidly after 1864. Changes in *rural taxes* and *indirect taxation* are also reflected in the evolution of the ratio *direct/indirect* taxes that seems to decrease constantly during the whole period (see column (2) of Table 1).

Economic theory suggests that indirect taxation affects in a similar way the high and the low-income agents and hence it is considered a regressive tax instrument. However, in the case of the Greek economy during the 19th century, there was an additional distributional implication since the Greek economy was an agrarian economy characterized by high levels of self-consumption especially in the rural areas. Thus, the rural population was able to evade indirect taxes through self-consumption and was not affected to a great extent by this type of taxes²⁴. In contrast,

²³ Increased fiscal needs during the first years after independence were mostly handled through international borrowing. More precisely, from 1824-1825 the Greek revolutionary government decided to get a loan of 70 million golden francs from abroad, then in 1833 King Otto added an international loan of 60 million golden francs (see e.g., Dertilis, 2016, pp.31-34). Major investments on fiscal capacity took place much later, especially when the Greek state faced important military challenges requiring increased tax revenues (i.e., before the Balkan Wars and WWI). This is in line with the theoretical predictions of Tilly (1990) and Dincecco and Prado (2012), who suggest that military competition promoted fiscal innovations that enabled states to raise even larger tax amounts.

²⁴ According to Dertilis (1993, pp.159-164), self-consumption is estimated around 60-70% of rural income during the 19th century.

indirect taxes affected, though not homogenously, the population that was living in urban regions, since a large number of basic goods consumed (such as wheat, textiles, and energy producing raw materials) were imported from abroad (see Dertilis, 2015, pp.1169-1171). In particular, increases in custom duties substantially harmed the welfare of poor urban citizens, since the option of self-consumption was not available, but did not considerably affect the most privileged parts of the urban population. The introduction of excises duties from Trikoupis in 1884 presented similar distributional implications between rural and urban areas, causing the poorer segments of the urban population to be the clear-cut losers from this change in fiscal policy.

2.4.2 Changes in urban taxation

Another basic characteristic of the Greek tax system was the full absence of personal income taxation until 1910²⁵. Investigating the composition of direct taxes from 1833 to 1910, several scholars have concluded that the amazing drop in *rural taxes* was accompanied by moderate increases in, or introduction of, other forms of direct taxation that fell within the categories of *trade and corporate taxes* and *capital taxes* (see e.g., Dertilis, 1993, pp.33-35). A good example is the introduction of the corporate tax rate in 1877, which contributed, on average, less than 0.5% of annual tax revenues. Therefore, despite these changes, the radical decrease in rural

²⁵ In sharp contrast, many other European countries established the personal income tax during the 19th century. More precisely, in 1842 Britain introduced a permanent tax on earned income. This was soon after followed by the Austrian Empire in 1849, Italy in 1864, Norway in 1892, and the Netherlands in 1899. In most of these countries, revenues from income tax reached 5% of total tax revenues shortly after the year of adoption of the new tax (see Aidt and Jensen, 2009a).

taxes after 1864 dominated, leading to a constant decrease in the percentage of direct taxes from 53.95% in 1864 to 20.44% in 1910.

In 1911, Eleftherios Venizelos introduced the first modern personal income tax. However, its tax rate was flat and small and tax evasion was so large that tax revenues from personal income taxation were insignificant until 1918. Its share exceeded 5% in 1919, and increased gradually thereafter. This was the main reason that the percentage of *urban taxes* increased from 6.22% during the period of 1864-1915 to 18.66% the remaining years of our sample. This change also affected the overall level of *total taxes* that increased from 13% before 1915 to 17.99% after that year (see Table 1). Notably, most of these personal income tax revenues came from labour income taxation (i.e., *payroll tax*) and a much smaller amount from other forms of income taxation (i.e., *non-payroll tax*). As can be easily understood, the *payroll tax* mostly harmed the welfare of the workers that were working in small firms and corporations established in urban regions, whereas they left relatively unaffected the peasantry of the countryside.

3. Empirical Specification

Our goal in this study is to investigate whether the observed reductions in *rural taxes* (and the corresponding increases in indirect taxes) can be attributed to the political changes of the 19th and the beginning of the 20th centuries, with priority of course in the radical reform of 1864. To test the

fiscal outcomes of democratisation in Greece, we estimate the following equation for the period of 1833-1933:

$$fiscal\ policy_t = \alpha_0 + \alpha_1 fiscal\ policy_{t-1} + \alpha_2 Democracy_t + \beta X_t + \gamma_t + \varepsilon_t \quad (1)$$

where *fiscal policy_t* stands for fiscal indicators, as described in section 2.1; *Democracy_t* is a dummy variable that takes value 1 if Greece is categorized as democratic in year *t*, according to the Boix et al. (2013) dichotomous classification, and 0 otherwise; *X_t* is the vector of control to be discussed below; *γ_t* is a trend that measures the effect of time on the dependent variable; and *ε_t* is the error term. In all specifications, in line with many previous studies (see e.g., Aidt et al., 2006), we include a lagged dependent variable on the right-hand side of our estimated equation to control for the fact that the evolution of tax policy exhibits a high degree of persistence.

Moreover, our empirical specification includes a number of covariates that are expected to affect fiscal policy. First, we consider the variable *GDP per capita*, the natural logarithm of real GDP per capita, to control for the effect of economic development on the level and composition of taxation (see Wagner, 1883). Related to that, we expect the structure of the economy, and more specifically the reliance on agricultural activity, to be a crucial determinant of the various tax bases and how taxes are levied. For this reason, we employ the percentage of population living in cities of less than two thousand people (denoted as *agricultural rate*), as proxy for the relative magnitude of the agricultural sector. Second, we employ the variable *old*, which is defined as the percentage of the population aged 65

or older. According to Lindert (1994), the ageing of the population significantly increased the demand for intergenerational redistribution in Europe during the period of 1880-1930. Therefore, we expect a positive relationship between age structure and the level of government spending.

A number of dummy variables are also included in our empirical specification. We intended to use the population size in order to control for the possibility that the public sector exhibits economies of scale (see, e.g., Mulligan et al., 2004; Aidt et al., 2006). However, we abstain from using this variable in our specification since it is highly correlated with the variable *agricultural rate*. Instead, we construct the dummy variable *population spikes*, which takes the value of 1 in the years that we observe significant increases in the population (e.g., annexation of regions), and 0 otherwise. Our next covariates allow us to control for the impact of economic crises on the implementation of fiscal policy in Greece. The variables *debt crisis* and *currency crisis* take the value of 1 if a debt (domestic or external) or a currency crisis, respectively, occurred during the year, and 0 otherwise. Finally, we include two dummy variables to control for the pressure of *internal instability* and *wars* on the implementation of fiscal policy. Appendix A1 provides descriptions, data sources, and descriptive statistics for all variables included in our regressions analysis in Section 4.

4. Results

4.1 Baseline Results

Our baseline results are reported in Table 2. In column (1), the main variable of interest, *Democracy*, bears a non-significant effect on the variable *total taxes*. This finding appears to be in contrast with the standard Meltzer and Richard (1981) framework, but it is in line with previous historical studies for Greece (see Dertilis and Kostis, 1995; Kostis, 2006, pp.307-316) suggesting that total tax revenues remained relatively stable during the 19th century. In contrast, in column (2) the variable *Democracy* enters with a negative and statistically significant coefficient at the 5% level. This empirical finding demonstrates that democratisation exerts a significant impact on the structure of taxation.

Moreover, when direct taxes are decomposed between *rural taxes* and *urban taxes* in columns (3) and (4), respectively, we see that *Democracy* has a negative and highly significant coefficient in the former, whereas no effect is found on the latter. On top of that, in column (5) to (8), where *urban taxes* are further disaggregated between (1) *payroll taxes*, (2) *non-payroll taxes*, (3) *trade and corporate taxes*, and (4) *capital taxes*, democratisation seems to exert a positive and statistically significant impact solely on *payroll taxes*. In particular, in column (5), *Democracy* enters with a positive and highly significant coefficient, indicating the positive effect of democratisation on personal income taxes from labour income. Finally, in columns (8) and (9), we investigate the impact of democratisation on the composition of indirect taxes. As can be seen, *Democracy* bears a positive coefficient in both *customs taxes* and *market taxes* at the 5% and 10% levels, respectively.

Table 2. Fiscal effects of Democratization in Greece

| Dependent variable: | (1) <i>total taxes</i> | (2) <i>direct/indirect</i> | (3) <i>rural taxes</i> | (4) <i>urban taxes</i> | (5) <i>payroll taxes</i> | (6) <i>non-payroll taxes</i> | (7) <i>trade and corp. taxes</i> | (8) <i>capital taxes</i> | (9) <i>customs taxes</i> | (10) <i>market taxes</i> |
|----------------------------------|---------------------------|-------------------------------|---------------------------|---------------------------|-----------------------------|---------------------------------|-------------------------------------|-----------------------------|-----------------------------|-----------------------------|
| <i>Democracy</i> | 0.281 (0.652) | -0.123** (0.051) | -4.571*** (1.692) | -1.145 (1.204) | 0.624*** (0.157) | 0.043 (0.155) | -0.040 (0.302) | -0.457 (0.325) | 4.530** (1.851) | 1.940* (1.071) |
| <i>lagged dependent variable</i> | 0.814*** (0.066) | 0.478*** (0.098) | 0.446*** (0.109) | 0.788*** (0.123) | 0.583*** (0.163) | 0.634*** (0.103) | 0.160 (0.176) | 0.500*** (0.123) | 0.636*** (0.081) | 0.932*** (0.044) |
| <i>GDP per capita</i> | -0.179 (1.445) | 0.465 (0.286) | 3.657 (3.876) | 0.186 (1.257) | -0.077 (0.253) | 0.234 (0.151) | -0.180 (0.545) | 0.041 (0.654) | -4.034 (3.333) | 2.868 (2.082) |
| <i>agricultural rate</i> | -0.166 (0.157) | -0.024 (0.017) | -0.067 (0.379) | 0.006 (0.250) | -0.174*** (0.058) | -0.018 (0.038) | 0.197*** (0.055) | 0.205** (0.082) | 0.291 (0.372) | -0.268 (0.214) |
| <i>old</i> | 0.495 (0.465) | 0.126 (0.077) | 1.169 (1.069) | 1.232** (0.491) | 0.327** (0.125) | 0.143** (0.059) | -0.172 (0.140) | -0.029 (0.134) | 0.092 (0.939) | -0.663 (0.649) |
| <i>population spikes</i> | -0.591 (0.655) | 0.010 (0.064) | 0.178 (1.603) | -0.964 (1.706) | -0.208 (0.179) | -0.041 (0.092) | -0.203 (0.213) | 0.253 (0.360) | 1.813 (3.524) | -0.848 (1.150) |
| <i>debt crisis</i> | -0.990* (0.567) | 0.027 (0.041) | 3.092*** (1.070) | -0.397 (0.388) | 0.173 (0.109) | 0.184* (0.099) | -0.306** (0.136) | 0.296* (0.166) | -0.202 (1.141) | -0.600 (0.819) |
| <i>currency crisis</i> | 0.015 (0.746) | -0.195*** (0.043) | -2.297 (1.397) | -7.645*** (2.768) | 1.538** (0.748) | 0.785*** (0.293) | -0.314 (0.423) | -0.333 (0.534) | 6.113** (2.678) | 4.455*** (1.288) |
| <i>internal instability</i> | -2.882*** (0.815) | -0.063 (0.062) | 0.454 (1.342) | -1.482 (0.948) | -0.028 (0.126) | -0.095 (0.084) | 0.481 (0.400) | 0.104 (0.363) | -0.759 (1.998) | 3.012* (1.539) |
| <i>wars</i> | -0.259 (0.538) | 0.018 (0.045) | 0.021 (1.407) | 0.813 (0.612) | 0.067 (0.144) | 0.026 (0.074) | 0.069 (0.269) | -0.437* (0.240) | -1.374 (1.494) | 0.049 (0.865) |
| <i>Observations</i> | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| <i>R2</i> | 0.897 | 0.920 | 0.975 | 0.925 | 0.939 | 0.898 | 0.784 | 0.823 | 0.776 | 0.975 |

Notes: The table reports OLS estimates All estimates include an intercept and a time trend. Robust standard errors are reported in parentheses. *** denotes significance at 1% level, ** denotes significance at 5% level and *denotes significance at 10% level.

Our empirical findings suggest that the swift in the political regime led to significant changes in the tax structure, and more precisely to fiscal redistribution from urban to rural areas. This is because democratisation reduced *rural taxes* (i.e., land and assessed taxes), which were the basic tax categories that burdened the agricultural population in the countryside. It must be noted that since Greece was characterized by a relatively equal distribution of land during that period, decreases in *rural taxes* did not exhibit significant distributional implications between small farmers and large landowners²⁶. At the same time, increases in *custom taxes* and *market taxes* that also came as a result of democratisation were also in favour of the rural population and at the expense of the urban population because the rural population was able to evade indirect taxes through self-consumption, whereas the population in urban regions, including its poorer segments, did not exhibit such an option (see Dertilis, 1993). Moreover, our analysis suggests that high income agents of the cities were not significantly affected by the policies implemented after democratisation, as indicated by the effect of the latter on the main components of *urban taxes*, namely *trade and corporate taxes* and *capital taxes*. The only urban tax category that seems to be affected positively after the franchise reform is *payroll taxes*, a sub-component of income tax. However, the share of this tax remained at low levels after its introduction in 1911, and most

²⁶ In practice, Greek governments nationalized the great bulk of lands that had belonged to Ottoman landowners after independence.

importantly this tax mostly affected the welfare of the working class of the cities.

It should be noted that the fiscal effects of democratisation are consistent with our theoretical priors, given that Greece was a severely underdeveloped economy –much behind the other European economies – without significant fiscal capacity that would allow for replacing the decreasing *rural taxes* with other forms of direct taxation. We observe instead that *rural taxes* were replaced with indirect taxes, changing the composition of taxation but leaving the overall level of total taxes unaffected. Overall, this shift in fiscal policy after democratisation indicates that the rural population, as opposed to the low-income agents of the cities who could not evade indirect taxes, was favoured, whereas the wealthiest citizens of Greece were left untouched. More importantly, these findings clearly demonstrate the political economy motivation of the Greek governments that altered the composition of taxation to ensure a minimum level of social consensus and to satisfy the large majority of the voters who were peasants and farmers living in rural areas (see Dertilis, 1993, 2004; Palairret, 1979)²⁷.

We also estimate the long-run effect of democratisation on fiscal policy instruments. To do so, the coefficient of the variable *Democracy* (α_2) from equation (1) should be divided by $(1 - \alpha_1)$, where α_1 is the coefficient of the lagged dependent variable. According to our estimates,

²⁷ Consistent with this argument, Kammass and Sarantides (2016) show that when the democratic regime is not fully consolidated (i.e., in a new democracy), incumbents implement pre-electoral redistributive policies in order to signal that “democracy works”, thereby preventing a reversion to an autocratic status quo ante at a time of the regime’s extreme vulnerability. Similarly, Brender and Drazen (2007) suggest that the attitude of the citizenry towards democracy is important in preventing democratic collapse, and fiscal manipulation can act as an instrument to convince them that “democracy works”.

the change in the composition of taxation in favour of indirect taxes is driven mainly by the long-run decrease in the share of *rural taxes* by 8.25%, and by the long-run increase in the share of *customs taxes* by 12.46%. Given that the mean value of the former is 32.48% and of the latter is 34.07%, it is clear that this effect is quantitatively sizable. Interestingly, the significant short-run effect of democratisation on *market taxes* does not seem to survive in the long-run. More specifically, the high degree of persistence in *market taxes* generates a sizeable long-run effect of democratisation (28.5%), which is though statistically insignificant.

To close, we discuss our empirical findings concerning the rest of the covariates reported in Table 2. First, as expected, the lagged dependent variable bears a positive and statistically significant coefficient in all but one of our estimates²⁸. Moreover, we observed that the variables that capture the level of economic development, namely *GDP per capita* and *agricultural rate*, enter with non-significant coefficients in most of the specifications. As expected, the variable *debt crisis* decreases the size of tax revenues, whereas the variable *currency crisis* is found to decrease the share of direct to indirect taxes mainly through its negative impact on *urban taxes*. Finally, the variable *internal instability* deteriorates the level of tax revenues, while the variable *wars* negatively affects the share of *capital taxes*.

²⁸ To assess if the high degree of persistence of some of our estimates can affect the interpretation of our results, we transformed equation (1) to an Error Correction Model. The qualitative and quantitative results we obtain for the long-run effect of democratisation on fiscal instruments are essentially the same as those obtained from the estimates in Table 2.

4.2. Sensitivity analysis

In this section, we examine the robustness of the results obtained in Table 2. As a first step, we examine if our findings are sensitive to the dichotomous variable we employed so far to measure *Democracy*. More precisely, in Table 3 we substitute Boix et al.'s (2013) measure with the variable *Polity2* from the Polity IV Project (Marshall and Jaggers, 2010)²⁹. This index has been applied as a tool to classify political regimes (democracy versus autocracy) in a large number of studies (see e.g., Haber and Menaldo, 2011; Harrison and Wolf, 2012), though a closer look at it suggests that it mainly focuses on the institutional side of political competition (see, Vanhanen, 2000). However, it offers the advantage of varying from -10 (extreme autocracy) to +10 (perfect democracy), thus allowing for more variation in the sample. Moreover, in the case of Greece, the sharp changes in the index coincide with institutional changes that affected all aspects of the political regime. As shown in panel A of Table 3, our empirical findings remain qualitatively identical to those depicted in Table 2. More precisely, we observe a negative impact of *Polity2* on the ratio of direct to indirect taxes, which is mainly driven by changes in the composition of taxation between rural and indirect taxes. Interestingly, we also observe a negative effect on *capital taxes*, a small component of direct taxation levied mostly on the wealthiest citizens of Greece.

²⁹ This variable has missing values for the years 1916-1919. To avoid any loss of information from our sample, we bridge this gap by replacing the missing observations with the value 1, which is the value *Polity2* receives the years just before and after the gap period, namely the years 1915 and 1920. Alternatively, we run our estimates without this modification and our results, which are available upon request, remain essentially the same.

Table 3. Fiscal effects of Democratization in Greece: Robustness checks

| Dependent variable: | (1) <i>total taxes</i> | (2) <i>direct/indirect</i> | (3) <i>rural taxes</i> | (4) <i>urban taxes</i> | (5) <i>payroll taxes</i> | (6) <i>non-payroll taxes</i> | (7) <i>trade and corp. taxes</i> | (8) <i>capital taxes</i> | (9) <i>customs taxes</i> | (10) <i>market taxes</i> |
|--|----------------------------------|--------------------------------------|----------------------------------|----------------------------------|------------------------------------|--|--|------------------------------------|------------------------------------|------------------------------------|
| Panel A: Using alternative measure of democracy | | | | | | | | | | |
| <i>Polity2</i> | -0.002 (0.057) | -0.011** (0.005) | -0.425*** (0.160) | -0.160 (0.118) | 0.067*** (0.017) | 0.006 (0.015) | -0.012 (0.026) | -0.054* (0.031) | 0.410*** (0.136) | 0.161* (0.086) |
| <i>Observations</i> | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| <i>R2</i> | 0.897 | 0.920 | 0.975 | 0.926 | 0.943 | 0.898 | 0.785 | 0.829 | 0.777 | 0.975 |
| Panel B: Testing for outliers | | | | | | | | | | |
| <i>Democracy</i> | 0.499 (0.510) | -0.100** (0.040) | -2.470** (1.270) | -1.382** (0.693) | 0.467*** (0.099) | 0.289*** (0.033) | 0.012 (0.170) | -0.331** (0.165) | 3.740** (1.454) | 1.624* (0.847) |
| <i>Observations</i> | 93 | 95 | 95 | 95 | 97 | 93 | 95 | 94 | 93 | 94 |
| <i>R2</i> | 0.930 | 0.970 | 0.985 | 0.982 | 0.991 | 0.989 | 0.891 | 0.932 | 0.855 | 0.983 |
| Panel C: Sample 1844-1915 | | | | | | | | | | |
| <i>Democracy</i> | -1.402 (1.470) | -0.284** (0.134) | -11.047*** (3.570) | 0.331 (0.317) | - | 0.071** (0.029) | 0.210 (0.154) | -0.230 (0.294) | 5.315 (4.178) | 6.323*** (2.118) |
| <i>Observations</i> | 72 | 72 | 72 | 72 | - | 72 | 72 | 72 | 72 | 72 |
| <i>R2</i> | 0.752 | 0.900 | 0.963 | 0.949 | - | 0.834 | 0.919 | 0.895 | 0.760 | 0.976 |

Notes: The table reports OLS estimates. All models control for the lagged dependent variable, GDP per capita, agricultural rate, old, population spikes, debt crisis, currency crisis, internal instability, wars, but these coefficients are not reported to save space. Robust standard errors are reported in parentheses. *** denotes significance at 1% level, ** denotes significance at 5% level and * denotes significance at 10% level.

Our next robustness check is to ensure that the results presented in Table 2 are not influenced by outlier observations. For this reason, we rerun the estimates from Table 2 without observations with a standardized residual above 1.96 or below -1.96. As can be seen in panel B of Table 3, our results confirm our previous findings concerning the fiscal effects of democratisation in Greece³⁰. The only notable difference is that, according to the results in column (6), *non-payroll taxes* seem to increase after democratisation. If we relate this result with the decrease in *capital taxes*, we have indications that part of the tax revenues that burdened affluent citizens before 1910 were transformed to *non-payroll taxes* after 1911, when income taxation was introduced. However, it should be noted that the overall share of both tax categories, *capital taxes* and *non-payroll taxes*, is disproportionally small to the tax bases on which they were levied.

Finally, we check if our results continue to hold when restricting our sample between the years 1844 and 1915. Our motivation is twofold. First, as already mentioned, the first significant political reform that increased the political power of the agricultural population took place in Greece in 1844. Therefore, if our results in the restricted sample continue to hold, we demonstrate that the second more radical constitution of 1864 is indeed the significant reform that drives our result. Second, we choose to limit our sample to prior to 1915, since until that year, the major instruments of direct taxation of the Greek state remained broadly the same. The two exceptions are the introduction of the corporate tax in

³⁰ Our results remain essentially the same if, alternatively, we drop observations with a Cook's distance larger than $4/n$, where n is the number of observations.

1877 and that of the personal income tax in 1911. However, both taxes, until 1915, contributed an amount close to 1% of total tax revenues to the public budget. Therefore, limiting our sample until 1915 allows us to exclude the possibility that the negative effect found on *rural taxes* after 1864 is driven by their replacement by other direct forms of taxation that potentially could have burdened the rural population. As can be seen in panel C of Table 3, our main results regarding the change in the level and composition of taxation after 1864 continue to hold. A notable expectation is that the effect of the reform seems even more detrimental to the share of direct to indirect taxes, mainly because its effect on *rural taxes* and *market taxes* is more than doubled in comparison to our baseline specification³¹.

5. Fiscal Effects of Democratisation in Europe

As already discussed, the structure of the Greek economy differs significantly from those of other European countries that democratised during the 19th or the beginning of the 20th century. To demonstrate this, in Figure 1 we depict the prevalence of the agricultural sector in Greece and eight other European countries for the year 1864 that we observe the big reform in Greece³². It is evident that Greece is a notable case, since

³¹ We cannot obtain any estimates in the specification of column (5), since the payroll tax was introduced after 1915.

³²As already mentioned, for the case of Greece we proxy the size of the agricultural sector using the percentage of population living in cities of less than two thousand people, given that occupational statistics are not available from the beginning of our sample. However, as noted in footnote 7, the

upon democratisation, the agricultural sector dominates the economy (76%). In contrast, for the other European countries, on average, the workforce occupied in agriculture is 47.2%, which indicates that other sectors of the economy (e.g., industrial activity) were significantly more developed. Therefore, one important aspect of the Greek democratisation is that it can be characterised as premature, since it took place when the domestic economy was still purely agrarian. On top of that, most other European countries that were already significantly more developed than Greece in 1864 democratised much later chronologically (e.g., the UK). Figure 2 illustrates this point by plotting the prevalence of the agricultural sector upon democratisation, according to Boix et al.'s (2013) classification, for Greece and 12 other European countries³³. Three points are worth noting about this Figure. First, the only country, according to Boix et al. (2013), that democratised before Greece, is Switzerland in 1856, with almost 80% of the adult male population enfranchised (Flora et al., 1983). Second, and more importantly, the agricultural sector the year of democratisation for the sample of other European countries is half to that of Greece, namely 38%³⁴. Third, it is evident that some countries (e.g., Finland and Italy) are closer to the Greek case, whereas other differ significantly. For instance, Sweden, which was already a more developed

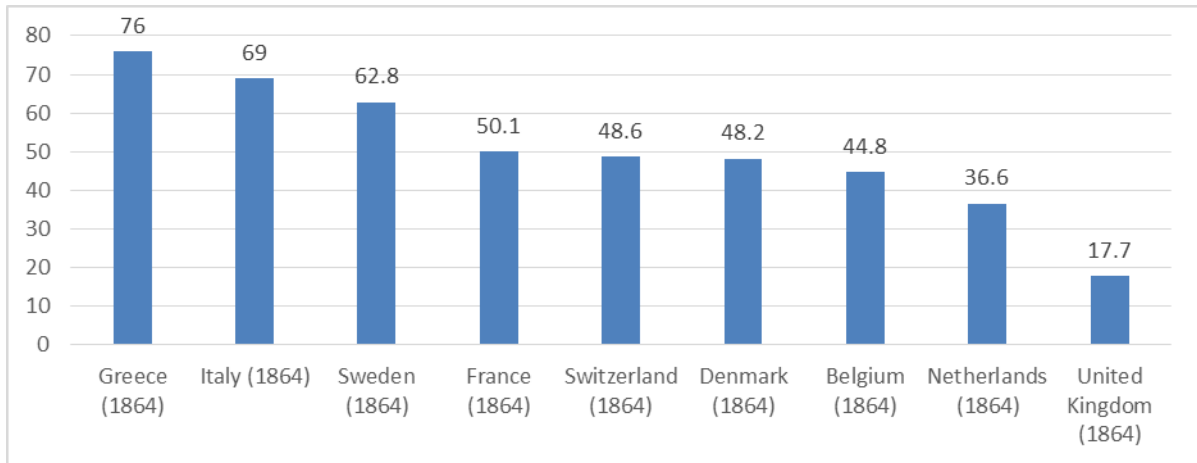
values of our proxy with that of the workforce occupied in the agricultural sector (%), in the first census that occupational statistics were reported in 1861, are essentially the same.

³³ The number of countries in the two figures is dictated by data availability.

³⁴ This difference between Greece and Europe is rather understated, if we consider that Boix et al.'s (2013) classification requires, among others, more than 50% of the male population to be enfranchised for a country to be qualified as democratic. In the case of Greece after the big voting reform in 1864 almost 100% of the male population was granted voting rights. So, if we consider 100% of male population (or 50% of total population) as the threshold of democratisation for European countries as well, we move democratisation in many cases to much later chronologically, making the distance between Greece and Europe even more significant.

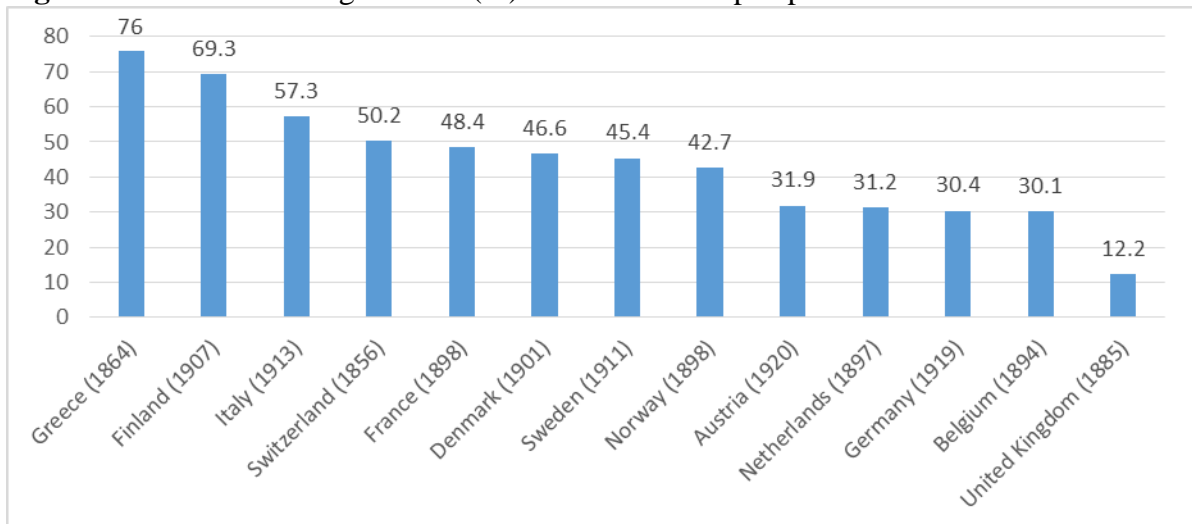
economy in 1864, democratised 47 years later than Greece in 1911, when the agricultural sector no longer dominates the economy.

Figure 1. Workforce in Agriculture (%): Greece vs Europe in 1864



Notes: In the parenthesis, next to the country name, the year of Greek democratisation is reported. Source, Boix et al. (2013). For Greece, we proxy for the workforce in agriculture (%) using the percentage of population that lives in cities of less than two thousand people, as obtained by Dertilis (1993). For all other European countries, the variable workforce in agriculture (%) is obtained from Banks and Wilson (2015).

Figure 2. Workforce in Agriculture (%): Greece vs Europe upon democratisation



Notes: In the parenthesis, next to the country name, the year of democratisation is reported. Source, Boix et al. (2013). For the workforce in agriculture (%) statistics see Figure 1.

As can be seen in Figure 2, the European countries of our sample are Austria, Belgium, Denmark, Finland, France, Germany, Italy, Norway, the Netherlands, Sweden, Switzerland, and the United Kingdom. To test the effect of democratisation on fiscal outcomes for this group of countries, we estimate the following equation for the period 1841-1933³⁵:

$$fiscal\ policy_{it} = \alpha_0 + \alpha_1 fiscal\ policy_{it-1} + \alpha_2 Democracy_{it} + \alpha_3 agricultural\ rate_{it} + \alpha_4 Democracy_{it} * agricultural\ rate_{it} + \beta X_{it} + \gamma_i + \delta_t + \varepsilon_{it}$$

(2)

Where *fiscal policy_{it}* is a fiscal indicator in country *i* in year *t*; *fiscal policy_{it-1}* is the respective lagged dependent variable³⁶; *Democracy_{it}* is a dummy variable that takes value 1 if country *i* in year *t* is categorized as democratic, and 0 otherwise; *agricultural rate_{it}* is the percentage of the workforce in agriculture; *X_{it}* is the vector of additional control variables; γ_i and δ_t correspond to country and time fixed effects, respectively, and ε_{it} is the error term. As can be seen, equation (1) has been augmented with the interaction term

*Democracy_{it} * agricultural rate_{it}*, in order to test whether the phase of economic development and consequently the structure of the domestic

³⁵ Although for some countries fiscal data are available from year 1833 onwards (e.g., UK, France), due to data limitations of other variables, our sample starts in 1841.

³⁶ The inclusion of a lagged dependent variable introduces a potential bias in the dynamic Fixed Effects model by not satisfying the strict exogeneity assumption of the error term ε_{it} . As shown in the literature, the estimated bias of this formulation is of order $1/T$, where *T* is the time length of the panel, even as the number of countries becomes large (see, among others, Nickell, 1981). However, the average length of our panel ranges between 41 and 60 years in the different specifications making the bias negligible.

economy around the time of democratisation is a decisive determinant of the development of the tax system.

According to the literature, the need for public investment in human capital to complement the production process upon and during industrialisation (Galor, 2005) is more likely to manifest in implemented fiscal policies when the poorer segments of the society are part of the democratic institutions (see Justman and Gradstein, 1999; Lizzeri and Persico, 2004; Aidt et al., 2010). Simultaneously, the provision of public education that increases the literacy rate of the domestic population works to improve the tax collection capacity of the state and the reliance on direct forms of taxation (see Aidt and Jensen, 2009b). Thus, as the level of development increases, democratically elected governments gradually should rely more heavily on direct forms of taxation that in turn can enlarge the level of government spending.

The focus on the 12 European countries is due to the fact that Flora et al. (1983) provide directly comparable fiscal data to that employed for the case of Greece. Moreover, although these European countries had significant differences in the rules and institutions that governed fiscal policy during that period, they share similar economic and political characteristics that make them an appealing sample for panel analysis³⁷. The tax variables that we employ in this section are identical to those of Section 4, with only one exception. In particular, Flora et al. (1983) do not provide a decomposition of income taxes to payroll and non-payroll taxes. For this reason, we are restricted to using the variable *income taxes*,

³⁷ An obvious example is the case of Germany, where the central government reserved the right to levy and collect a significant amount of direct taxes close to the beginning of WWI (Ritschl, 2003).

which is defined as the percentage of income taxes to total tax revenues. In the few cases where tax data is missing, we fill in the gaps with linear interpolation (see e.g., Aidt et al., 2006). This strategy aims to maximize data coverage, but by no means has affected our qualitative results³⁸.

The same methodology has been applied, when needed, to the control variables, which choice of source has also been dictated by our priority to maximize data availability. We include the same controls as in Section 4, with only one exception³⁹. More specifically, for the case of Greece we preferred the variable *population spikes* because the actual population size was highly correlated with the *agricultural rate*. However, in the case of European countries we do not face the same limitation. For this reason, we construct the variable *population*, which is defined as the natural logarithm of the population of the country. Appendix A2 provides descriptions, data sources, and descriptive statistics for all variables included in our regressions analysis in Section 5.

³⁸ We have to note that in cases where we observe inconsistencies in the classification of tax revenues in the various tax categories, observations are excluded from the estimates. For instance, observations for Belgium during 1923-1925 and 1930-1937 of the variable *rural taxes* are excluded from the specification, because trade and income tax are included in land tax.

³⁹ It should be noted that in many relevant studies the main explanatory variable is continuous (see e.g., Aidt et al., 2006; Aidt and Jensen, 2009b), rather than dichotomous, as in our case, and captures the extensions or the contradictions of the voting franchise. For instance, the United Kingdom adopted four reform acts between 1832 and 1918 until all adult males were entitled to vote. Of course, in the case of Greece we observe only one big reform, which took place in 1864 establishing voting rights to almost 50% of the population. Despite this difference, we prefer to retain the dichotomous variable *Democracy* in the new specification in order to make the results of Sections 4 and 5 as comparable as possible.

Table 4. Fiscal effects of Democratization in Europe

| <i>Panel A: Estimated coefficients</i> | | | | | | | | | |
|---|---------------------|------------------------|---------------------|----------------------|---------------------|------------------------------|----------------------|----------------------|---------------------|
| Dependent variable: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | <i>total taxes</i> | <i>direct/indirect</i> | <i>rural taxes</i> | <i>urban taxes</i> | <i>income taxes</i> | <i>trade and corp. taxes</i> | <i>capital taxes</i> | <i>customs taxes</i> | <i>market taxes</i> |
| <i>Democracy</i> | 0.673*** (0.173) | 0.476*** (0.153) | 0.087 (0.325) | 5.523*** (0.945) | 2.851** (1.123) | 1.171 (0.923) | 1.597 (1.119) | -2.218** (0.719) | -2.215* (1.034) |
| <i>Democracy* agricultural rate</i> | -0.014** (0.006) | -0.010** (0.003) | -0.007 (0.012) | -0.086*** (0.017) | -0.054* (0.030) | -0.008 (0.017) | -0.022 (0.025) | 0.041* (0.019) | 0.039 (0.026) |
| <i>agricultural rate</i> | 0.014 (0.013) | 0.018** (0.007) | 0.042 (0.038) | 0.184*** (0.057) | 0.121 (0.088) | 0.057 (0.065) | 0.023 (0.032) | -0.125** (0.050) | -0.062 (0.040) |
| <i>lagged dependent variable</i> | 0.803*** (0.061) | 0.315 (0.193) | 0.920*** (0.030) | 0.751*** (0.047) | 0.772*** (0.079) | 0.797*** (0.095) | 0.544** (0.182) | 0.846*** (0.039) | 0.787*** (0.053) |
| <i>GDP per capita</i> | -2.384** (0.988) | 0.124 (0.243) | 0.686 (1.262) | 0.472 (2.375) | 1.755 (3.643) | 1.197 (1.128) | 2.261 (1.527) | -8.900** (3.182) | 9.146*** (1.974) |
| <i>old</i> | 0.401*** (0.101) | 0.001 (0.024) | -0.053 (0.149) | 0.177 (0.373) | 0.765 (0.445) | -0.233 (0.131) | 0.350 (0.428) | -0.010 (0.450) | 0.657 (0.428) |
| <i>population</i> | 1.896 (1.069) | -0.144 (0.201) | -1.953** (0.873) | 1.628 (1.648) | 2.963 (2.255) | 0.217 (0.906) | -2.808 (3.038) | 0.894 (3.980) | 4.879 (3.057) |
| <i>debt crisis</i> | -0.165 (0.177) | 0.210* (0.116) | 0.052 (0.304) | -0.048 (1.687) | -0.175 (1.371) | 0.743 (0.508) | 1.173 (1.336) | -2.367 (1.906) | 2.196 (2.423) |
| <i>currency crisis</i> | 0.097 (0.234) | 0.052 (0.091) | -1.119 (0.953) | 2.118 (1.220) | 3.168 (2.022) | 0.116 (0.341) | 0.231 (1.171) | -2.939** (1.137) | 2.162* (1.060) |
| <i>internal instability</i> | -0.418 (0.852) | 0.424 (0.280) | 0.195 (0.541) | 1.211 (3.375) | -1.443 (3.083) | -0.670 (0.652) | 0.045 (0.451) | 1.053 (2.404) | 0.338 (2.266) |
| <i>wars</i> | 0.130 (0.076) | -0.039 (0.032) | 0.124 (0.103) | -0.292 (0.439) | -0.484 (0.549) | 0.058 (0.210) | 0.763 (0.611) | -0.465 (0.417) | 0.831* (0.407) |
| <i>Observations</i> | 449 | 681 | 687 | 687 | 681 | 681 | 681 | 681 | 681 |
| <i>R2</i> | 0.971 | 0.837 | 0.989 | 0.953 | 0.934 | 0.905 | 0.661 | 0.988 | 0.972 |
| <i>Panel B: Estimated Fiscal Effects of Democracy for Different Values of the agricultural rate</i> | | | | | | | | | |
| <i>agricultural rate = 23.19</i> | 0.340* (0.170) | 0.240** (0.080) | -0.086 (0.149) | 3.538*** (0.735) | 1.597* (0.745) | 0.993 (0.627) | 1.082 (0.607) | -1.277*** (0.374) | -1.310** (0.544) |
| <i>agricultural rate = 38.24 (mean)</i> | 0.123 (0.218) | 0.087* (0.045) | -0.198 (0.212) | 2.249*** (0.687) | 0.783 (0.794) | 0.878 (0.506) | 0.747* (0.395) | -0.666* (0.319) | -0.722 (0.430) |
| <i>agricultural rate = 68.34</i> | -0.309 (0.362) | -0.220** (0.095) | -0.421 (0.520) | -0.329 (0.845) | -0.846 (1.428) | 0.647 (0.600) | 0.078 (0.763) | 0.555 (0.715) | 0.454 (0.940) |

Notes: Panel A reports OLS estimates. All estimates include a full set of country and year fixed effects. Robust standard errors, clustered by country are reported in parentheses. Panel B reports estimates of the derivative of the variable *agriculture rate* with respect to the variable *Democracy* with controls set at the mean. *** denotes significance at 1% level, ** denotes significance at 5% level and * denotes significance at 10% level.

Table 4 reports our results for the European countries. As can be seen in panel A, the variable *Democracy* is positively correlated with *total taxes* and the share of direct to indirect taxes. Moreover, we observe that these changes are driven by the increase in *incomes taxes* and the decrease of both categories of indirect taxes, *customs taxes*, and *market taxes*. However, and more importantly, these effects are conditional on the structure of the economy as revealed by our results for the interaction term *Democracy*agricultural rate*. The interaction term is negative and statistically significant when related to the variables *total taxes*, *direct/indirect*, *urban taxes*, and *income taxes*, while the opposite holds when related to *customs taxes* – the effect on *market taxes* is also positive but marginally insignificant. Therefore, our empirical findings suggest that the phase of economic development, and the consequent structure of the economy, result in a differentiated effect of democratisation on the size and structure of taxation.

To further elucidate this, we calculate the partial derivative for each dependent variable in Table 4, with respect to the variable *Democracy* at reasonable values of the *agricultural rate*. Specifically, these values are the mean of our sample (38.24), one standard deviation below the mean (23.19) and two standard deviations above the mean (68.34). The lower value, 23.19, corresponds to countries like the UK, where upon democratisation other sectors beyond the agricultural occupy the vast majority of the workforce. The higher value of 38.24 captures cases like Norway, where the agricultural sector is at the margins to be the most crowded segment of the society, and finally the value 68.34 is close to

cases like Finland or Italy, where after democratisation the majority of the workforce is occupied in agriculture. In panel B of Table 4 we report the marginal effect of democratisation for each of these three values reported above.

What we observe is that for the latter case the agricultural sector dominates the economy, the size of the public sector remains unaffected after democratisation. Interestingly, and consistent to the results we obtained for Greece, the only significant effect is the change of the composition of tax revenues in favour of indirect forms of taxation. At the mean of our sample, democratisation still has no effect on the size of the public sector, but the composition of tax revenues changes now in favour of direct forms of taxation like *capital taxes*, as can be seen in column (7). Finally, at lower values of the *agricultural rate* democratisation has a positive effect on the size of the public sector, and on direct forms of taxation like *income taxes* as can be seen in column (5)⁴⁰. Overall, these results are consistent with our expectations that the effect of democratisation on the size and the structure of the tax system would differ significantly between agricultural and industrial economies, e.g., Finland or Greece vs the UK.

⁴⁰ We have conducted various robustness tests in order to check the sensitivity of our results. For instance, we have checked if our results are affected by outlier observations or the inclusion of additional control variables. However, in both cases our results are in line with those depicted in Table 4.

6. Discussion

The main concern of the Greek governments during the first decades after independence was the legitimization of their authority. This could be achieved by ensuring a minimum level of social cohesion and by convincing the citizens of the young Greek state that public demand for equality is going to be satisfied. On this basis, a number of political and economic benefits were provided to middle and low income agents from the very first day after independence. However, fundamental economic reforms took place later and, in particular, after the constitution of 1864 that established a political regime of parliamentary democracy, universal male suffrage, and equality of political rights.

According to Dertilis (2015, pp.769-772), the franchise reform of 1864 was accompanied by three significant economic reforms, all of which were in favour of the rural population. The first economic reform was the distribution of the so-called “public lands” to small peasants and landless sharecroppers in 1871. This was accompanied by a second land redistribution in 1924 of the large-land estates that were located mostly in Thessaly. The second reform was related to changes that took place during the 1860s in the functioning of the banking system, which allowed the rural population to gain access to low-cost credit from the banks. This low-cost credit was further increased after 1928 through the creation of the Agricultural Bank of Greece. Finally, the third key economic reform was the restructuring of the implemented tax policy. As we have already noted, the tax burden on land (i.e., *dekati* and *epikarpia*) started to decline in 1845 and was then reduced more radically after 1864.

Decreases in land taxation that took place during that period were accompanied by remarkable increases in indirect taxes. Once again, both changes in taxation were in favour of the agricultural population.

This paper places the spotlight on the third economic reform and investigates empirically whether franchise extension was the driving force behind observed changes in implemented tax policy. Building on a unique tax dataset that contains 13 different tax categories of Greek state during the period 1833-1933, our empirical analysis clearly identifies that the extension of the voting franchise in 1864 did not affect the level of taxation, but significantly changed its structure in favour of the rural population. These findings support the hypothesis of the political economy motives behind the changes in the composition of taxation. In other words, Greek governments proceeded to change taxes in order to ensure a minimum level of social consensus and to satisfy the large majority of the voters who were peasants and farmers living in rural areas. At the same time, in more industrialised European economies, democratisation revealed the political preferences of a more urbanized electorate (mostly consisting of workers and middle class capitalists), and thus led to a different pattern of development of the tax system.

Appendix

A1: Summary statistics of variables used in section 4 (Greece)

| Variable | Description | Obs. | Mean | SD | Min | Max | Source |
|------------------------------------|---|------|--------|--------|--------|--------|--|
| <i>Democracy</i> | Dummy variable that takes the value of one whenever the political regime in Greece is categorised as democratic, and 0 otherwise | 101 | 0.584 | 0.495 | 0 | 1 | Boix et al. (2013) |
| <i>Polity2</i> | Index variable that ranges -10 (extreme autocracy) to +10 (perfect democracy) | 101 | 4.515 | 6.162 | -6 | 10 | Marshall and Jagers (2010) |
| <i>total taxes</i> | Total tax revenues as a share of GDP (%) | 101 | 13.773 | 4.072 | 5.900 | 26.743 | Own calculations based on DPH and Kostelenos et al. (2007) |
| <i>rural taxes</i> | Sum of land and assessed taxes as a share of total tax revenues (%) | 101 | 32.485 | 21.501 | 3.035 | 75.518 | Own calculations based on DPH |
| <i>urban taxes</i> | Sum of income, trade, corporation, property, inheritance, extraordinary and other direct taxes as a share of total tax revenues (%) | 101 | 7.151 | 6.631 | 0.000 | 31.769 | Own calculations based on DPH |
| <i>payroll taxes</i> | Payroll taxes as a share of total tax revenues (%) | 101 | 0.540 | 1.372 | 0.000 | 5.316 | Own calculations based on DPH |
| <i>non-payroll taxes</i> | Non-payroll taxes as a share of total tax revenues (%) | 101 | 0.310 | 0.744 | 0.000 | 3.168 | Own calculations based on DPH |
| <i>trade and corporation taxes</i> | Sum of trade and corporation taxes as a share of total tax revenues (%) | 101 | 2.684 | 1.121 | 0.000 | 5.733 | Own calculations based on DPH |
| <i>capital taxes</i> | Sum of property and inheritance taxes as a share of total tax revenues (%) | 101 | 2.146 | 1.297 | 0.000 | 5.854 | Own calculations based on DPH |
| <i>customs taxes</i> | Customs taxes as a share of total tax revenues (%) | 101 | 34.078 | 7.766 | 17.618 | 55.150 | Own calculations based on DPH |
| <i>market taxes</i> | Sum of excise, turnover, and other indirect taxes as a share of total tax revenues (%) | 101 | 26.286 | 13.895 | 2.495 | 47.000 | Own calculations based on DPH |
| <i>direct/indirect</i> | Ratio of direct taxes -rural and urban taxes- to indirect taxes -customs and market taxes. | 101 | 0.845 | 0.679 | 0.204 | 3.085 | Own calculations based on DPH |
| <i>GDP per capita</i> | Log of GDP per capita | 101 | 5.435 | 0.164 | 5.040 | 5.847 | Kostelenos et al. (2007) |
| <i>agricultural rate</i> | Population within Greece living in cities of less than two thousand people (%) | 101 | 70.441 | 6.302 | 56.500 | 80.000 | Dertilis (1993) |
| <i>old</i> | Population over the age of 65 as a share of total population (%) | 101 | 3.919 | 0.918 | 3.058 | 5.905 | Siampos (1973) |
| <i>population spikes</i> | Dummy variable that takes the value of 1 in the years 1864, 1881, 1913, 1920 and 1922, and 0 otherwise. | 101 | 0.050 | 0.218 | 0 | 1 | Own calculations |
| <i>debt crisis</i> | Dummy variable that takes the value of 1 the years 1833-1878, 1894-1897 and 1932-1933, and 0 otherwise. | 101 | 0.020 | 0.140 | 0 | 1 | Reinhart and Rogoff (2010) |
| <i>currency crisis</i> | Dummy variable that takes the value of 1 the years 1919-1921, 1924 and 1931, and 0 otherwise. | 101 | 0.515 | 0.502 | 0 | 1 | Reinhart and Rogoff (2010) |
| <i>internal instability</i> | Dummy variable that takes the value of 1 the years 1843, 1862, 1909 and 1916-1917, and 0 otherwise. | 101 | 0.139 | 0.347 | 0 | 1 | Own calculations |
| <i>wars</i> | Dummy variable that takes the value of 1 during the years 1866-1869, 1878, 1897, 1912-1913 and 1917-1922, and 0 otherwise. | 101 | 0.050 | 0.218 | 0 | 1 | Own calculations |

Notes: DPH= Dertilis (1993), Prontzas et al. (2011) and Historical Archives of the National Bank of Greece

A2: Summary statistics of variables used in section 5 (Europe)

| Variable | Description | Obs. | Mean | SD | Min | Max | Source |
|------------------------------------|--|-------------|-------------|-----------|------------|------------|---|
| <i>Democracy</i> | Dummy variable that equals to one whenever a political regime is characterized as democratic and 0 otherwise | 697 | 0.492 | 0.500 | 0 | 1 | Boix et al. (2013) |
| <i>total taxes</i> | Total tax revenues as a share of GDP (%) | 455 | 7.166 | 3.670 | 1.300 | 20.500 | Flora et al. (1983) |
| <i>rural taxes</i> | Sum of land and assessed taxes as a share of total tax revenues (%) | 697 | 9.026 | 9.569 | 0 | 33.800 | Own calculations based on Flora et al. (1983) |
| <i>urban taxes</i> | Sum of income, trade, corporation, property, inheritance, extraordinary and other direct taxes as a share of total tax revenues (%) | 697 | 18.803 | 15.011 | 0 | 73.500 | Own calculations based on Flora et al. (1983) |
| <i>income taxes</i> | Income taxes as a share of total tax revenues (%) | 697 | 4.240 | 5.097 | 0 | 20.800 | Flora et al. (1983) |
| <i>trade and corporation taxes</i> | Sum of trade and corporation taxes as a share of total tax revenues (%) | 697 | 8.730 | 11.689 | 0 | 72.000 | Own calculations based on Flora et al. (1983) |
| <i>capital taxes</i> | Sum of property and inheritance taxes as a share of total tax revenues (%) | 697 | 2.668 | 3.586 | 0 | 30.400 | Own calculations based on Flora et al. (1983) |
| <i>customs taxes</i> | Customs taxes as a share of total tax revenues (%) | 697 | 30.806 | 23.826 | 3.828 | 96.400 | Flora et al. (1983) |
| <i>market taxes</i> | Sum of excise, turnover, and other indirect taxes as a share of total tax revenues (%) | 697 | 41.366 | 16.025 | 0.000 | 73.900 | Own calculations based on Flora et al. (1983) |
| <i>direct/indirect</i> | Ratio of direct taxes -rural and urban taxes- to indirect taxes -customs and market taxes. | 697 | 0.456 | 0.364 | 0 | 2.773 | Own calculations based on Flora et al. (1983) |
| <i>GDP per capita</i> | Log of GDP per capita | 697 | 7.934 | 0.360 | 6.997 | 8.753 | Bolt and van Zanden (2014) |
| <i>agricultural rate</i> | Share of workforce occupied in agriculture (%) | 697 | 38.242 | 15.052 | 5.700 | 69.300 | Banks and Wilson (2015) |
| <i>old</i> | Population over the age of 65 as a share of total population (%) | 697 | 6.385 | 1.234 | 3.465 | 9.745 | Mitcell (2003) |
| <i>population</i> | Log of population | 697 | 9.233 | 1.167 | 7.497 | 11.098 | Bolt and van Zanden (2014) |
| <i>debt crisis</i> | Dummy variable that takes the value of 1 if a debt (domestic or external) crisis occurred during the year, and 0 otherwise. | 697 | 0.009 | 0.092 | 0 | 1 | Reinhart and Rogoff (2010) |
| <i>currency crisis</i> | Dummy variable that takes the value of 1 if a currency crisis occurred during the year, and 0 otherwise. | 697 | 0.047 | 0.213 | 0 | 1 | Reinhart and Rogoff (2010) |
| <i>internal instability</i> | Dummy variable that takes the value of 1 if a revolutionary event took place in a given year, and 0 otherwise. | 697 | 0.366 | 0.482 | 0 | 1 | Aidt and Jensen (2014) |
| <i>wars</i> | Dummy variable that takes the value of 1 if a country participated in an armed conflict with another country in a given year, and 0 otherwise. | 697 | 0.053 | 0.224 | 0 | 1 | Brecke (1999) |

References

- Acemoglu, D., Naidu, S., Restrepo, P., and Robinson, J. (2015). *Democracy, Redistribution and Inequality*. In A. Atkinson and F. Bourguignon (eds), *Handbook of Income Distribution*.
- Acemoglu, D., and Robinson, J., (2000). Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective. *Quarterly Journal of Economics*, 115 (4), 1167-1199.
- Aidt, T. S., Daunton, M., and Dutta, J. (2010). The retrenchment hypothesis and the extension of the franchise in England and Wales. *The Economic Journal*, 120(547), 990-1020.
- Aidt, T., Dutta, J., and Loukoianova, E. (2006). Democracy comes to Europe: Franchise expansion and fiscal outcomes 1830-1938. *European Economic Review*, 50(2), 249-283.
- Aidt, T., and Jensen, P. (2009a). The taxman tools up: An event history study of the introduction of the personal income tax. *Journal of Public Economics*, 93, 160-175.
- Aidt, T., and Jensen, P. (2009b). Tax structure, size of government, and the extension of the voting franchise in Western Europe, 1860–1938. *International Tax and Public Finance*, 16(3), 362-394.
- Aidt, T., and Jensen, P. (2014). Workers of the World, Unite! Franchise Extensions and the Threat of Revolution in Europe, 1820-1938 *European Economic Review*, 72, 52-75.
- Alivizatos, N. (2011). *The Constitution and Its Enemies: Modern Greek History 1800– 2010*, Athens: Polis Publishers (in Greek).
- Banks, A., and Wilson, K. (2015). *Cross-National Time-Series Data Archive*. Databanks International. Jerusalem, Israel.
- Besley, T., and Persson, T. (2011). *Pillars of prosperity: The political economics of development clusters*. Princeton, NJ: Princeton University Press.
- Besley, T., and Persson, T. (2013). Taxation and development, in Auerbach, A, R. Chetty, M. Feldstein, and E. Saez (eds.) *Handbook of Public Economics*.

- Boix, C., (2003). *Democracy and Redistribution*. Cambridge University Press.
- Boix, C., Miller, M., and Rosato, M. (2013). A Complete Data Set of Political Regimes, 1800–2007. *Comparative Political Studies*, 46(12), 1523 - 1554.
- Bolt, J., and Van Zanden, J. L. (2014). The Maddison Project: collaborative research on historical national accounts. *Economic History Review*, 67(3): 627-651.
- Brecke, P. (1999). Violent Conflicts 1400 A.D. to the Present in Different Regions of the World, Paper prepared for the 1999 Meeting of the Peace Science Society.
- Brender, A., and Drazen, A. (2007). Why is economic policy different in new democracies? Affecting attitudes about democracy. NBER Working Paper No. 13457.
- Dincecco, M. Prado, M. (2012). Warfare, fiscal capacity and performance. *Journal of Economic Growth* 17, 171-203.
- Dertilis, G. B. (1993). *Taxation and Political Power in Modern Greece*, Athens: Alexandria Publishers (in Greek).
- Dertilis, G. B. (2015). *History of the Greek State, 1830-1920*. (Historia tou Hellinikou Kratous, 1830-1920). Athens: pages xxiii +1123 +160 in site, Crete University Press (in Greek).
- Dertilis, G. B. (2016). *Seven wars, four civil wars, seven defaults 1821-2016*. Athens: Polis (in Greek).
- Dertilis G. B. and K. Kostis, (1995). Banking, Public Finance and the Economy: Greece, 1919-1933, in: Ch. Feinstein (ed.), *Banking, Currency and Finance in Europe between the Wars*, Oxford: Clarendon Press, pp. 458-471.
- Flora, P., Alber, J., Eichenberg, R., Krausm, J.K.F., Pfenning, W., and Seeböhm, K. (1983). *State, Economy and Society 1815-1975*. Campus Verlag, Frankfurt, Germany.
- Galor, O., (2005). From stagnation to growth: Unified growth theory, in P. Aghion and S.N. Durlauf (eds), *Handbook of Economic Growth*, Vol.1A, Elsevier North-Holland, Amsterdam.

- Galor, O., Moav, O., Vollrath, D., (2009). Inequality in landownership the emergence of human-capital promoting institutions, and the Great Divergence. *Review of Economic Studies* 76, 143-179.
- Goldin, C., Katz, L.F. (1998). The origins of technology-skill complementarity. *Quarterly Journal of Economics* 113, 693–732.
- Haber, S., and Menaldo, V. (2011). Do natural resources fuel authoritarianism? A reappraisal of the resource curse. *American Political Science Review*, 105(1), 1-26.
- Huntington, S.P. (1991). *The Third Wave: Democratization in the Late Twentieth Century*, Oklahoma: University of Oklahoma Press.
- Harrison, M. and Wolf, N. (2012). The Frequency of Wars, *Economic History Review*, 65(3), 1055-1076.
- Hobsbawm, E., (1975). The British standard of living 1790-1850, in A.J. Taylor (ed). *The standard of living debate in the industrial revolution*. pp. 58-92.
- Justman, M., and Gradstein, M. (1999). The Industrial Revolution, Political Transition, and the Subsequent Decline in Inequality in 19th-Century Britain. *Explorations in Economic History* 36(2), 109-127.
- Kalyvas, S., (2015). *Modern Greece. What everyone needs to know*. Oxford University Press.
- Kammas, P., and Sarantides, V., (2016). Fiscal redistribution around elections when democracy is not “the only game in town”. *Public Choice*, 168 (3), 279-311.
- Kostelenos, G., Vassiliou, D., Kounaris, E., Petmezas S., and Sfakianakis M. (2007). The Gross Domestic Product (1830–1939), in Sources of Economic History in Modern Greece: Quantitative Data and Statistical Series 1830-1939, Athens: National Bank of Greece.
- Kostis, K. (2006). Public Finance, in Kostis, K. and Petmezas, S. (eds) *Growth of the Greek Economy During the 19th Century*. Athens: Alexandria Publishers, pp.293-335 (in Greek).
- Llavador, H., and Oxby, R., (2005), Partisan Competition, Growth, and the Franchise, *Quarterly Journal of Economics*, 120(3), 1155- 1189.

- Lindert, P. (1994). The Rise in Social Spending 1880-1930. *Explorations in Economic History*, 31(1), 1-37.
- Lindert, P. (2004). *Growing Public: Social Spending and Economic Growth since the Eighteenth Century*. Cambridge University Press.
- Lizzeri, A., and Persico, N., (2004). Why did the elites extend the suffrage? Democracy and the scope of government with an application to Britain's "age of reform". *Quarterly Journal of Economics* 119(2), 707-765.
- Marshall, M., and Jagers, K. (2010). *Polity IV Project*, Center for Systemic Peace. Available from: www.systemicpeace.org.
- McGowan, B. (1981). *Economic Life in Ottoman Europe: Taxation, trade, and the struggle for land, 1600-1800*. Cambridge University Press.
- Meltzer, A., and Richard, S. (1981). A Rational Theory of the Size of Government. *Journal of Political Economy*, 89(5), 914-927.
- Mitchell., B. (2003). *International Historical Statistics: Europe 1750-2000*. Palgrave Macmillan. Basingstoke.
- Mulligan, C., Gil, R., and Sala-i-Martin, X. (2004). Do democracies have different public policies than nondemocracies? *Journal of Economic Perspectives*, 18(1), 51-74.
- Nickell, S. J. (1981). Biases in dynamic models with fixed effects. *Econometrica*, 49(6), 1417-1426.
- Palairat, M. (1979). Fiscal pressures and peasants impoverishment in Serbia before World War I, *The Journal of Economic History* 39, 719-740.
- Petmezas, S. (2003). *The Greek Agricultural Economy During the 19th Century*. Iraklio: Panepistimiakes Ekdoseis Kritis (in Greek).
- Profeta, P., Puglisi, R., and Scabrosetti, S. (2013). Does democracy affect taxation and government spending? Evidence from developing countries. *Journal of Comparative Economics*, 41(3), 684-718.
- Prontzas, E., Kimourtzis P., and Melios, N. (2011). *Public Revenues, 1833-1939: Sources of Economic History in Modern Greece. Quantitative data and statistical series*, National Bank of Greece, Athens 2011.

- Przeworski, A. (2006). Self-enforcing Democracy. In Donald Wittman and Barry Weingast (eds.), *Oxford Handbook of Political Economy*. New York: Oxford University Press.
- Przeworski, A. (2009). Conquered or granted? A history of suffrage extensions. *British Journal of Political Science*, 39 (2), 291–321.
- Reinhart, C., and K. Rogoff. (2011). From Financial Crash to Debt Crisis, *American Economic Review*, 101(5), 1676-1706.
- Ritschl, A. (2003). *Modern Germany*. In: Mokyr, J., (ed.), *The Oxford Encyclopaedia of Economic History*. Oxford University Press, Oxford, UK.
- Shaw, S. (1975). The Nineteenth-Century Ottoman Tax Reforms and Revenue System. *International Journal of Middle East Studies*, 6, 421-459.
- Siampos, G. (1973). *Demographic evolution of modern Greece 1821-1985*. Athens: S. Tzanettis Press. (in Greek)
- Sideris, A.I., (1931). The historical evolution of taxation on agriculture. *Archives of Economic and Social Sciences*, 11, 355-412 (in Greek).
- Szreter, S., (1997). Economic Growth, Disruption, Deprivation, Disease, and Death: On the Importance of the Politics of Public Health for Development. *Population and Development Review*, 23(4), 693-728.
- Szreter, S., and Mooney, G., (1998). Urbanization, mortality and the standard of living debate: new estimates of the expectations of life at birth in nineteenth-century British cities. *Economic History Review*, 51, 84-112.
- Tilly, C. (1990). *Coercion, capital, and European states, 990–1990*. Cambridge: Blackwell.
- Vanhanen, T. (2000). A New Dataset for Measuring Democracy, 1810-1998. *Journal of Peace Research*, 37 (2): 251–265.
- Wagner, A. (1883). *Grundlegung der Politischen Oekonomie*. 3rd ed. C.F. Winter, Leipzig.

Previous Papers in this Series

108. Tsekeris, Charalambos, Ntali, Evdokia, Koutrias, Apostolos and Chatzoulis, Athena, [Boomerang Kids in Contemporary Greece: Young People's Experience of Coming Home Again](#), March 2017
107. Theologos Dergiades, Eleni Mavragani, Bing Pan, [Arrivals of Tourists in Cyprus Mind the Web Search Intensity](#), February 2017
106. Kougias, Konstantinos, ['Real' Flexicurity Worlds in action: Evidence from Denmark and Greece](#), January 2017
105. Jordaan, Jacob A. and Monastiriotes, Vassilis, [The domestic productivity effects of FDI in Greece: loca\(lisa\)tion matters!](#), December 2016
104. Monokroussos, Platon; Thomakos, Dimitrios D.; Alexopoulos, Thomas A., [The Determinants of Loan Loss Provisions: An Analysis of the Greek Banking System in Light of the Sovereign Debt Crisis](#), November 2016
103. Halikiopoulou, Daphne, Nanou Kyriaki, Vasilopoulou Sofia, [Changing the policy agenda? The impact of the Golden Dawn on Greek party politics](#), October 2016
102. Chalari, Athanasia; Sealey, Clive; Webb, Mike, [A Comparison of Subjective Experiences and Responses to Austerity of UK and Greek Youth](#), September 2016
101. Monokroussos, Platon; Thomakos, Dimitrios D. and Alexopoulos, Thomas A., [Explaining Non-Performing Loans in Greece: A Comparative Study on the Effects of Recession and Banking Practices](#), August 2016
100. Gourinchas, Pierre-Olivier; Philippon, Thomas and Vayanos, Dimitri, [The Analytics of the Greek Crisis](#), July 2016
99. Labrianidis, Lois and Pratsinakis, Manolis, [Greece's new Emigration at times of Crisis](#), May 2016
98. Vasilaki, Rosa, [Policing the crisis in Greece: The others' side of the story](#), April 2016