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Tax incidence and fiscal systems: some problems on tax compared history in XIX and XX centuries.*

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Abstract

The study of tax systems have been deeply discussed regarding the early modern period. However, there is a lack of comparative historical studies about the last two centuries in what respect the tax state developments. In our article we analyse the tax history of the last two hundred years for five countries, intending to analyse the mechanisms levied by the different governments to efficiently collect more revenues and the power to coerce several economic agents as well as we reflect about the power of those agents to condition the tax political policies.

Keywords: Tax history; Tax developments; Fiscal systems; State building

*The opinions expressed herein are those of the author and do not necessarily reflect those of his employers. Any remaining errors are the author's sole responsibility.

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1 Introduction

The economic and institutional developments of political systems on Western World are deeply related (North (1990)). One of the reasons explaining this interdependence is the constitutional state consolidation process. In fact, political systems developments, by consolidating the constitutional state, allow greater intensity of trades in *markets*. Therefore, we cannot neglect the important role that state has in these developments. In this state consolidation process, the tax system evolution had an important impact on the political regime and, consequently, the economic performance.

Moreover, and as North and Wallis (1982) explain, governments have played an important role in boosting economic activity. In fact, over the last 200 years, and beyond the reduction costs in the production processes, the public sector has allowed the private sector to expand by reducing the transaction costs of the *markets*, enabling, as the authors say,"individuals to enter into a greater number of exchanges, and thereby encourage specialization and productivity growth". Still, the power to tax - a comparative advantage vis-à-vis the private sector, allowed the state to assume the role of reducing transaction costs and, therefore, reduced the agency problems.

Since the governments must be financed to implement policies for the improvement of economic performance, the study of taxation, the tax incidence and the tax systems composition among countries can give new insights to understand a more general framework of problems and models of income and wealth coercion. While, on the one hand, the fiscal state emergence was study comparatively in the long-run (Bonney (1999)), until the XVIII century, the raise of late modern fiscal systems have not been so reflected. Thus, we intend to analyse five countries between the XIX and XX centuries, following technical developments by the state and the raise of fiscal systems, in a historical perspective: the way of tax structure changes affects economic growth; the impacts of taxation in changing the economic agents behaviour; collect historical evidence on the practices of tax data centralization and, consequently, its impact on the efficiency of tax revenues collection; to study the trade-off between coercion and tax efficiency, analysing the costs of fiscal coercion and the various levels of public administration; and finally, give new insights about the role of interest groups on tax structure composition.

Bearing in mind the stated objectives that we intend to study, we compare both tax systems of France, Germany, Portugal, United Kingdom and United States, over the last 200 years. The choice of these economies is justified in three important aspects: 1) a demand for diversity of tax solutions and problems related to it; 2) a relative similarity in cultural and geographical terms, albeit with diversities of tax histories; 3) the relation between the scale of the territory and the financing of decision centre's process.

While the French case is a typical case of the aggregation of different territories, in the Portuguese case we have a separation of a territorial agglomeration in which the success of taxation was fundamental to preserve the political viability of the territory. On the other hand, the cases of the United Kingdom and the United States are an example of a separation between a colonial ownership (with the successive viability of a new nation) and a territory confronted with the impacts of heavy losses due to fiscal mismanagement. As for Germany, it is a classic example of unification and fragmentation of decision-making centres for reasons not necessarily related to economic aspects. This diversity of cases has allowed to make an exhaustive survey of the extent of economic problems in the field of taxation.

The chapter is organized as follows: section 2 study the tax composition and its effects on growth, the implications of taxation on economic agent's behaviour; moreover, section 3 sheds light on the relationship between the tax data centralization and the corresponding impacts on tax revenues efficiency, and also it addresses the connections between tax coercion and the different degrees of administrative divisions, as also it analyses how interest groups influence the tax structure; lastly, in section 4, we summarize our conclusions.

2 On the tax composition for the five countries

2.1 The beginning of some tax divergences

In the beginning of the XIX century, the taxes levied on the economy did not evidence similar patterns among all the countries. In fact, while the proportion of taxes levied on the French, British and American economies amounted about 10.0%, on average, during the first fifty years of that century, the revenues of the Portuguese crown were little more than a third of those economies, in GDP proportion (Bonney (2010),Cardoso and Lains (2010), Mitchell (1983) and Mitchell (1998)). In fact, the lower proportion of taxes levied on the Portuguese economy at the beginning of the nineteenth century, and compared to other countries, deserves some considerations. First, the Portuguese *Ancien Régime* was characterized by the non-monopoly of tax coercion by the crown. In fact, some Nobility and Clergy could tax, evidencing the rentier nature of Portuguese aristocracy, with negative impact for economic performance (Monteiro (2003)). Moreover, and combining the fact the most important share of revenues came from the outside of the metropolis, and the Portuguese economy backwardness had domestic reasons, help to explain the maintenance of an undeveloped tax system and, at the same time, some resistance for economic reforms that could help to improve the Portuguese economic development and, consequently to improve the Portuguese tax system (Amaral (2012)) and Costa et al. (2012)). However, with the consolidation of the liberal regime, the role of the state in the economy had grown and this fact had an extreme importance on the development of taxation and the Portuguese fiscal system during the nineteenth century (Cardoso and Lains (2010) and Costa et al. (2012)).

In what concerns the taxation composition during the first half of the nineteenth century, tax structures were markedly different among the countries under analysis. On the one hand, the French tax system was characterized by an avoidance of indirect source of taxation, influenced by the Physiocratic perspective. It somehow explains, combined with the political impacts from the French revolution, the majority share was derived from direct taxation regarding all taxes collected by the French authorities (Shoup (1955)). Moreover, Willis (1895) has indeed considered that French tax system represented a developed system in this period, in what concerns income taxation. In the beginning of the nineteenth century 46% of taxes were collected from indirect sources while 49% had origin in direct taxation, and the remaining share of revenues were part of other sources (Mathias and O'Brien (1976)).

Regarding the German case[1], the data on nineteenth century Prussia show a little more than 50% of public revenues collected from taxes. Still, between 1800 and 1812, the share of taxes on public revenues increase its importance by almost 10 p.p. representing in the latter year 64.7%. In addition, in 1820 it was promoted the introduction a progressive income tax system without disfavouring the taxation of consumption. Additionally, and due to a reform of property organization and the cease of feudal dues and services, total public property income had fallen, with the consequent increase of taxation share on public revenues, with more share of tax revenues for indirect taxation sources (Mathias and Pollard (1989)). In short, and according to Mathias and Pollard (1989), Prussian authorities had in mind two main goals: the promotion of both capital accumulation and economic growth. In what concerns the taxation on individual income and until the end of the nineteenth century, the Prussian income taxation was based on the individual social status, with no tax exemptions for low-income taxpayers. It only changed in 1851, when the Prussian system levied income taxes based on actual income, becoming socially fairer (Spoerer (2010)).

During the first half of the nineteenth century, the Portuguese case is characterized by a pro-cyclical relation between tax revenues and political stability. In fact, and after the three Napoleonic invasions to Portugal, the Portuguese tax revenues had increased between 1812 and 1817, with customs amounting between 40% and 50%. Further, in the first 30 years of that century, Portuguese authorities opted for the indirect taxation via, which represented between 52% and 65%, despite an also growth in direct taxation, which varied between 13% and 29% (Silveira (1987)). From 1834 to the end of the first half of the nineteenth century, the share of direct taxation nearly triples the value of 1834, while the revenues regarding customs remained practically unchanged, in nominal terms (Cardoso and Lains (2010)).

In England, the problems related with taxation were debated with regularity since the Glorious Revolution of 1688. In fact, discussions of how taxation could affect both economic growth and industrialization process, and how to levy taxes after the war against France (1793 to 1815), were taken not only in the parliament but also in press (Hartwell (1981)). Actually, there were the wars England was involved in, which represented a factor to rethink an old tax system that was not elastic enough to give response to collect the needed revenues to face those wars (O'Brien (1988) and Daunton (2010)).

Yet, the issued debt during the wars against Napoleon crowded out investment and, consequently, jeopardized economic growth, supporting the necessity for state financing discussions (Williamson (1984)). Yet, it was recognized by some British people that there was an *unacceptably burdensome* tax system, especially during wartime periods (Harling

[1]Due to a lack of literature, sometimes in this section we will talk only on some important German territories, highlighting the most significant tax historic episodes on those territories. In that sense, we refer explicitly what we are referring about when we talk about "Germany".

and Mandler (1993)). During the first twelve years of the nineteenth century, the share of direct and indirect taxation in public revenues amounted to an average of 30% and 70%, respectively. Moreover, the proportion of direct taxation on output ratio raise from 6% to 13%, in the same period. After the war against France, more than 75% of government revenues were collected from customs and excise (Mathias and O'Brien (1976)).

In 1815, the income tax accounted 57% and 21% for direct taxation and total public revenues, respectively. However, in 1816, the large appeals for the income tax elimination gain strength and this tax was abolished. In fact, the income tax was so unpopular that British Parliament sort the complete elimination of all records regarding this tax. Between the year of 1815 and the end of the first half of XIX century, the indirect taxation was several reformed. Those reforms, namely the repealing of some taxes whose raised revenue were considered insignificant and efficiently hard to coerce, and the reduction of tariffs on some imported goods were carried out in response to the income tax abolition and the decreasing amount of money spent by the British public authorities. In 1842, with the reintroduction of the income tax by the Peel's government, the changes regarding the disassembly of the indirect sources of taxation were reinforced. This tax philosophy had a subjacent perspective of a free-trade economy. This economic perspective, jointly with the alterations in the British tax system allowed raising the British domestic consumption. At the same time, the external trade developed, raising exports in about of 122% and imports at approximately 82% (Mathias and Pollard (1989)).

Looking for the American taxation during the first half of the nineteenth century, the public revenues had origin on import duties and lands sold by the public authorities, with a little importance of excise and direct taxes. Some political and economic events led to a change in tax dynamics. There was the case of embargo imposed to England by Thomas Jefferson, with a consequent decline on import duties revenues and the Panic of 1837 financial crisis, with a consequent decrease of 50% in federal revenues in that year (Jones and Joulfaian (1991)). The constitutional architecture emerged from the United States constitutional ratification in 1788 had the effect for indirect taxation preference as a way to finance public expenditures, without provoke political instability derived by tax discords related with direct taxation. In fact, the elimination of direct taxes by Thomas Jefferson, in 1802, demonstrate a clear option for an American economy indirectly taxed. Furthermore, with an increasing dynamics of industrialization process during the decades of 1820's and 1830's, the property tax had increased its important and raised important revenues to the government. On other side, the tariffs on imported goods did not always remain low during the first half of nineteenth century. Actually, the tariffs were reformed to increase the revenues they provided through the increase in tariffs rates, as it the case the case of 1812, and as a protection measure against the British competitiveness during the 1820's and 1830's, representing an average value of about 80% between 1830 and 1850 (Brownlee (2004)).

2.2 A Trade Age and Direct vs. Indirect Tax Frictions

The last fifty years of the nineteenth century, more concretely between 1880 and 1900 in France, is marked by a great share (between 84% and 81%) of indirect taxes in percentage of all taxes collected by the French authorities (Morgan and Prasad (2009)). Regarding international trade tax policy, the tariffs levels in France were constantly lower when compared to the values of the industrial Britain, throughout the majority of nineteenth century period (Nye (1991)). Furthermore, looking for the foreign trade policy in the last 30 years of the nineteenth century, Barnes (2011) concludes that the French protectionism justify the low relative importance of direct taxation in the set of French public revenues. In fact, direct taxes represented between 22% and 26%, during the period of 1881-1903.

On the other hand, and in the same period, the Prussian tax system was reformed. Specifically, the land tax was under debate and it culminated with its burden being redistributed differently to what had been until 1861 in order to promote the most industrialized regions in Prussia (Tilly (1966)). Additionally, the successive reforms of German tax system between 1820 and 1873 aimed the capital accumulation and, consequently, the growth of the economy (Mathias and Pollard (1989)). Between 1872 and 1874, an average of 66.2% of revenues to finance the German Reich came from taxes and tariffs while 22.7% and 4.4% had origin in net contributions from the states and public enterprises, respectively (Hefeker (2001)). At last, between the last decade of the nineteenth and the first decade of twentieth centuries, while the share of direct taxes on total ordinary revenue increased from 9.9% to 10.4%, we assist a decrease in the indirect tax importance, diminishing from 3.9% to 2.8% (Mathias and Pollard (1989)). Yet, in the last decade of the nineteenth century, it was reformed the Prussian income tax in 1891, and its complementary property tax, in 1893. This tax reform intended to replace an outdated tax system by a new universal taxation system on income and property promoting, at the same time, a fairer income distribution through taxation. The tax reforms of these two taxes led to a share of tax burden on the economic capacity to pay of each individual. Furthermore, once the taxation on capital was not detrimental to private capital accumulation and, because of that, no exemption was established for this source of income. Yet, those reforms performed in the late nineteenth century also had the objective to establish a more efficient and flexible financial regime for German local authorities (Mathias and Pollard (1989)).

In the second half of XIX century, the Portuguese finances were characterized by an unsustainable path, which led to a default in 1882. During this period, the Portuguese economic performance did not converge with some other European countries. The proportion of revenues on GDP were only 1.5 p.p. higher than in 1834. Yet, we assist to a more pronounced growth of direct and indirect taxation share, while tariffs on trade and tobacco tax lost their importance of almost 5 p.p., in the last 50 years of the nineteenth century. Overall, the Portuguese tax revenues growth originated in increases in tax rates than on tax reforms (Reis (1984), Esteves (2003), Mata and Valério (2003), Esteves (2005) and Valério et al. (2006)).

On the British case, the proportion of direct and indirect taxes represented, respectively, 30.8% and 69.2% in total revenues, at the beginning of the second half of this century. Until the end of the XIX century and the early XX century, the importance of indirect taxation felt by almost 17 p.p. to 52,4% of total revenue, with a correspondent increasing on direct taxes, reaching 47.6% in percentage of funds raised by the British governments (Matthew (1979)). The public finances during the Gladstone period was marked by a laissez-faire perspective as highlighted by Baysinger and Tollison (1980).). As the same authors refer, the Gladstonian public finances were characterized by a minimal state framework with a consequent reduction in tariffs and the elimination of the income tax. Yet, public finances period influenced by William Gladstone was characterized by a tax system with a non-intervention on industry in addition, trade philosophy, but not disregarding the distribution effects of tax policies. This balance between the reduction of taxation burden and the poorest individuals in Britain was an important reason popularity of Gladstone, amongst the taxpayers (Biagini (1991)).

Looking for the American case during the second-half of the nineteenth century, this period is decisively marked, in what respects taxation, by the introduction, for the first time, the of income tax in the beginning of the American Civil War (1861-1865), while in Europe this taxation source was already very common. The introduction of this new tax reveal to be very important in the United States tax system, representing almost 30% of total revenues in 1865 (Hill (1894)).

2.3 The Emergence of Income Taxation

In the last century, the French tax historiography is featured by the introduction of a wartime profits tax, in 1917, to obtain extra revenues to finance the World War I (WWI). Furthermore, the financial war efforts that relied on taxation represented a few proportion on the overall costs related to the war – about 16%. In fact, there was a fear feeling concerning the political stability of the French regime if taxes and tax burden increased on population (Horn (2000) and Dormois (2004)). During the WWI, the revenues in France were often constant until the end of the War. Between 1913 and 1918, the taxes, in proportion of GDP, stagnated around 10%, increasing its value for 14.1% two years after the end of the war. In addition, due to inflationary pressures and administrative causes, it was difficult to assess individuals' real income making it hard to raising income taxes during the WWI (Hautcoeur (2005)).

In the years preceding WWII, the level of taxation on national income French varied from 26.9% to 21.3% between the years 1935 and 1938, respectively (Clark (1945)). The income tax revenues increase 1,011%, from 55.7 to 619.0 thousand of millions of francs, between 1945 and 1951. In fact, this sharp growth of tax revenues on income is explained in part by the inflation phenomena. Moreover, and when comparing for the evolution of taxes on income in thousands of millions of 1938 francs, the real variation of taxes collected only varied about 100%. Nonetheless, income tax as a proportion of total government revenue increased from 15% to 28.6%, between 1938 to 1951, reflecting an economic activity increase after the WWII and an improvement, since 1949, in efficient tax method to collect taxes on income (Lynch (1997)).

Meanwhile, one year before the beginning of the WWI, the German revenues had the following structure: 35.6% was from taxes on income and property; 21.1% had origin on consumption taxes and 7.0% was levied by transaction taxes while revenues from public enterprises, fees, contributions and others accounted for 34.2% (Mathias and Pollard (1989)). With the start off the WWI, the German state presented some failure degree to tax more heavily caused by a direct taxation backwardness. This failure to raise more taxes on individuals had origin in a constitutional limit preventing the Reich to raise revenues from direct sources. Direct taxes were only assigned to states as an attempt of elites to keep its control in the new industrialization process of the German nation (Witt (1987)). At the end of WWI, Germany's tax system was considered ineffective for the post-war period, as its structure did not have sufficient capacity to pay interest on debt through its current revenues (Kuczynski (1923)). After the WWI, the tax reform policies introduced in 1920, it was possible to stabilize the price level consistent with the levels of German debt (Webb (1986)).

During the Great Depression, the behaviour of German governments was considered restrictive in establishing the fiscal policies. Only with the ascent of Hitler to chancellor of the Reich, the Nazi governments implement a set of expansionary fiscal policies leading to a fast economic recovery when compared to other economies. In terms of tax policies, the Nazis only reduced some tax rates in 1933. Although, later the taxes were increased, but the combined tax changes are considered as having low impact on German fiscal policy (Cohn (1992)). From the year of 1920 to 1930, the Reich revenues decreased from 22.6% to 12.5% of Net Nominal Product (Sommariva and Tullio (1987)).

During all the twentieth century, the Portuguese economy remain the poorest country in the set of all countries in analysis. The Portuguese income per individual represented only 47% of Gross National Product per capita relatively a set of countries (Reis (1984)). Similarly, to the last half of the nineteenth century, the first decade of XX century is characterized by an unsustainable pattern of public finances (do Rosario Correia et al. (2008)). As mentioned by Franco (1982), the public revenues are characterized by an indirect taxation predominance, mainly based in tariffs, consumption and stamp taxes in the beginning of the century. This fact was accompanied with structural failures in direct taxation incidence. As the author stresses the direct taxation system remain similar to the tax reform operated by Mouzinho da Silva, almost one century ago, which is in line with the notion of an archaic tax system. Furthermore, during the First Portuguese Republic regime (1910-1926), the amount of taxes collected between 1914 and 1920 represented a decrease in tax-to-GDP ratio, jeopardizing the Portuguese fiscal sustainability, with a recovery in that sustainability in the end of the regime (Ferraz and Duarte (2014)). Although, from the beginning of the First Republic period to the end of the first half of twentieth century, the share of tax revenues on the Portuguese GDP declines from 11.2% to 6,7%. Yet, and during this period, the conveyancing tax revenues on GDP, as well as direct taxation proportion on economic activity, kept stable proportions (Lopes (2005)).

In the beginning of twentieth century, the rise of the British state role on the economy was concerned primarily with the taxpayer's interests, instead of increase of public expenditures. This means that the British taxation structure was more important than the proportion of taxes levied on proportion of national income (Daunton (1996b)).

The period coincident with the WWI, the government revenues varied, in percentage of net receipts, between 19.3% and 30.5% between the fiscal year of 1914/15 and 1918/19. There was a political consensus on the direct taxation policies and both parties had a pragmatic perspective on this source of taxation. For reasons of deflation phenomena afraid in the beginning of the WWI, the British authorities had some caution in raising taxes. Because of this perspective, taxes represented less than one third of total government income between the fiscal years of 1914/15 until 1918/19. The other revenues raised by the British governments came from contributions from British colonies and borrowing. The capacity of borrowing by Britain was a signal of the best-developed financial system in Europe in the beginning of twentieth century (Daunton (1996b)). In addition, the income tax represented almost 30% in 1913/14, while customs and duties saw their importance reduced from the values rounding the 22.5% of all revenues receipted by the Exchequer for almost 15%. Furthermore, between the WWI start until 1929/30, the direct taxation significance regarding total revenues raised from 57.5% (1913/14) to 64.2% (1929/30), translating in a decreasing importance of indirect taxation (Daunton (2002)).

After the WWI until the years preceding the beginning of the Second World War (WWII), the tax amounts collected by the British authorities' increase, in terms of British income, from 11.2%, in 1913, to 21.9%, in 1937 (Clark (1945)). Between the two world wars, due to the increase in the burden taxation after the WWI and the large interest payments to individuals holding public debt and the increased demanding for welfare expenditures by the citizens put some pressure on the political consensus and could lead to a lack of legitimacy of British constitutional state. To deal with equilibrium between both sides, the level of taxation has increased to allow the British state to fulfil its financial obligations and enlarge some social spending. That grew in the taxation on national income enabled some social equity without hampering the British financial system (Daunton (1996a)).

During the World War II (WWII), the proportion of taxes levied reached 44.7% of British national income in 1944, being 25.2% in the year before WWII, that is, 1938. In the end of the WWII, the income and super taxes represented 44.9% while Customs and Excise together and excess profits tax amounted 34.7% and 14.5%, respectively, in the total of revenues receipted by the Exchequer (Daunton (2002)).

The early twentieth century American tax history is characterized by a large proportion of custom duties and taxes on both tobacco and alcohol on total federal revenues (84%). However, the share of these taxes has decreased to 25%, and, consequently, another taxes as the income tax represented the majority quota in the federal revenues, amounting 59% in the year of 1930 (Mehrotra (2013)). On the other hand, the WWI had a tremendous impact in the American tax system. In fact, it was during the WWI that income tax became permanent, structurally changing the American government revenues (Saldin (2010)).

With the 1929's financial crash and the consequent Great Depression, taxes were raised to finance the New Deal program. Consequently, the tax base extension increased the taxpayer numbers in 500 thousand individuals. In the same way, in 1935, a new set of taxes, as were the cases of gift, inheritance, were launched, and, on the other hand, a surtax on individual income was adopted. However, the revenues extracted from the new tax policy seemed to be in vain (Markham (2002)). With the WWII, United States had the necessity to finance the war while facing the end period of the Great Depression. Therefore, during the Roosevelt's administration, it was imposed a tax of a 50% rate on excessive profits - afterwards this tax rate reached 90% - and, in order to prevent inflationary pressures, it was reduced the income tax exemptions. With those tax impositions, the income tax share amounted 40% of all federal revenues, while tax base has widened for a total of 42.6 million taxpayers in 1945, when it stood at 3.9 million in 1939 (Brownlee (2004)).

2.4 Between tax progressivity and tax cuts

In the last 50 years of the last century, the French taxation system is considered to be the most developed and, at the same time, the most economically neutral tax system regarding indirect taxation, when compared to western countries (Shoup (1957)). In fact, the revenues provided to French authorities with the value-added tax (VAT) accounted one-third for the total public revenues collection, and it proved to be the most stable tax, both in political and economic terms, of the late 50 years of French tax history (Dormois (2004)). In fact, until the introduction of VAT in 1954, the tax on production was focused on final producer, but, due to the necessity to funds to finance public spending, the introduction of VAT emerged. The creation of VAT also allowed dividing the tax payments for all the chain of value, and reducing the tax burden on final producer (Shoup (1955)). The proportion of indirect taxes on GDP only increased 0.6 p.p. in 30 years, i.e., between 1970 and 1999, being in the later year 15.6%. The important point to highlight regarding to changes in indirect taxation took place in the 1970's, with the loss of importance of taxes on general sales, offset by the increased importance of VAT. In what respects direct taxation, this source of taxation has increased more significantly from 1975 until the end of the century (7.4% to 9.2% in percentage of GDP). Although, the dynamics of direct taxation was not constant, which is explained by factors as economic growth performance, the increasing progressivity degree of individual income tax, with the consequent decrease in income and capital inequalities degree, as well as the increase above economic growth of firms profits in France during the last 30 years of the twentieth century (Bernardi and Profeta (2004) and Piketty (2007)). Still, in 1980, the taxation structure composed by the individual tax, corporate tax, property and general sales tax represented 12%, 5%, 3% and 22%, respectively, of government revenues, and 41% on the French economy (Alt (1983)). In conclusion, in the last 30 years, the French tax history was marked by a declined in indirect taxation share, although it remained the most important source for French public revenues, the tax on income provided from labour represented almost three times the capital tax burden, illustrating the political tax options over the last decades in France (Bernardi and Profeta (2004)).

As for the German case, and after it defeat in WWII, the German territory was divided between the Federal Republic of Germany (commonly known as West Germany), occupied by United States, United Kingdom and France, and the German Democratic Republic (also referred as East Germany), under control of the Soviet Union[2]. . Since the 1950's decade,

[2]Onwards, we will address only the West Germany case until the reunification process.

the main source of the German state revenues was levied on personal incomes, including social security contributions). Between 1955 and 1979 the shares of taxes regarding GDP had increased 6.5 p.p. to 37.3% in 1979. The dynamic of tax revenues expresses the several tax policies reform taken after the WWII. With the occupation of the West German by the Allied Control Council, it was implemented several tax reforms to face the needs of German reconstruction, the economic recession of 1970's and the occupation itself of the Allies[3]. During this occupation it was introduced and raised personal income (up to 90%) and corporation (up to 60%) tax rates. However, with the end of the reconstruction period and the improvement of the German economic situation, the taxes were lowered in 1970's (King and Fullerton (1984)).

From the 1970's to the end of the twentieth century, the tax revenues, in proportion of GDP, grew from 19.2% to 24.4%. Both direct and indirect taxes shared equal proportion on GDP in 1999 (12.2%). The VAT tax revenues is, during this period, the main source of collected revenues via indirect source. When compared to the European average values, the tax raised by the German authorities was constantly lower. The gap between German taxes and the European average is due to VAT taxes which were always lower than European mean. Lastly, and during the 1990's, there were not substantial tax reforms in Germany, keeping a high statutory and narrow basis. In the beginning of the last decade of the twentieth century, it was introduced some taxes to finance the process of reunification between the West and East Germany (Maffini (2004)).

On the other hand, and with the coup d'état of 25^{th} April and the consequent process of democratization, the necessity of fiscal modernization was imperative. The adoption of a western capitalist constitution as expressed by Franco (1982) and the will of Portugal to make part of European Economic Community (ECC) had impact on the Portuguese tax system improvement. From the beginning of democratic period in Portugal, the share of revenues on GDP rose roughly 12 p.p. to 22.30% in 1997. In addition, it is possible to observe the political choice by the increasing of direct taxation. On the other hand, the indirect taxation importance remained (Lopes (2005)). Moreover, it is clear the difference between direct and indirect taxation between Portugal and the remaining countries in European Union. First, the Portuguese economy taxed less than the other European partners, in proportion of GDP did. Secondly, and contrarily to Portugal, the European countries opted to raise revenues mostly from directed sources. Nevertheless, as the data presented in Porto (1985), the direct and indirect shares of taxation converged between the years of 1977 and 1984. As Lopes (2005) refers, some causes related with the decreasing proportion of direct taxation in the post-25^{th} April period are the reduction of tax on agricultural property and with the diminishing amount of tax on industrial activity caused by changes in tax base. Those changes were provoked in part by the weakness of Portuguese institutions and with the tumultuous events originated in the transition process to democracy.

During that period, the tax effort increases significantly, raising the level of discontent

[3]Since we are analysing the West German case, when we refer to *Allies* we are referring United States, United Kingdom and France.

of taxpayers. Therefore, a tax reform which to excel for a greater sense of tax justice, in an economic rationality framework and to fight tax evasion was mandatory (Sousa (2012)). Therefore, a major tax reform was carried out in 1980 decade. In fact, the 1988's tax reform established two taxes, IRS and IRC, which addressed on individual income and firms profit, respectively. In this tax changes, the Portuguese authorities opted to tax the real income, instead of the presumed one. Another important tax introduced in this period and responsible an important share of revenues, was the introduction of a value-added tax (IVA) which was focus on spending, highlighting the fact of being a tax on real income. However, as Lopes (2005) criticizes, the reform was not totally completed, keeping different tax rates according to the income sources. Consequently, and with the taxation on real income, the events related with tax evasions emerged in a higher degree.

After the WWII and the last 50 years of the twentieth century, the British tax revenues rounded the value of 40% of GDP. Between the end of the WWII until 1960, tax revenues dynamics was characterized by a decreasing movement while during the 1960's, the burden of taxation has risen constantly. Between the 1970 and the end of the twentieth century, the taxes collected by the British government did not present a regular pattern. The British tax system, the second half of twentieth century is defined by a little decrease on the importance share of income and wealth taxes, declining from almost 45%, in the post-WWII period, to 38.9%, in 1980, increasing its importance to 42% in the year of 2000. When observed the direct source of taxation, the income and wealth taxes represented more than a half of taxation levied in Britain during the last 50 years of the last century. When looking to the income tax evolution during the second half of the previous century, the 1973/4 reform there was an increasing on top rate on earnings from 75% to 83% but rapidly was cut to 60% and 40% in 1979 and 1988, respectively, as well as the basic rate which decreased from 35% to 22% between 1977 to 2000. To compensate those reductions on tax rates, several allowances were eliminated. Those reforms explain somehow the relative importance kept by the taxes on capital and income over the eighties. Furthermore, and regarding the indirect taxation, the value added tax (VAT), introduced in 1973 - a tax implementation requested to be part of the European Economic Community (ECC) - represented the most important increase in its importance of tax revenues in the latter 30 years, while excise duties lost some importance in the late 50 years (Clark and Dilnot (2002)).

Lastly, in 1948, the United States signed the General Agreement on Tariffs and Trade (GATT) cutting off some tariffs and other restrictions, favouring international trade and reducing the level of protectionism. In percentage of GDP, the proportion of revenues extracted from the United States economy varied between those the 1948-1995 period, from 22.7% to 36.2% (Fishback (2007)).

Between the WWII and the 1970's, the American government size increased significantly as a result of a greater need for regulation of the economy to avoid further crises arisen from the free market economy, thus replacing the existing economy by a modern mixed economy (Walton and Rockoff (2009)). In what respects the tax composition, the share of individual income tax on the United States revenues evidenced a relative stable path only challenged by war or inflation phenomena. In 1960, the federal income tax was essentially a flat tax rate between 20% and 22%, becoming a more progressive only in the end of 1970's

(Bakija and Steuerle (1991)). The president Kennedy, and his successor Johnson, had paid particular attention to the poverty phenomenon, and to deal with it, social spending programs were created, as were the cases of Medicare and Medicaid, being financed by a cut on taxes and by a set of progressive tax reforms (Brauer (1982)). Furthermore, and despite the political discussions around how to finance those social programs, the payroll tax rates were increased to get more revenues to balance the social program budgets.

The late 1970's period was marked by some tax discontent feelings. In fact, contrary to the continuous tax cuts, the real tax burdens increased constantly during the 1970 decade provoked by the combining factors of inflation and increasing in some marginal tax rates (Shaviro (1990)). During the 1980's, period under the liberal panorama of Reagan's administration, there was a perspective, as explained in Fullerton et al. (1994), of a tax policy by the supply-side of the economy. That perspective had, as consequence, the decrease of taxation to favour economic growth, as demonstrated by the tax philosophy of the *Economic Recovery Tax Act of 1981* and the *Tax Reform Act of 1986*. The reduction in taxes came inevitability with a reduction of almost 20 p.p. in the top federal marginal income tax, increasing the regressive degree of the income tax (Kasten et al. (1996)).

Therefore, a significant tax reform was carried out in 1986, with the purpose of reducing the tax rates. One important feature of this tax reform was the implementation of a comprehensive income taxation with support of both parties in the American congress and, equally, the president Ronald Reagan. According to Pechman (1987), this tax reform improved the United States tax system fairness and, at the same time, reduced the distortional behaviours that the old system induced in the American economy. However, on the other hand, this reform jeopardized the firms, provoking an increase in corporate taxes through the investment credit elimination and reduced a considerable set of capital cost allowances, provoking a reduction in investment and an increasing to the cost of capital.

During the 1990's, some taxes increased its share regarding the federal revenues, in special, individual and corporate income taxes grew more than 5 p.p. while social security revenues, excise taxes and other receipts reduced its importance in the United States tax revenues. Under the Bill Clinton presidency, two tax reforms were carried out the Omnibus Budget Reconciliation Act, in 1993, and Taxpayer Relief Act, in 1997. The first tax reform raised the income tax rates from 36% to 39.6% for individuals of higher earnings and several taxes on firms, on fuels and on social security were raised while some tax exemptions were reduced or even eliminated. On other hand, the latter tax reform was characterized by a tax reduction in some federal taxes, as the reduction of 8 p.p. in the capital gains tax (Schick (2007)). Lastly, in the opinion of Martin Feldstein, in Elmendorf et al. (2002) , it was clear that the Clinton tax policies did not change significantly the American taxation system. The raise of marginal tax rates increased significantly as the inefficiency and the deadweight of the United States tax system.

3 Centralizing tax data and revenues collection efficiency: There is a mutual gain?

Beyond the tax composition and several tax incidences, the multiple administrative divisions of the territory as well as the taxation administrative procedures centralization, besides the power of the various pressure groups, can have a serious impact on the collection of tax revenues. Moreover, the efficiency degree related to the costs of coercion also evidence an important feature in collecting the same revenue. Specifically, the non-standardization of procedures related to taxation, could seriously affect the income and wealth. In fact, tax regionalization and non-uniform procedures could give more access to economic opportunities to those who can spend time and resources to get advantage from a non-unified tax system. However, it also could be beneficial to have ad-hoc tax procedures for the regions, in an economy, which behaves differently from the average economic behaviour. For those reasons, we think to be important to explore the many features regarding the tax centralization procedures, as well as the impact of possible tax effects differentiated due to territory divisions. In addition, we also intend to understand the impact of groups of interests in the existing tax decision-making along both nineteenth and twentieth centuries. In this section we have chosen to do an individual analysis of each country, since the data available in the literature on these issues are not very abundant. This is why tax efficiency remains a central topic neglected by the economists since the administrative data is not so easy to treat. Either by methodological bias regarding bureaucracy analysis a higher degree of data dispersion and difficulty in handling large amounts of data. Therefore, it is understandable that we cannot analyse these topics in a temporal perspective as in the previous section.

The French tax historiography during the last 200 years was marked by the introduction by Nicolas-François Mollien and Charles-Louis Gaston of double-entry bookkeeping accountability system in 1815 to provide transparency on public budgets. The implementation of that mechanism was due to the need of the French kingdom in controlling the activity carried out by financiers, which were private entities responsible for funds collection to the crown. During the first-half of the French nineteenth century tax history, the doubly-entry methods proved to be a solid method and was never truly challenged by other existing methodology (Nikitin (2001)). Moreover, during the nineteenth century, the French system was reformed to avoid the arbitrariness of the *Ancien Régime* tax incidence, assessing it by a verifiable criterion, that is, with a low operation costs, and respecting the rights of the taxpayer (Shoup (1955)). Until the first half of the nineteenth century, there is evidences highlighting the role of French *rentier* social classes and their excessive representation in parliament pressing for indirect taxes to be preferred over direct taxes (Bonney (2010)).

On the other hand, when we look for the centralization process in tax collections, the French tax system started the concentration procedure of tax administration along the first half of nineteenth century, first via a central bureaucratization of indirect source of taxation, in 1804, and other taxes, including customs, in the years of 1814, 1816 and

1852. Yet, it was clear that the bureaucratization and the increase in the power to coerce degree explain the reduction costs in tax enforcement, reducing them from 28% to 9%, in comparison to gross revenues, between 1823 and 1900. On the other hand, when we look for the centralization process in tax collections, the French tax system started the concentration procedure of tax administration along the first half of nineteenth century, first via a central bureaucratization of indirect source of taxation, in 1804, and other taxes, including customs, in the years of 1814, 1816 and 1852. Yet, it was clear that the bureaucratization and the increase in the power to coerce degree explain the reduction of costs in tax enforcement, reducing the costs from 28% to 9%, in comparison to gross revenues, between 1823 and 1900. Furthermore, it was clear that the process of slower pace of bureaucratic and centralization of direct tax collections were due to the large extent of French territory, coinciding with the weak development of roads, while French economic activity did not present a booming trajectory (Kiser and Kane (2001)).

Looking for tax administration in France, the structure of tax administration remained practically unchanged until the World War I (WWI), contributing for an efficient tax management. From the French revolution until the mid-twentieth century, there were four administrative divisions responsible direct taxes, indirect taxes, customs, and stamp taxes, respectively, with little evidence of data exchange between those tax administrations (Shoup (1955)). In addition, during the first half of the twentieth century some lobby groups intended to repel some tax measures, as was the case of the undeveloped French agrarian sector and other economic groups which caused numerous resistances on the application of income taxation, and appealing for the government to opt for tariffs to finance public government.

As for the phenomenon of tax evasion, early in the second half of the twentieth century, this was relatively tolerated by the tax authorities. There was, at the time, the notion that, regardless of the behaviour of taxpayers in tax compliance, lack of revenue would force the government to increase the level of both taxes and coercion on individuals (Shoup (1957)).

In the beginning of the nineteenth century, Prussia was characterized by the most efficient tax system in Europe. Some features as an effective tax system controlled by politicians, an efficient inspection scheme on tax officials and a long-term agreement on tax farming over the domains, beyond a political stability, may contribute, according to Kiser and Schneider (1994), for the highest efficiency degree of the Prussian tax system between 1640 and 1806. However, there was also intentions to repeal some taxes. In fact, in 1811 a 5% marginal tax rate on income is introduced in Germany provoking many protests among the wealthiest individuals, accusing the state of meddling in the private sphere, evoking, at the same time, the destruction of their property rights. Nine years later, in 1820 it was introduced a class tax, a mix of poll and income taxes contributing, with the set of existing indirect taxes, to increase the income and wealth inequalities (Kitchen (2006)).

On the other hand, the division of the German territory in multiple states evidence of non-sharing for the same tax features. in what concerns public finances, namely the taxation incidence. While southern states opt to tax land and businesses, following the French case, the Prussian territory choose to base its taxation on individuals. Other territories, with little administration control, chose the indirect via. Until the Napoleonic

Wars, Germany did not possess a system of records of taxes and expenditure. During the French occupation, the public finance system in Germany was reformed. A periodic budget had to be elaborated, enforced and controlling the enforcement degree, with no exception for the most territories (Spoerer (2010)).

In the year of 1834, an agreement between German states to manage customs barriers originated the German Customs Union or Zollverein. Institutionally, Zollverein was consisted of a congress composed by representative members of each state making decisions on tariff rates among other questions related with the mechanism of the custom union. The final decision required a unanimous decision between the member states to change or to implement policies. There was only a small and permanent office in Berlin responsible to manage the revenues between the German member states. Almost 40 years from the establishment of Zollverein, German territories were unified and, at the same time, dominated by Prussia. However, as a counterpart to the integration into the German empire, the southern territories were allowed to continue to levy taxes on beer and liquor. The revenues intended to the Reich had come from indirect taxes beyond the revenues provided for its monopolies (Ploeckl (2010)). Moreover, in 1913, and taking into account the administrative division of Germany, the Reich raised 30.0% of taxes while the German states and local territories totalled 30.6% and 39.4% of all public revenues collected in 1913 (Mathias and Pollard (1989)).

The Portuguese tax history in the first half of nineteenth century, and in what respect to tax administrative evolution is characterized by an evolution with the objective of efficiency increasing, with the adoption of modern fiscal and tax rules (Esteves (2005)). Yet, and during this period, with the objective of raising fiscal revenues and with the improvement of public administration efficiency, some tax reforms were implemented by the Costa Cabral governments, as were the case of the implementation of a new circulation tax and a reform in *décima* tax which originated a tax on production, and another based on individual income. Although these tax reforms proved to be fruitless, with some tax revolts events, as were the case of Maria da Fonte revolt (Hespanha (2004) and de Macedo et al. (2006)). Moreover, the ministry of finance Henrique de Barros Gomes tried to implement a progressive tax, in 1880. This attempt of tax reform was partially sinker by the opposition. However, and because the financial crisis of the end of the century, this tax became the most important source of direct taxation (Esteves (2005)).

In the last 50 years of nineteenth century, there were significant efforts to raise a modern tax administration, with the consequent geographical delimitation of taxation, corresponding to the attempt to fiscal state modernization by liberals in Portugal (Sousa (2012)).)). Attempts to modernize the state of taxation, however, were not peaceful, and there were several popular protests against the creation of some taxes and their incidence (Cerezales (2007)).

During the Portuguese dictatorship, it was presented a new proposal for a tax system with the purpose of raising at least the same amount of tax revenues as before, with a consequent increase the taxation efficiency degree, while the authorities intended to avoid double taxation phenomena. Yet, it was clear the authorities' intention to tax only from certain thresholds depending on the geographical area where the taxpayers lived. Therefore, some of the measures proposed by this commission were neglected, with fear of political instability, and in 1928, were implemented progressive personal income tax based on income ranges for public servants, there was a reduction in capital tax rate when applied in foreign assets and the individual tax income was replaced by a complementary tax. In the same year, the *ad valorem* municipal taxes were abolished. Those implemented tax measures were an attempt to satisfy who criticize the tax reform occurred in 1922, but, however, this reform was accompanied by a raise in tax effort, although the elimination of income and transaction taxes with this tax changes (Valério et al. (2006)).

One of the hallmarks that characterized the Portuguese tax system over the last 150 years was the fact that only in 2011 the several institutions responsible for taxation converge into one, the *Autoridade Tributária e Aduaneira* (Sousa (2012)).

The year of 1803 is marked, in the context of the British tax system, by a centralization of the income tax (Kiser and Kane (2001)). Beside this, in the beginning of the XIX century, the improvement in the efficiency degree of tax administration, combined with some tolerance on tax evasion phenomena, and a focused tax design to extract the necessary extra amount of public revenues on specific set of goods and social groups characterize the British tax system in the early XIX century (O'Brien (1988)). Moreover, when Addington became prime-minister, his government reformed the tax system established in Pitt's era, splitting the income tax returns into five separate ones. With this reform, Addington managed to reduce the degree of dissatisfaction with the taxation imposed on British taxpayers, with the consequent trade-off of a certain degree of tax evasion.

Lastly, and during WWII in Britain, the tax payment schedules were reformed allowing the taxes to be paid in a weekly or monthly periods. Yet, the tax reform of 1942 gave some protection to over/under payments on income tax due to an assessment of actual earnings by taxpayers in a weekly basis, instead of what happened before, in which tax deductions were set on past earnings.

In what respects the United States case, we can split the American tax administration history in three periods: 1790-1842, the 1840's until the WWII and the final one relies between WWII and the end of the twentieth century. These three distinct periods highlight the relative importance of the various levels of government in public finances history in the United States, which suggests a relationship between the structures of revenue and government. Yet, during the first stage of the American public finance system, the state governments benefited from a context of lower costs regarding its financing when compared with the other levels of government, allowing for the development and creation of businesses with financial returns via dividends, fees and indirect taxes. The second stage of the American public finance dynamics the local government increase its importance with the decline on asset finance era, yielding a set of infrastructures carried out by local governments. To finance these local government expenditures, the property taxes played the most important role and dominated the share of all government revenues. The last era of the United States finances began with the Great Depression and the subsequent New Deal. After this economic crisis, the fiscal importance of national government increased significantly, where the federal government centralized the revenues collection, due to its comparative advantage compared to other governments degrees, and decentralized the public spending among all government levels. During this last period, the income tax raised its importance, with a consequent decline in property taxes share in tax revenues (Wallis (2000)).

4 Conclusions

In this essay we analysed the tax history of France, Germany, Portugal, United Kingdom and United States in the last two centuries. Usually, tax problems are analysed as we can clearly distinct between political processes, tax decisions and the taxpayers. The problem is that some taxpayers can influence the bureaucratic decision-makers, when they are not precisely the same individuals (Brennan and Buchanan (2000)).

In order to avoid these generalizations, the historical data presented in the present essay highlights the mechanisms between tax burden composition, the tax administration and the political system.

First, the groups of interest seem to have forced a tax composition favouring indirect taxes: France throughout the nineteenth and early twentieth centuries, Prussia in the nineteenth century, Portugal during the 200 years under analysis, and the United Kingdom and the United States in the second half of the 19th century, as can be observed in both tables 1 and 2.

The reversal of this process in the case of the United Kingdom and the United States throughout the twentieth century is obviously linked to the frank broadening of the electoral recruitment base of parliaments and chambers of representatives, which explains the emergence of constitutional analyses of the fiscal process, with greater sophistication, in these two countries (Hayek (2011)). It is clear, furthermore, that this oscillation between non-parliamentary systems and preponderance for indirect taxes, and on the other hand, parliamentary systems and predominance by direct taxes is influenced by other factors. Above all, the costs of coercion (and its inevitable pressure on tax revenue) and how to ease the payment of taxes (through payments in instalments such as the second half of the twentieth century in the UK, for example) can affect the taxpayer's perception about the fairness of tax systems.

The costs of coercion are clearly a decisive element and little studied. However, the data collected show that the reduction of operating costs was a decisive factor in the construction of tax systems. In our study, we identified four factors that explain the reduction of these costs with obvious consequences on the tax burden perception: efficiency in the calculation of taxes and accounting of revenues, transparency of these processes, control of fiscal officials, and centralization of taxation offices. It seems evident that these factors are decisive in explaining, for example, the difficulties of economic performance and redistribution of income as is the case of Portugal during the twentieth century.

Other decisive factors, but in need of complementary studies, are the importance of technological factors in the efficiency of tax systems, such as the development of terrestrial roads, through transport systems (implying information costs in analogical systems), or the capacity of information communication systems, namely modern digital processes.

Knowledge of these developments will make it possible to rigorously assess the use of regional economies of scale in order to increase the efficiency of tax systems over the last two centuries.

Table 1: Tax structure by country in percentage of total revenues, 1800-1990.

	Customs					Excise				Indirect taxes					Direct taxes				
	FR	DE	PT	GB	US	FR	DE	GB	US	FR	DE	PT	GB	US	FR	DE	PT	GB	US
1800				21.48	82.73			33.54						7.27				30.41	
1810				19.18	91.49			36.99										28.77	
1820				20.00	83.33			50.00						0.56				13.33	
1830				35.19	88.00			37.04										9.26	
1840			40.49	44.23	73.68			28.85				39.54			25.43		19.97	7.69	
1850	9.87			38.60	90.91			26.32							23.21			17.54	
1860	7.84		40.96	32.86	94.64			27.14				30.56			17.48		28.47	20.00	
1870	4.93		32.05	29.41	47.45	16.61		33.82				32.04		45.01	37.85		35.89	13.24	
1880	8.86	55.78	40.37	23.17	55.99	20.80	39.80	30.49				27.51		37.13	32.16		32.11	15.85	
1890	10.99	55.67	43.42	20.62	57.07	18.95	38.88	29.90				31.9		35.48	31.62		24.69	16.49	
1900	10.88	52.54	33.27	19.29	41.09	17.51	38.44	27.14				31.96		52.03	28.76		34.77	20.71	
1910	13.71	44.23	30.92	16.18	49.41	15.09	36.56	19.61				35.73		42.90	29.87		33.38	32.35	
1920	8.51	4.08	30.58	9.40	4.86	8.39	16.96	14.03	12.15	7.81	9.4	31.89			20.60	21.1	37.53	43.20	
1930	12.09	16.32	38.53	14.10	14.47	13.86	29.85	14.45	13.92	17.21	15.01	21.5			30.34	48.4	39.96	38.11	59.39
1940	11.19	5.19	29.39	20.40	4.81	8.03	20.49	14.98	27.40	25.30	14.43	24.47			23.11	52.21	46.15	46.56	43.08
1950	7.23	3.73	27.87	21.77	0.99	2.31	18.63	17.44	18.44	35.89	29.81	29.49			31.11	32.92	42.64	47.46	74.70
1960	11.61	4.97	31.27	22.95	1.20	1.77	14.56	14.71	13.04	31.61	28.24	27.03			37.26	41.39	41.72	45.49	83.69
1970	8.23	2.12	17.53		1.24	4.34	15.99	29.72	8.29	41.03	27.81	42.87			34.17	43.65	33.26	48.60	87.05
1980	7.57	1.40	6.28		1.39	2.63	11.82	16.62	4.64	40.49	28.39	58.63	16.62		39.79	51.67	35.09	44.56	90.33
1990	8.39	1.31	1.15		1.65	2.42	11.98	16.81	3.39	44.80	26.73	60.58	21.18		43.70	44.36	38.27	54.58	91.27

For France, Germany and United Kingdom the results are computed by using the data from Mitchell (1998), for Portugal from Valério et al. (2006) and for the United States the presented results was constructed based on Mitchell (2007) statistics.

Table 2: Tax revenues in proportion of GDP, and average *per capita* GDP growth rate by country and per decade, 1800-1990.

	France			Germany			Portugal			United Kingdom			United States		
	Taxes	Change (p.p.)	GDPpc	Taxes	Change (p.p.)	GDPpc	Taxes	Change (p.p.)	GDPpc	Taxes	Change (p.p.)	GDPpc	Taxes	Change (p.p.)	GDPpc
1800													5.77		
1810												0.40	9.35	3.58	0.68
1820	10.41											-0.51	10.21	0.86	-0.19
1830	8.50	-1.90	0.48							12.27		0.71	9.32	-0.89	1.28
1840	8.61	0.11	1.81				3.55			10.20	-2.08	1.24	11.12	1.80	0.88
1850	9.08	0.47	1.12							10.67	0.48	-0.79	10.79	-0.34	0.90
1860	8.33	-0.76	1.70			1.38	3.43			9.20	-1.48	1.94	11.33	0.54	1.92
1870	6.94	-1.39	-0.09			1.15	3.49	0.05		6.30	-2.90	1.20	10.54	-0.79	0.87
1880	11.64	4.70	1.23	1.74		0.80	3.82	0.33	-0.29	6.32	0.02	0.86	9.26	-1.28	2.64
1890	11.16	-0.48	1.14	2.79	1.05	1.98	4.68	0.85	1.74	7.06	0.74	1.42	10.91	1.65	0.63
1900	11.63	0.47	1.91	2.73	-0.06	2.07	4.85	0.18	1.44	7.80	0.74	1.14	11.13	0.22	1.87
1910	10.45	-1.18	0.31	3.27	0.54	1.15	5.98	1.12	-0.59	9.94	2.14	0.26	8.92	-2.21	1.93
1920	12.83	2.38	0.85			-1.80	3.50	-2.47	0.01	23.89	13.94	-0.14	9.31	0.39	1.12
1930	15.20	2.37	3.40	9.23		3.52	7.51	4.01	2.45	20.29	-3.59	1.79	11.51	2.20	1.12
1940			-1.14			3.07	7.06	-0.45	0.28	22.25	1.96	2.31	15.37	3.86	1.21
1950			2.49	16.46		-3.31	7.58	0.52	2.56	36.46	14.21	0.12	20.63	5.26	3.10
1960	20.88		3.55	18.58	2.12	6.86	8.17	0.58	3.48	28.07	-8.39	2.20	26.53	5.90	1.70
1970	22.35	1.47	4.33	20.18	1.60	3.41	10.84	2.67	6.16	35.84	7.77	2.20	26.69	0.16	2.83
1980	23.04	0.69	2.58	22.24	2.07	2.64	13.06	2.23	3.85	32.94	-2.91	1.83	27.69	1.00	2.12
1990	21.43	-1.61	1.78	22.47	0.22	1.21	19.65	6.59	2.97	30.06	-2.87	2.39	28.12	0.43	2.22

Notes and Sources: *Taxes* represent the proportion of taxes collected in percentage of GDP; Δ*(p.p.)* represents the change, in percentual points between decades. The *GDPpc* variable represents the annual average growth rate of *per capita* GDP between decades. Regarding to the *Taxes* variable, we use the ratio between government revenue and GDP data of Mitchell (1998) for France, Germany (West Germany for the years between 1950 and 1990) and United Kingdom. For the United States case we collected data from Mitchell (1983) for the years between 1800 and 1910. From 1920 to 1990 we use the data presented in Piketty (2014). It is important to mention that for the four previous countries, sometimes there is a lack of data regarding GDP. In those cases we made use of Gross National Product data. For Portugal, there are several data sources. Tax revenues: 1840-1910 based in Cardoso and Lains (2010); 1920-1990: Sousa (2012); Gross Domestic Product statistics based in Valério (2001)). Since economic years did not match with calendar years between 1915 and 1935 - economic years started at 1^{st} July of a calendar year and ended at 30^{th} June of the following year -, we calculate the tax revenues of a given calendar year as the arithmetic mean of tax revenues of economic years which overlap the calendar year (eg. tax revenues regarding 1920 is computed throughout the average of tax revenues of economic years 1919-20 and 1920-21 years). The data for *per capita* GDP growth rate variable was collected from Bolt and van Zanden (2014).

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