# Fiscal Capacity and the Enduring Legacy of the First Income Tax Law [*]

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August 2016

## Abstract

The institutional and political circumstances under which income taxes are introduced can have lasting effects on the structure of tax systems and help explain differential patterns of fiscal capacity across space and time. I hypothesize that while democratic regimes are no more likely to introduce an income tax, they implement more effective income tax regimes. The paper presents a new dataset on historical government revenues and the introduction of income taxes in 31 countries from 1800 until today to test these ideas. I find that the size of governments and income tax collection are smaller if income taxes were introduced by non-democracies and by conservative governments. These differences remain over time, even as countries become democratic, change governments, and abandon some of the elite-biased institutional restrictions present earlier on.

Why would governments that are dominated by the interests of a rich elite support investment in the state's ability to tax and ultimately allow an opportunity to distribute resources from the rich to the rest of society? Contrary to intuition, one of the most significant expansions of the capacity to tax - the introduction of income taxation - was often not enabled by a newly enfranchised population eager to scrounge from a wealthy elite (Acemoglu and Robinson, 2006b; Meltzer and Richard, 1981; Boix, 2003). Instead, the majority of these new tax laws were introduced in non-democracies. In a sample of 39 countries in Europe, Latin America, the European colonial offshoots in North America, Oceania, and Japan, about two-thirds of countries introduced the income tax under authoritarianism. In Latin America, the region with the highest levels of income inequality in the world (Deininger and Squire, 1996), almost 80 percent (11 out of 14 countries) were non-democracies at the time when the income tax was introduced.

This paper argues that the political and institutional conditions under which the first general income taxes were introduced had lasting effects on the way tax systems were structured and help explain some of the differential patterns of fiscal capacity across space and time. Similar to the predominant works in this literature, the starting point is a simple median-voter understanding of political decision-making in which a rich political elite faces the redistributive demands of the poor (Acemoglu and Robinson, 2006b; Meltzer and Richard, 1981; Boix, 2003). Such a model suggests that income taxes introduced under democracy, if modeled as a broader franchise, ought to be reflections of a wider cross-section of society and thus are likely intended to have stronger redistributional consequences (Meltzer and Richard, 1981). In contrast, if income taxes are introduced by a narrow (and usually wealthy) elite, we may expect the preferences of this group for lower redistribution to be institutionalized, even for a formally progressive tax as the income tax.

Existing empirical research on the introduction of income and inheritance taxes finds mixed support for the hypothesis that franchise extensions and democratization lead to increased progressive taxation (Aidt and Jensen, 2009a,b; Aidt and

Eterovic, 2011; Mulligan et al., 2004; Scheve and Stasavage, 2010, 2012). Despite the pattern that democracies today have on average larger governments compared to non-democracies, it has been surprisingly difficult to establish robust empirical evidence for the theoretical predictions with regard to the connection between changes in the franchise and redistribution. Recent works have started to address some of this incongruence between the theoretical expectations about the effects of democracy and its empirical reality. Ansell and Samuels (2010) argue that the relevant conflict over democratization and redistribution is not between a monolithic rich and the poor masses, but rather an intra-elite clash in which emerging economic elites prefer democracy to protect their property against expropriation. Presenting a similar intra-elite conflict, Beramendi and Queralt (2014) contend that franchise extensions and (indirectly) increased redistribution were a result of the short-sighted competitive interaction of liberal and conservative political elites to gain votes. However, while intra-elite conflict is an important addendum to our understanding of the process of democratization and associated redistribution, it only partially explains why political and economic elites, whether unified or factionalized, would introduce new progressive taxes.

This paper shows that once we account for the circumstances under which income taxes were introduced, the extent of democracy and the type of the franchise at the time of the introduction of permanent income taxes matter for long-term fiscal differences. In other words, it is neither the establishment of democracy nor the extension of the franchise per se that lead to redistribution through taxation. Instead, the preferences of political elites at the time of introduction are reflected in the type of income tax introduced and persist over time. Even well after introduction, income taxes introduced by democratic governments are more efficient for raising revenues. The extent of democratic participation in government thus appears to matter by shaping the type of income tax law that is introduced at the first time in a country. Moreover, if tax laws and their administration exhibit institutional persistence (Acemoglu and Robinson, 2006a), even conservative, wealthy elites have

an interest in establishing tax laws early on to cement their preferences before the franchise is expanded. In fact, in places most firmly in control of the economic elite, that is highly unequal countries, we would expect this incentive to prevent or preempt mass democratic tax decisions to be the strongest.

To test whether the political and institutional circumstances at the time of the introduction of the initial income tax law matter for fiscal outcomes, we need long-run information about government revenue collection. The empirical analysis introduces a novel dataset on historical government revenues for Latin America, Europe (and its colonial offshoots), Oceania, and Japan starting in 1800 or the time of independence. The dataset combines and extends existing government revenue data from a variety of sources to allow for a comprehensive test of the argument. While historical revenue data from Western Europe is fairly accessible, the addition of the Latin American cases allows us to challenge and test our existing, mostly euro-centric theoretical understanding of state formation and the development of the modern tax state. The additional data makes it possible to subject existing and new theoretical claims to evidence from other areas and time periods (Vu, 2010). The analysis also presents and applies a newly created measure of ideological preferences of heads of governments regarding redistribution through taxation (Brambor et al., 2016) to test how ideological dispositions of government leaders shape income tax laws.

In the sections to follow, I first review the existing literature on the development of the modern tax state, the expansion of fiscal capacity and specifically, the introduction of the income tax. Second, I provide a theoretical discussion of how the institutional and political circumstances at the time of establishing the income tax affected the ability and willingness of the elite to implement an income tax to collect additional revenue. In the subsequent empirical section, I combine newly collected historical data on government revenues and the ideological orientations of governments with existing cross-national datasets to test my theoretical claims regarding the institutionalized dominance of elite preferences and its effect on the tax revenue collection by the state.

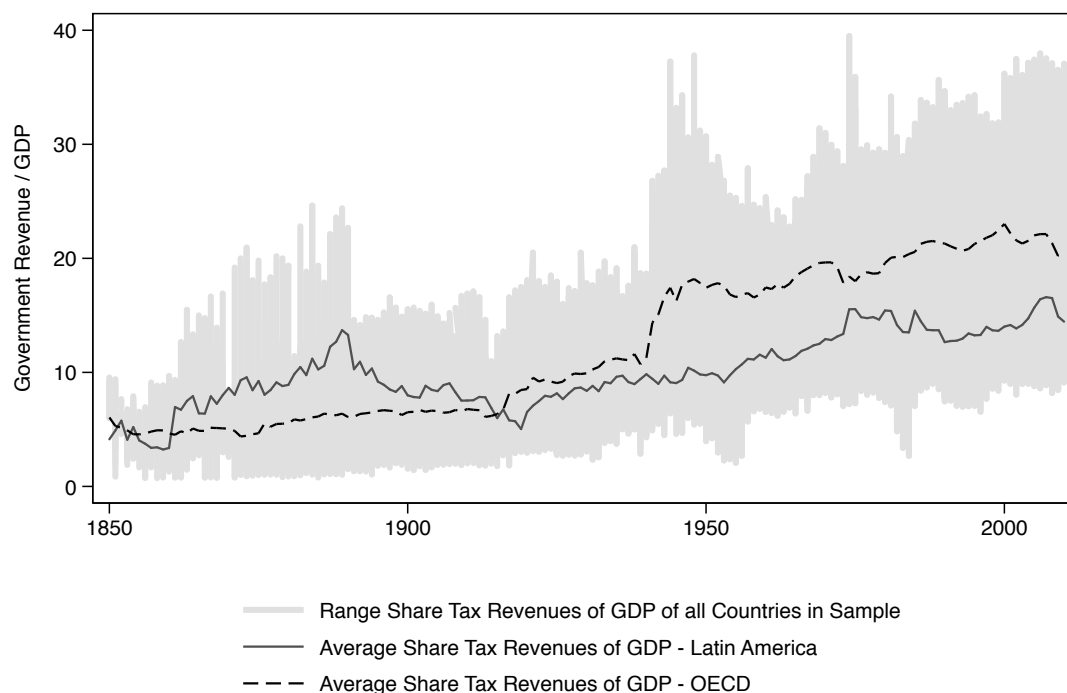## Fiscal Capacity and the Legacy of the Income Tax

In the past two hundred years, many states have significantly increased in size and their capacity to obtain revenues through taxation. Figure 1 shows this long-term increasing trend in the size of governments, measured as total central government tax revenue as a share of the economy. The greater extraction rates of Latin American countries in the late nineteenth century are largely due to the very high taxation of trade.[1] Since 1900, governments in today's rich countries (Europe, North America, Oceania, and Japan) have approximately tripled their tax shares of the economy.[2] Notably, Latin American countries have on average been less successful in expanding their central states' capacity to tax, especially in the period since the start of World War II, compared with today's rich countries of Europe, North America, Oceania, and Japan (Tanzi, 2005).

Yet, despite this common trend to larger and more encompassing states, tax systems across space and time show tremendous variation in the *extent of overall taxation* as well the *type of taxes* employed. Figure 1 suggests that the variation in the size of central governments (indicated by gray bars in the background) has increased over time. Some changes in revenue structures are simply a result of economic and financial development. Many of today's developing countries continue to derive most of their revenue from sources that require less administrative capacity to collect than direct taxes, including from tariffs, excises, and sales taxes. Historically, today's developed countries similarly relied on excises and trade to cover their revenue needs but have since shifted successfully to varying extent to a wider and more equitable tax base by relying on taxation of personal and corporate income, as well as broad-based consumption taxes (Burgess and Stern, 1993). Competitive

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[1]Around 1900, countries in Latin America collected on average around sixty percent and today's OECD countries more than one-third of total central government revenues from customs. Since the beginning of the twentieth century, the importance of tariffs to generate revenue has significantly declined in both regions.

[2]Note that the data relies on estimates of central government tax revenues, the only data that is reliably available before World War II for a cross-section of countries. The size of general governments, including subnational units, is only available starting in the 1970s for a large number of countries.

FIGURE 1. Expansion of Government Size (1850-2010)



Range Share Tax Revenues of GDP of all Countries in Sample
——— Average Share Tax Revenues of GDP - Latin America
– – – Average Share Tax Revenues of GDP - OECD

pressures to liberalize trade reduced the ability of governments to rely on easy to collect revenues from customs and since the beginning of the twentieth century the importance of tariffs to generate revenue has significantly declined across the world (Brambor and Lindvall, 2014).

To replace lost tariff revenues and match increased spending demands for health, education, and welfare, governments needed to develop alternative sources of revenue (Baunsgaard and Keen, 2010). How and why states invested in expanding fiscal capacity - institutions for tax compliance - has been the topic of substantial debate (Tilly, 1990; Levi, 1989). Most recently, Besley and Persson have offered a comprehensive model of the development of the state's capacity to enact policies, enforce laws, and levy taxes (Besley and Persson, 2009, 2011). They argue that administrative, legal, and fiscal capacity are complements and are built by dynamic investments over time. For the development of fiscal capacity, they identify three

investments in administrative structures in support of tax collection that are of particular importance: the introduction of the income tax, income tax withholding, and the value added tax (Besley et al., 2013).

Arguably the most important tax innovation of the past 200 years and a crucial step in the development of fiscal capacity was the introduction of income taxes.[3] The consideration of using income as the basis for the assessment of taxes is largely a nineteenth-century development of thought responding to the changing economic structure of the time.[4] Great Britain was the first country to introduce a permanent, nationwide income tax in 1842. Figure 2 provides a graphical overview of the rate of adoption of income taxes in the sample of countries in Europe, North America, Latin America, Oceania, and Japan used for this paper.[5] An initial wave of adoption in the 1850s, emulating the British example, was followed by several decades of stagnation. In the 1890s (see Aidt and Jensen (2009a; 2009b) for a more detailed description for Europe), a second wave of European countries started to adopt the income tax, spreading to other regions of the world like Latin America and ending in the 1940s. Notably, Latin America appears to have been somewhat slower in adapting the 'technology' of income taxation.

Pioneering Britain used temporary income taxes in 1798-1802 and 1803-16 to cover the ongoing expenses of the Napoleonic wars (1803-14) (Daunton, 2007; Seligman, 1914, p.57). As the war ended, in 1815 the Chancellor of the Exchequer notified

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[3]Rogers and Weller (2014) go even further and argue that the ability of a state to collect income taxes is not only a good indicator of fiscal capacity but state capacity more broadly.

[4]The only two possible precursors to the modern income tax are short-lived experiments in democratic Florence in the 15th century and 17th century France (see Seligman (1914, p.45-52) for further detail and references). In Florence, in 1451 the previously assessed property tax or the *estimo* gave way to the *catasto*, a real income tax, in order to be able to tax the earnings of the booming sectors of industry and commerce. In France, a classified poll tax became essentially an income tax by 1705, and by 1710 a tenth of income (*dixième* was demanded by the state. In both Florence and France, these examples of the income tax proved short-lived as quickly many exemptions were granted and the arbitrary assessment of taxes was used to weaken political opponents. In both cases, the poor implementation and administration of the tax proved fatal and engendered general opposition to the corruption and arbitrariness of their assessment (Seligman, 1914).

[5]All countries and the corresponding dates of the introduction of the income tax are listed in Table 1. Paraguay is included in the sample but only introduced a personal income tax in 2012 – after the end of the data under analysis – and hence is not listed in Table 1.

parliament that the income tax would not be renewed (a promise made on its introduction), declaring the tax "a great and powerful resource which, in times of emergency, might and ought to be resorted to." (Seligman, 1914, p.106). The introduction of the permanent income tax in 1842 followed on the heels of five years of budget deficits and was seen as the only remaining policy option having reached the upper limit of what was achievable with specific consumption taxes. The law passed after long and heated debate against the votes of the opposition, who maintained that a "recurrence of that odious impost" should be reserved for extreme emergencies and in particular not be a measure used during peace time (Seligman, 1914, p.130f). Despite assurances to the contrary, the initially temporary imposition of the income tax became an enduring feature of British tax law.

FIGURE 2. Rate of Introduction of Income Taxes (1800-2010)
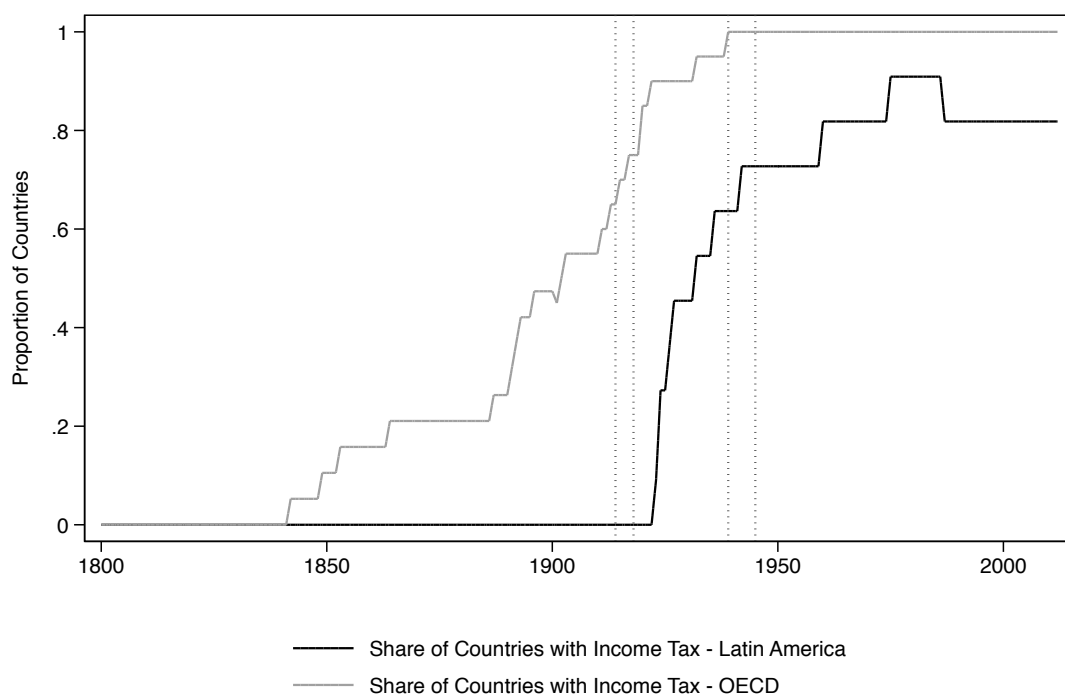


For the countries following the British lead it became soon clear that introducing an income tax was almost certainly a permanent measure. Contemporary politicians in these second-mover countries understood the weight of their decision in shaping

7

the future fiscal capacity of the state. By now, there is an extensive literature investigating the *timing* of the introduction of permanent income taxes. Both qualitative and quantitative evidence strongly suggest that spending pressures including persistent government deficits, high debt burdens, the costs of current or past wars (Tilly, 1985, 1990; Aidt and Jensen, 2009b; Scheve and Stasavage, 2012), and the spending needs generated by the expansion of public education (Ansell and Lindvall, 2013) and the introduction of social welfare systems (Briggs, 2000; Lindert, 2004) were precipitating events for introducing income taxes. Nonetheless, the question remains why and under which conditions governments at the time chose a new income tax as the basis for the desired expansion of taxation, rather than relying on an expansion of regressive taxes favored in the past.

The taxation of income, unlike most taxes on consumption, customs, or excises, is a progressive tax and falls more heavily on high-income earners. In systems in which political representation is reserved to a small, wealthy subset of the population, a median-voter model along the lines of the canonical model of taxation and redistribution (Meltzer and Richard, 1981) would thus predict a preference for regressive taxes among the political elite[6]. In turn, when the franchise is expanded, the admission of poorer voters into the electorate is expected to increase demands for redistribution and shift the preferences of the electorate to a position favoring more progressive taxation (Acemoglu and Robinson, 2001; Meltzer and Richard, 1981; Boix, 2003). If voters are able to translate their preferences for fiscal policies into policy, extending the suffrage is thus expected to lead to fiscal expansion through higher and more progressive taxation.

Empirically, there is limited evidence for this 'franchise-extension hypothesis'. Aidt et al. (2009b; 2011) find no empirical relationship between franchise extensions and the propensity to introduce income taxes in Europe or Latin America. In fact, contrary to expectation, income taxes were often introduced *before* the expansion of the franchise and the establishment of democracy. As seen in table 1, more than half

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[6]Acemoglu et al. (2009) show that the application of the median-voter theorem is theoretically applicable in more limited franchises in non-democracies as well.

TABLE 1. Introduction of Income Taxes by Regime Type

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|---|---|---|
| Under democracy | 13 (43%) | Australia (1915), Belgium (1922), Canada (1917), Chile (1924), Denmark (1903), Finland (1920), France (1911), Germany (1920), New Zealand (1891), Spain (1932), Switzerland (1939), United States (1913), Uruguay (1960) |
| Under non-democracy | 17 (57%) | Argentina (1932), Austria (1849), Bolivia (1975), Brazil (1923), Colombia (1927), Ecuador (1926), Ireland (1853), Italy (1864), Japan (1887), Mexico (1924), Netherlands (1893), Norway (1892), Peru (1936), Portugal (1896), Sweden (1902), United Kingdom (1842), Venezuela (1942) |

the countries in the sample used for this paper were non-democratic at the time the income tax was introduced. In Latin America, the region with the highest income inequality in the world, almost 80 percent of the countries (11 out of 14) introduced income taxes in a non-democratic setting.[7]

This simple overview already suggests that the intuitive temporal ordering of franchise extensions being followed by income tax expansions (Meltzer and Richard, 1981) is likely incorrect. Perhaps more importantly, the timing of the introduction of new taxes is only a necessary condition for higher tax revenues. Income tax laws are not created equal. The chosen tax rates, the breadth of the tax base, administrative capacity, and enforcement are crucial in translating the new tax law on the books into a measurable revenue for the treasury. Comprehensively measuring the *actual* administrative capacity of states to enforce tax compliance for the past 200 years is a tremendous task. Beyond simple indicators of some policies improving fiscal capacity, including the introduction of tax withholding (Besley et al., 2013), there is currently little historical data to aid in this task. What we are able to observe more concretely, however, is the fiscal success of these new taxes. Historical evidence on

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[7]The indicator for democracy is from Boix, Miller and Rosato (2013). The categorization in the table is almost identical if an alternative measure of the extent of democracy, the polity score (Marshall et al., 2010), is used to identify democracies at the time of introduction of the income tax. The starting years of the income tax are from independent data collection. In two countries, Ireland and Norway, the introduction of the income tax falls into a time period in which these countries were not formally independent. For Germany, I use the introduction of the first nation-wide income tax to remain consistent with the overall coding system. However, many German principalities introduced income taxes already during the Wilhemine Era in the 19th century (see Mares and Queralt, 2014, for further information). Paraguay is not included in the table because it has only introduced a nationwide income tax in 2012, after the end of the underlying panel data.

government revenues provides a way to measure the *realized* fiscal capacity of states in a comparative fashion. Following similar arguments in the literature (Rogers and Weller, 2014), this paper uses the actual observed yield of income tax revenues as a share of GDP as a proxy for the fiscal capacity of the state.

The central argument of this paper is that the circumstances under which income taxes were introduced can have lasting effects on the way tax systems are structured and may help explain differential patterns of fiscal capacity across space and time. If income taxes are introduced under the control of a narrow elite or in an oligarchic setting, the resulting tax laws should be designed to favor the median voter *at the time of introduction*, who is part of the wealthy class and disfavors redistribution. Income tax laws set up in non-democratic setting[8] should thus on average result in lower income taxation. In contrast, if income tax laws are set up under broad(er) suffrage, the median voter is poorer, moving preferences toward redistribution and thus higher income taxation. This argument thus differs from existing explanations in that it separates the legacy effects of the institutional environment present at the time of the introduction of the income tax from the effects of the concurrent institutional and political environment in a country. The first hypothesis addresses the main argument of the paper.

**Hypothesis 1.** *Income taxes are more likely to be effective in generating revenue if they are introduced under democracy.*

How do non-democratic elites assure that the income tax laws they enact persist? If non-democratic elites indeed establish income tax laws intended to thwart successful taxation of income in the future, then we need to understand whether and how such institutional persistence of tax laws is possible. While democracy re-allocates de jure power to poorer agents, richer segments of the society can compensate for

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[8]Following the argument, non-democratic settings and situations of competitive elections with severely limited franchise are expected to yield similar income tax laws. Since reliable historical measures of the extent of the franchise or electoral participation are difficult to obtain, the empirical analysis relies on a democracy indicator from Boix et al. (2013) (hereafter BMR) which incorporates both participation and competition.

their loss of power by investing in and expanding their de facto power (Acemoglu and Robinson, 2006a). I argue that anti-democratic institutional restrictions can ensure the continued outsized influence of a small segment of society over policy decisions well into the future. For example, Londregan (2000) argues that the outgoing Pinochet government in Chile implemented a new constitution before transition to democracy to put limits on future redistribution. Examples for such institutional restrictions associated with advantaging a rich, usually landed elite, are bicameralism, suffrage limitations, malapportionment, and the open ballot (Albertus and Menaldo, 2014). The preferences of landed elites are overrepresented when upper houses in bicameral legislatures are hereditary and unelected (as most of the members of the House of Lords in the United Kingdom) or provide more weight to rural votes through malapportionment. Based on a cross-country analysis of government revenue data from 1990 to 2007, Ardanaz and Scartascini (2013) find that historically unequal countries have higher levels of legislative malapportionment, which in turn is associated with lower shares of personal income taxes in GDP. Another institutional restriction is the open ballot which allows that hierarchical relationships are transferred to the ballot box through intimidation and the threat of reprisals (Baland and Robinson, 2008; Aidt and Jensen, 2012).

Arguably, the most direct connection between representation and preferences for redistribution can be drawn, when suffrage itself is limited based on wealth, income, tax payments, or property ownership.[9] For example, Mares and Queralt (2014) show that among the principalities of Wilhelmine Germany the likelihood of an early adoption of the income tax was highest in unequal places in which elites had ensured their political dominance through suffrage limitations.

Such franchise restrictions were historically common across the countries in the sample used for this paper as well. Using available data on franchise restrictions and

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[9]More recently, Corvalan et al. (2015) have explored the effects of similar restrictions on the candidacy of running for political office and found that these served as additional elite safeguards against progressive spending policies.

the extent of suffrage from Przeworski (2009)[10], we can get a sense of the suffrage institutions in place at the time of the introduction of income taxation. For the 26 countries for which data is available at the time when the income tax was introduced, 46 percent restricted the franchise based on literacy and/or property. On average, 25 percent of the population is estimated to have been eligible to vote at the time of introduction though these figures are often only estimations.

I expect wealthy elites to be less likely to oppose the establishment of income taxes if their political influence is secured through institutional restrictions on the franchise. Income taxes introduced when democratic selection is elite-biased are further expected to be less efficacious in raising tax revenues. While many of these franchise restrictions are removed at later points of time, the expectation is that tax institutions are sticky, and thus income tax laws established under a restricted franchise are expected to be less effective in the longer term as well.

**Hypothesis 2.** *Income tax laws established in the presence of franchise restrictions based on property or income are less effective in raising tax revenues.*

The stylized conflict over the extent of income taxation articulated thus far has been between a conservative, oligarchic elite and a liberal, poor mass of citizens. This central conflict is the common focus in the literature on understanding the interactions of democracy, progressive taxation, and redistribution (cf. Meltzer and Richard, 1981; Acemoglu and Robinson, 2000, 2001; Aidt and Jensen, 2009a,b; Aidt and Eterovic, 2011; Scheve and Stasavage, 2012). One of the assumptions in the theoretical setup is that the interests of the ruling elite are indeed largely a function of their income or wealth, inducing a conservative, anti-tax and anti-redistribution stance. Yet, as discussed above, the introduction of the income tax often took place under the auspices of non-democratic governments, for example, in Argentina (1932)[11], Turkey (1907), and Brazil (1923). The prevalent assumption in formal

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[10]For Latin America, also see Engerman and Sokoloff (2005) for a detailed description of historical suffrage institutions.

[11]Argentina's first personal income tax (*Impuesto de Emergencia a los Réditos*) was introduced in 1932 under the presidency of José E. Uriburu, who had deposed President Yrigoyen two years earlier in the first military coup d'état against the constitutional order established in 1862 (Alvaredo,

models of democratization that democracy arises in transition from a conservative dictatorship or oligarchy which in turn is followed by increased redistribution may be even less tenable in the non-European context. Especially in Latin America, populist left-wing, and often non-democratic governments appealed to the working class by introducing social welfare systems early on. It is thus plausible that the ideological orientation of a government, both democratic and non-democratic, may be an important predictor for when and which kind of tax innovations are adopted and whether fiscal capacity is expanded in the process[12]. In general, the ideological orientation (with regard to redistribution) of the government in power at the time of the introduction of the income tax could thus be taken as proxy for the political elite's preferences about redistribution. Conservative governments are expected to be associated with preferences for lower redistribution and in turn a desire to introduce income tax systems that are intended to result in lower tax collection. As before, the emphasis is on the legacy effects of ideological orientation of the government in power at the time of introduction.

**Hypothesis 3.** *Income taxes introduced by right wing governments are associated with lower income tax revenue collection.*

To summarize, this paper argues that the political and institutional conditions under which the first income tax law is introduced has a lasting and possibly enduring effect on the extent of revenue collection. The three conditions that are pinpointed as potentially differentiating fiscal capacity are the extent of democracy, the existence of franchise restrictions, and the political ideology of the government in power at the time of introduction. Central to all three of these explanations is the conflict

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2007). Notably, previous attempts to introduce the income tax were blocked by the Conservative party dominating the Senate (Román, 2012).

[12]Aidt and Jensen (2009b) propose a similar connection between ideology and redistributive preferences but find no evidence that historically left-wing parties were instrumental in introducing the income tax in Europe. When looking at the effects of the strength of left-wing parties on government revenues and expenditures in a smaller sample of 8 European countries, the authors even document a negative relationship. Roemer (1998) provides a game-theoretic model of the argument and claims that when voters are weighing multiple salient issues at the same time, e.g. redistribution and religion, then even poor voters may vote against their fiscally leftist preferences.

highlighted in a model of political decision-making in which the salient conflict is (income or wealth) inequality (e.g. Meltzer and Richard, 1981). In particular, it is the understanding that connecting political decision-making to the distribution of property and/or income allows us to predict individual preferences about the capacity of a proposed income tax regime to generate revenues and to redistribute such revenue from rich to poor.

How and why tax systems vary are difficult questions. This paper focuses on one important part of that variation, the relative extent of income taxation over time. In the existing literature, the political decision to introduce income taxes and expand the fiscal capacity of the state has been linked to a host of economic and political factors. Broadly, we can identify three sets of determinants of the capacity to raise revenue from direct taxation. First, there is the *economic structure hypothesis*. Economic development, in particular the transformation of agricultural to industrialized economies, the extent to which large businesses are represented in the economy (Burgess and Stern, 1993), and the rise of per capita income (Musgrave, 1969) are structural changes that enable and encourage the reliance on income taxation. The trade liberalization necessary to reduce the reliance on taxes on international trade can be difficult (Baunsgaard and Keen, 2010), and may even be foregone if sufficient non-tax revenues in the form of natural resources or foreign aid are available (Tait et al., 1979). Second, there the is *war hypothesis* which suggests that spending pressures contribute to the urgency of the development of new revenue sources. Sustained fiscal deficits as well as increased war expenditures (Tilly, 1985; Scheve and Stasavage, 2012; Dincecco and Prado, 2012) often precipitated or coincided with the introduction of the income tax and its subsequent expansions. While in the European setting there is strong evidence that fiscal pressures from war expenditures played an important role for the introduction of the new taxes (Dincecco, 2009), the importance of war appears to be less salient in the Latin American context (Centeno, 1997). Third, there is the *fiscal contract hypothesis*. Taxation and political representation are expected to be the outcome of an implicit

negotiation – a fiscal contract – between citizens and the state. Since coercion is costly, citizens can constrain states by withholding revenues, and hence rulers have an incentive to credibly commit to comply with citizens' demands, for example, by giving them a say over policy through representation (Timmons, 2004). In such a world, democratic representation would be expected to be associated with increased tax levels. Dynamically, we would expect that expanding the franchise, that is allowing poorer voters into a position of influencing policy, should increase demands for redistribution and thus taxation (Meltzer and Richard, 1981). Whether such an expansion of the franchise is a strategy of the rich to forestall a revolutionary threat (Acemoglu and Robinson, 2000) or whether franchise extensions occur for other reasons and change the policy demands of the median representative (Aidt et al., 2006) is of less importance for this paper. The main prediction – increased income taxation associated with expansions of the franchise – remains the same.

The subsequent section introduces the data that will be used to test the argument and provides some descriptive statistics and graphical evidence before turning to the empirical analysis. Variables capturing the three main alternative explanations are included as controls in the subsequent empirical analysis, though data limitations due to the historical coverage of the analysis do not allow to fully capture the breadth of existing scholarship.

## Data

The goal of this paper is to examine whether introducing the income tax under different institutional and political circumstances alters its revenue generating effects in the short and long term. To make such a comparison rigorously requires the ability to compare the structure of government revenues across time and space. The main parts of the empirical analysis thus demand information about the timing of the introduction of income taxes as well as historical revenue data, ideally covering the time before and after the income tax was introduced.

For the timing of income taxes, I am able to build on efforts by Aidt and Jensen (2006) and Besley and Persson (2011) and complemented and cross-checked their

15

data. Table 1 includes information about the timing of the introduction of the income tax in the sample of countries used in the analysis.

To my knowledge, there is no complete cross-country dataset of government revenues covering a cross-regional sample and extending far enough into history to cover the time when countries introduced income taxes. Especially for today's developing countries, including for Latin America, comprehensive historical information is often incomplete, contains conflicting estimates of the size of governments and the sources of government funding, and is at times only available in country-specific primary or secondary sources. For the developed world, the task of combining a variety of sources is easier, in part by the being able to rely on a number of enterprising scholars before us and several excellent datasources covering parts of the time frame and/or country groups. The dataset of central government used for this paper relies on a joint effort (Andersson and Brambor, 2014) to assemble available secondary cross-national sources and country-specific primary and secondary information on historical government revenues as far back as possible to 1800 (or the time of independence). The data comprises an unbalanced panel of 31 countries (17 countries in Europe, its colonial offshoots in North America and Oceania, and Japan, and 14 countries in Latin America).[13]

The dataset contains information on the public finances of central governments. To make such information comparable cross-nationally we have chosen to normalize nominal revenue figures in two ways: (i) as a share of the total budget, and (ii) as a share of total gross domestic product. The total tax revenue of the central state is disaggregated guided by the *Government Finance Statistics Manual* of the International Monetary Fund (2001) which provides a classification of types of revenue, and describes in detail the contents of each classification category. Given the

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[13]The following countries are included: Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Denmark, Ecuador, Finland, France, Germany (West Germany between 1949 and 1990), Ireland, Italy, Japan, Mexico, New Zealand, Norway, Paraguay, Peru, Portugal, Spain, Sweden, Switzerland, the Netherlands, the United Kingdom, the United States, Uruguay, and Venezuela. In other words, the dataset includes all South American, North American (excluding Central America and the Carribean), and Western European countries with a population of more than one million, plus Australia, New Zealand, and Japan.

paucity of detailed historical data and the needs of our project, we also combined some subcategories.[14]

*Main Dependent Variables.* Empirically, this paper tries to establish whether income tax laws introduced under different institutional and political circumstances yield different outcomes with respect to government revenue collection. I rely on two main dependent variables to measure differences in tax revenue collection: (1) the share of income taxes in the budget of the central government (Income Tax/Total Tax), and (2) income taxes as share of GDP (Income Tax/GDP)[15]. In addition, the graphical analysis also contains a third measure of revenue raising capacity commonly used in the literature: the size of the central government (Total Tax/GDP). The share of the budget coming from income taxes indicates whether income taxes are important *relative* to other sources of revenue. However, budget shares say little about the *absolute* fiscal ability of the government to tax. In contrast, income taxes as a share of GDP combine both the relative weight of income taxes in the budget and the absolute amount of revenue that is being raised through income taxation, making it the preferred measure.[16] Lastly, the size of the central government has the most comprehensive coverage in the dataset but only partially captures the effect of new income taxes. For the regression analysis, methodological preference is given to

[14]For a complete description of all sources and coding decisions, the codebook is available on the author's website.

[15]In the dataset, the share of total central government tax revenue from income taxes includes taxes on (i) income, profits, and capital gains by individuals, (ii) income, profits, and capital gains by corporations and other enterprises, and (iii) taxes on payroll and workforce.

Ideally, I would prefer to separate these three sub-categories, however, especially historical data sources often do not allow a more fine-grained presentation. The separation of individual and corporate income taxes is inconsistent across time and space. In many countries, individuals (including lawyers, doctors, and accountants) can choose whether to incorporate their personal business or remain 'in persona' businesses. Such choices, in turn, are often influenced by taxation rules. To circumvent such difficulties and reduce coding inconsistencies, we combined personal and corporate income taxes. While payroll taxes may blur the line of redistributive taxes discussed in this paper, due to their late introduction in the mid-twentieth-century are less influential in the long-historical period under investigation.

[16]Unfortunately, the estimation of the gross domestic product is a relative modern concept, and has only recently and with great empirical difficulty been extended backward into the 19th century. Accordingly, for the early to mid-19th century we often have no or only highly uncertain measures of the total size of the economy.

using the share of income taxes as share of GPD but the analysis provides results for the income tax share in the central government budget as well.[17]

*Main Independent Variables.* The first main independent variable is an indicator for democracy from Boix et al. (2013) (hereafter BMR). Unlike another commonly used democracy indicator – the Polity Score (Marshall et al., 2010) – BMR present a measure of democracy of both contestation and participation. In contrast to the polity score democracy coding, in which participation plays no role, BMR identify democracies when political leaders are chosen through free and fair elections and satisfy a threshold value of suffrage. Given the theoretical argument with its emphasis on the extent of the franchise presented above, the BMR democracy measure is deemed more appropriate to test hypothesis 1. A cumulative count of a consecutive years of democracy are used for further tests and also based on the BMR democracy indicator.

The second main independent variable is a measure of restrictions on the franchise to test hypothesis 2. Relying on Przeworski's (2009) comprehensive database on the history of suffrage extensions, I create a summary measure that identifies each country-year in which the electoral franchise has restrictions based on property or income. Such restrictions are direct functions or are correlated with income and are intended to prevent poorer parts of the population from becoming part of the electorate.

The third main independent variable, utilized to test hypothesis 3, is the ideology of heads of government. Consistently measuring ideological differences and similarities among leading politicians in more than 30 countries reaching well back into the 19th century is a significant challenge. The ideology coding of Brambor et al. (2016) used in the analysis addresses this challenge by making the following two assumptions. First, the focus is on the ideology of the heads of government

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[17]The regression results for total government size, that is total central government tax revenue over GDP, are substantively and statistically similar. However, since this paper is specifically concerned with the introduction of income taxes and their effects on revenue collection, the results are not direct tests of the hypotheses and omitted from the presentation.

only. More fine-grained data on the composition of the cabinet or the ideological positions of the parties in government are currently unavailable. Second, to make the ideological coding comparable across space and time, the authors rely on long-standing party families that have existed for most of the time period that is covered (starting in 1870) and use country experts to cross-check the ideology placements. Consistent with the aim of this paper, the coded ideological orientation of the heads of government concentrate on the economic dimension. The coding conventions are based on the World Bank's *Database of Political Institutions* (Beck et al., 2001; Keefer, 2012) categorization of economic ideologies for the post-1975 period. The ideology variable takes five values: R(ight), L(eft), C(enter), O(ther) or NA[18]. In the late nineteenth century and early twentieth century, that is at the time of introduction of most income tax laws in the sample, the main ideological rift within most countries under consideration is between a conservative, right and a liberal, centrist position. Consequently, for the purposes of the analysis, I contrast the outcomes of income tax laws under right-wing heads of government with left/centrist head of governments.

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[18]"Left" largely denotes socialist and social democratic parties and factions, "center" denotes centrist agrarian and social liberal parties and factions, and "right" denotes conservative, Catholic, Christian democratic, and market-liberal parties and factions.

FIGURE 3. Legacy Effects of Introducing the Income Tax on Government Revenue stratified by Democracy, Franchise Restrictions, and Government Ideology
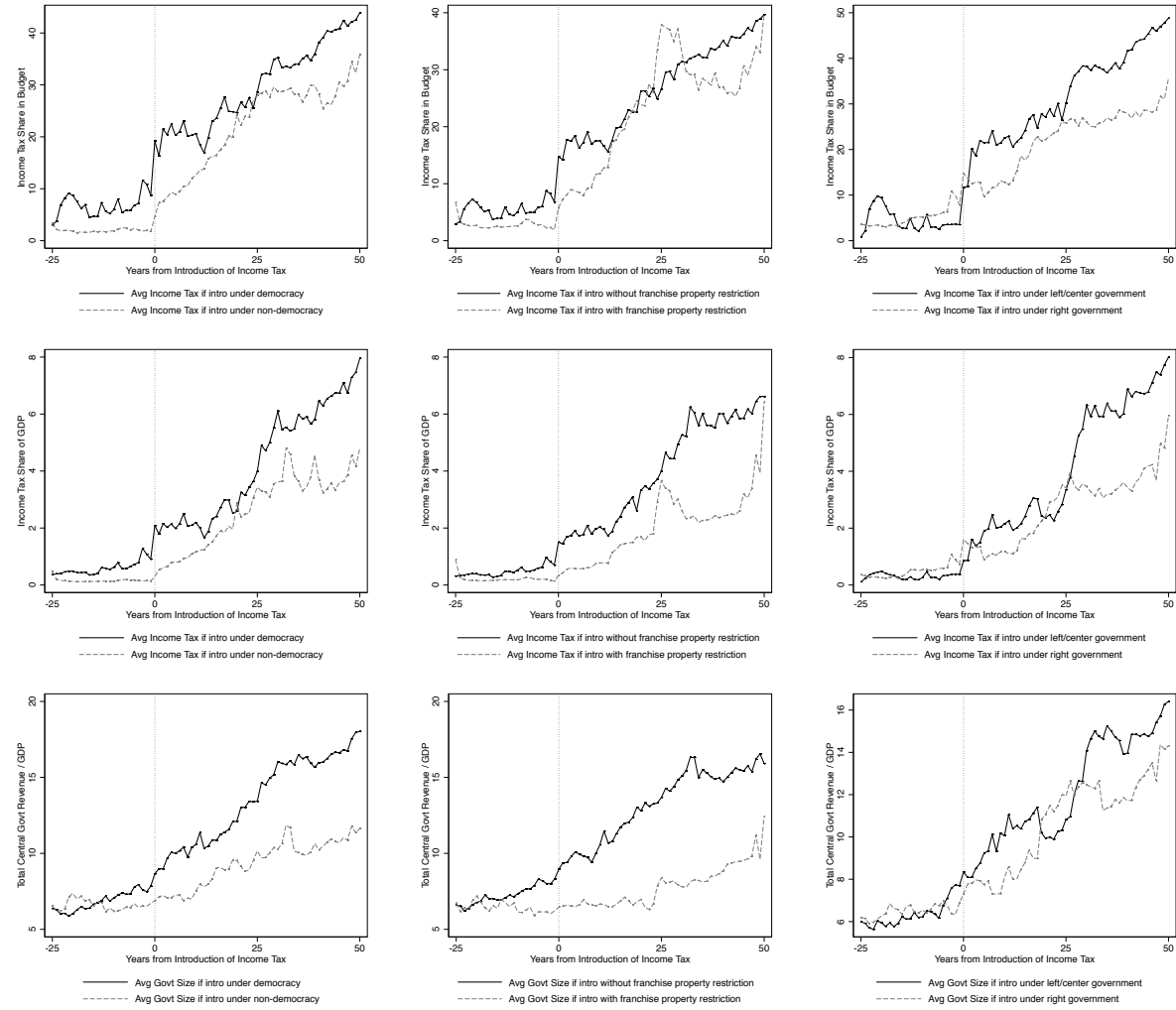


(A) Democracy      (B) Franchise      (C) Ideology

Before using a regression framework, we can explore the three hypothesized relationships graphically to gain a better understanding of the descriptive properties of the data. Figure 3 provides a comparison of average revenue collection before and after the income tax was introduced depending on the specific institutional configuration at the time of the introduction of the income tax corresponding to hypotheses 1 to 3. Following hypothesis 1, column (a) of figure 3 compares the fiscal outcomes of countries which adopted the income tax under democracy compared to countries in which the law was introduced under non-democracy. Specifically, the three graphs in column (a) compare countries that introduced the income tax under democracy (black solid line) vs. non-democracy (grey dashed line) using each of the three dependent variables introduced above: the share of income taxes in the budget, the share of income taxes in GDP, and the size of government as a share of GDP. The more clearly the two groups are separated in the hypothesized direction, the more suggestive is the evidence in support of the hypothesis in question. For column (a) we observe that countries in which the income tax was introduced under democracy are visually characterized by larger governments and more reliance on income taxes, providing some graphical support for hypothesis 1. These differences appear to remain or even widen over time.

Column (b) of 3 repeats the exercise but now differentiates countries that established permanent income taxes in a setting in which only voters with sufficient wealth or property were allowed to vote (black, solid line) at the time the income tax was introduced from countries with no such restrictions on voting (grey, dashed line). Countries with property restrictions on the franchise at the time of the introduction of the income tax are more successful in increasing the size of their governments over time and rely more on income tax revenue to do so than the comparison group, as hypothesis 2 suggests. The share of income taxes in the budget (top graph in column (b)) does not allow sufficient differentiation between the groups.

Column (c) of 3 provides a graphical test of hypothesis 3 regarding the effect of ideology on fiscal outcomes. There is some evidence, that income tax laws introduced

by right wing governments (grey dashed line) appear to be less effective (less revenue, less reliance on income taxes) than taxes introduced by center or left-wing heads of government (black solid line). However, we also see some overlap over time, suggesting that the ideology of the government introducing the income tax only imperfectly separates low and high tax capacity states.

Overall, figure 3 provides some first descriptive evidence of the data yielding partial support of hypotheses 1 to 3. Despite substantial volatility in budget shares and revenue collection over time, there is suggestive evidence that income taxes introduced under democracy, in systems without franchise restrictions, and by non-right governments have a higher income tax revenue capacity over time. Judging from these graphs, it thus appears that institutional differences at the time when income taxes were introduced may be associated with long-term differences in fiscal capacity. Yet, while figure 3 does provide some graphical evidence to support hypotheses 1 to 3, several important caveats apply. The graphs compare countries at very different points in time and do not control for other covariates affecting the type and extent of taxation. Moreover, simply averaging across countries has the potential to magnify these issues. The graphs may be a useful way to show to the long-run data to the reader and explore some basic bivariate relationships. However, they also do not lend themselves to control for country heterogeneity and temporal dynamics – issues that are clearly important in this analysis. To address these and other issues, I now turn to a panel data analysis to examine these suggestive relationships more rigorously.

*Control Variables.* The basic argument of this paper is that the institutional and political configuration *at the time the income tax was introduced* fundamentally shapes the revenue potential of the income tax. The empirical task is thus to separate the legacy effects identified in the theoretical argument from concurrent changes in the economic structure, the influence of military conflict, and the extent of democratic representation. First, an internationally comparable version of measuring the gross

domestic product per capita over time (Maddison, 2010) is used to proxy for differences in the economic structure. Some more specific measures such as urbanization rates, literacy, and the percentage of the population employed in agriculture are available (see Banks, 2011) but introduce substantial non-random missingness into the analysis, especially further back in time when income taxes were introduced. Since many of these measures are strongly correlated with GPD per capita, I chose to focus on the latter alone. Second, the influence of military conflict on revenue mobilization is captured by an indicator variable for interstate wars and civil wars.[19]

## Empirical Analysis

I estimate the determinants of the reliance on income taxes by the central government across countries over time in the full model as follows:

$$Y_{it} = \rho\, Y_{it-1} + \beta_1 \text{Tax Established}_{it} + \mathbf{Z}_{it}\delta + u_i + \alpha_t + \epsilon_{it}$$

The two dependent variables – Income Taxes over Total Taxes and Income Taxes over GDP – are continuous and usually change only slowly from year to year. To account for serial correlation, all models include a lagged dependent variable. In addition, the specification includes time by using decade dummies to capture common developments across countries.[20] The combination of time dummies and a lagged dependent variable does have the potential to introduce bias in the estimates (Hurwicz, 1950). However, that bias itself goes to zero as the number of time periods in the data grows. Following the advice of Beck and Katz (2011), we can ignore this issue given that all estimations span well over a century of data. To reduce the bias from unmeasured and omitted country-specific factors, fixed effects for countries are added. Lastly, the estimated errors are made robust to heteroscedasticity and are clustered by country.

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[19]I combine an indicator of inter-state and intra-state wars provided by the Correlates of War project (Sarkees and Wayman, 2010) and the more comprehensive information on civil wars from Przeworski (2009).

[20]A full set of year dummies is inefficient given the large number of years in the dataset but results in very similar results.

Control variables in the models that include them are a binary indicator of democracy (Boix et al., 2013), the level of economic development using Maddison's estimates of real GDP per capita (Maddison, 2010), and an indicator for war (Sarkees and Wayman, 2010; Przeworski, 2009). All independent variables are lagged by one year in attempt to account for the causal temporal ordering of budget making.[21]

Overall, this model is asking a lot from the data. The lagged dependent variable alone captures over 90% of total variation, with country fixed effects further reducing the variation to be explained. However, these additions appropriately focus empirical attention on within-country changes in revenue raising capacity. In the estimations, the presence of the lagged dependent variable removes all instances of serial correlation and thus appears to be a warranted addition to the model. In contrast, after adding the lagged dependent variable, the time dummies would no longer be needed, as they are jointly insignificant in most models. To assuage concerns about trending variables, the time dummies are nonetheless kept in the model. Unsurprisingly, the individual country fixed effects are always jointly significant.[22]

Table 2 presents the first set of analyses of the effects of introducing income tax laws on the ability to generate government revenues. Four models are presented for each of the two preferred dependent variables: income taxes over total taxes and income taxes over GDP.[23] Corroborating evidence from the existing literature, across most models the level of economic development is positively associated with expansions of the size of the state and income taxes in particular. The effect of war on income tax collection disappears when time and country fixed effects are introduced to the model. Since the two World Wars are the chief periods of the expansion of the size of the state (and income taxes in particular), time dummies controlling for common shocks across countries unsurprisingly (and appropriately) remove these changes. An indicator of democracy is not associated with revenue

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[21]The results remain similar when using time lags of 3 or 5 years for the independent variables.

[22]Table 5 in the appendix shows how the results are affected when each of the methodological choices, including fixed effects for time and space, and the control variables are added to the model.

[23]In addition, all estimations were repeated using the size of the central government (Tax Revenue/GDP) as the dependent variable. The results are comparable to the ones obtained from using the share of income taxes in GDP .

collection in most models, mirroring non-results by others (Aidt and Jensen, 2009b; Scheve and Stasavage, 2012).

I find that establishing income taxes significantly raises the share of income taxes in the budget but not their revenue as a share of GDP (see models 1 and 5 in Table 2). Models 2 and 6 add an indicator for whether the income tax was introduced under a non-democratic regime. The coefficient provides an estimate of the differential impact of an income tax under a non-democratic regime compared to the tax being introduced under a democratic regime. Note that, once the indicator for the introduction of the income tax under non-democracy is added, the coefficient on whether an income tax exists now indicates the effect of such a tax if introduced under democracy. The income tax is estimated to significantly raise the share of income taxes in the budget when introduced by democracies and non-democracies. However, income taxes introduced by non-democracies are estimated to result in a 11 percentage point lower share of income taxes in the budget in the long-run. In addition, the income tax share in GDP is estimated to be significantly lower (by 2.4 percentage points of GPD) when the income tax was introduced by a non-democratic regime. In other words, if a permanent income tax was introduced under non-democracy, the revenue raising capability from income taxes in that country is significantly lower compared to a country in which the income tax was introduced in a democratic setting. We thus find support for the differential impact of income taxes introduced in different political regimes on revenue capacity, as indicated by hypothesis 1.

Simply comparing democracies and non-democracies may be to coarse a differentiation. I argue above that franchise restrictions based on property should result in a direct translation of preferences for lower income taxation into parliamentary representation. Models 3 and 7 in Table 2 include an indicator for whether the first income tax was introduced under a franchise with property restrictions. In our analysis, we find no evidence to support hypothesis 2. Income taxes introduced in the

presence of franchise restrictions appear no different in their revenue raising potential. Models 4 and 8 attempt to disentangle the effects of democracy and franchise restrictions. The results again point to democracy as the more important mechanism. However, given that in the data non-democracy and franchise restrictions are highly correlated, it may be difficult to separate the effects empirically.

FIGURE 5. Long-Run Marginal Effects of the Introduction of Income Taxes over Time



Income Taxes as a Share of GDP

Income Taxes as a Share of Budget
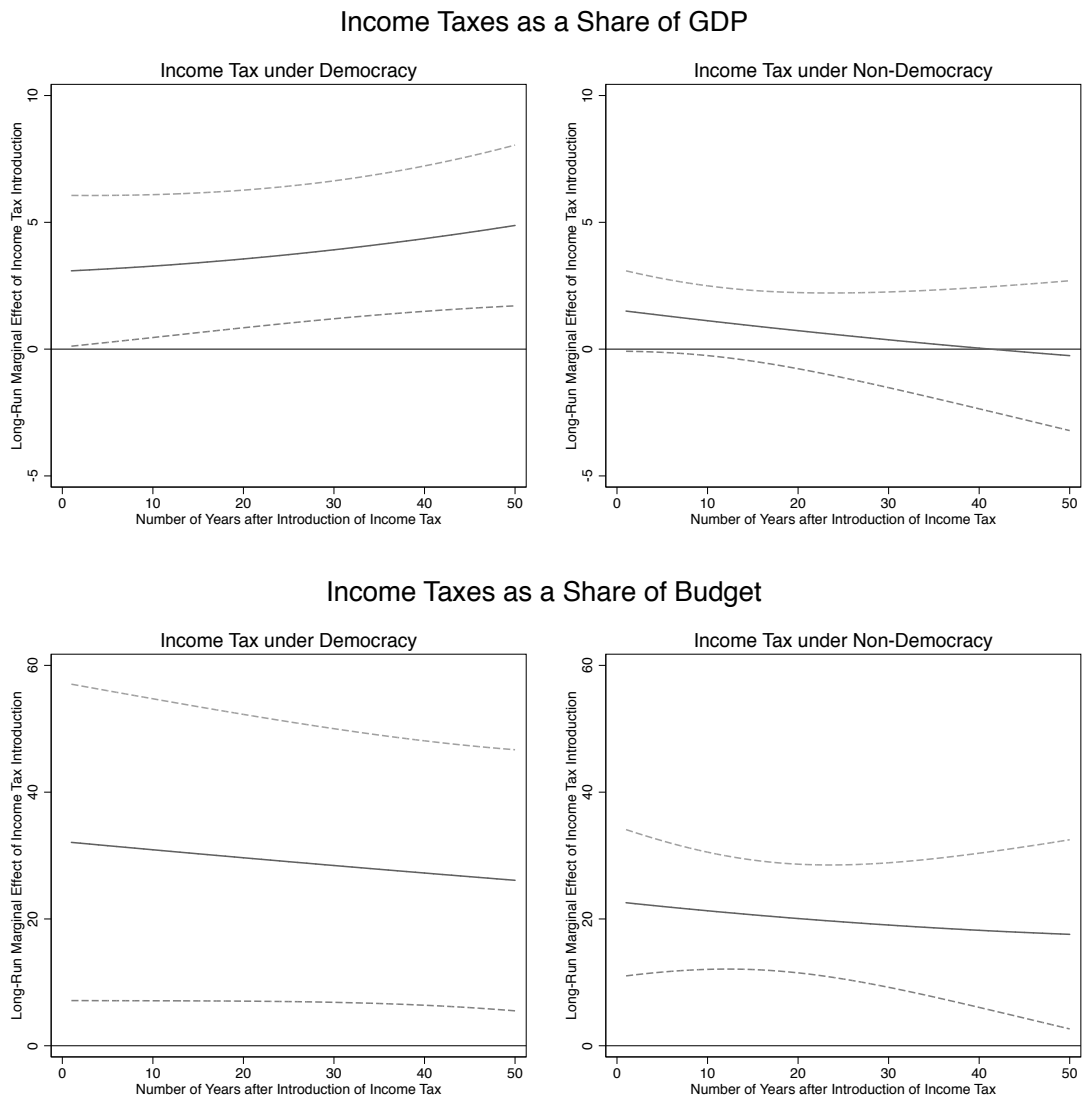
The analysis thus far only considers the average differences in revenue capabilities over time. More realistically, we may expect that any initial differences corresponding to the institutional differences the original income tax law was passed under may

eventually dissipate, once the franchise is expanded, laws are changed, the country becomes democratic etc. Table 3 thus continues the analysis by examining whether the length of time after passing the law matters in determining its effects. To aid interpretation, Figure 5 displays the marginal effects of introducing the income tax for democracies and non-democracies for 50 years after the law was initially introduced (based on models 2 and 4 in table 3).

For democracies, the marginal effect of having introduced an income tax remains positive and significant over the entire time period for both dependent variables (see Top Panels of Figure 5). The confidence intervals are wide, mirroring the variation in income tax collection across countries in the underlying data and thus our uncertainty about the predictions for each country. Also, the large confidence intervals around these long-run marginal effects suggest that the changes after an income tax was introduced were quite heterogenous across countries.

When the income tax law is introduced under non-democracy, the predicted marginal effect for the income tax share of GDP is no different from zero even several decades after its introduction. In other words, income tax laws introduced under non-democracies are not predicted to raise significant revenues. However, the income tax shares of the budget are estimated to be positively affected for both types of regimes (see Bottom Panels of Figure 5) across the time period.

Inferring preferences about taxation based on the extent of democracy or institutional restrictions on the ability to vote is a useful but indirect assessment of the difference in tax laws. Above I have argued that is its plausible that restricting the franchise to a small and rich set of the population would yield a preference for low (income) taxation among the elected representatives of the national government. In non-democratic settings, however, such a translation of preferences may not work the same way. For example, it is possible that some authoritarian leaders actually have ideological preferences for redistribution and higher taxation of the rich. In general, we would like to check whether the ideological leaning of the government influences whether central government income is generated from income taxes. To

directly test the legacy effects of the preferences of those in power at the time the first income tax law was introduced, we need to have a direct measure of such ideological differences.

Using a recently created measure of the ideological orientation of the heads of government in each country from 1870 onwards, I am able to directly test whether the redistributional preferences of the government leadership are associated with more effective income tax laws. The set of analyses presented in Table 4 examines how the political ideologies of the government in place at the time of passing the income tax and those in power at later times affect revenue collection. The variables on government ideology measure the ideology of the head of government on a left-center-right scale for the countries in the sample. Brambor et al. (2016) have coded the ideological orientation of heads of government since 1870 using the same coding conventions that the World Bank uses for its Database of Political Institutions, which contains data on the ideology of heads of government from 1975 onward. For the post-1975 period, the dataset largely replicates the World Bank coding. The variable *Executive Ideology* categorizes each head of government's ideological orientation from left to right (with a special emphasis on economic policies): Right-wing (R): Conservative; Center (C): Socially and economically liberal/neither left nor right; Left wing (L) Stressing governmental spending, wealth redistribution; Other (O): When ideology cannot be determined.

The results of the ideological determinants of income tax capacity are presented in Table 4. The results for the income tax share in the budget are consistent with hypothesis 3: when a conservative government introduces the first income tax law, the share of income taxes in the budget is significantly lower than when the law is introduced by a non-right government. In fact, the income tax share in the budget is predicted not to increase in the long-run (see model5, $p = 0.52$). For the share of income taxes in GDP there is no clear relationship: the effects of income taxes do not differ by the ideological persuasion of the governments that introduced them.

The models also control for the concurrent ideology of head of governments. Importantly, the effect of the ideology of the head of government is a legacy effect only; the concurrent ideology of governments does not significantly affect income taxation. When compared to the effects of introducing the income tax under democracy or non-democracy, it appears that the legacy effect of ideology is stronger for income taxes in the budget (model 6) but of no relevance for the case of income taxes as a share of GDP (model 3). In sum, I find some evidence of a legacy effect of the ideological leaning of the government that introduced the original income tax law. Right wing government leadership at the time of the introduction of the income tax is associated with significantly lower income taxation (as a share of the budget) in the long-run.

Overall, the analysis finds support for the claims that income tax laws are shaped by the type of regime and ideological persuasion of the government that introduces them. Non-democratic regimes and conservative heads of government are associated with less reliance on income taxation. The analysis does not support the idea that property restrictions on the franchise are associated with long-run reductions in income taxation capacity.

## Conclusion

Countries today, even those with similar trajectories of state formation and institutional development, exhibit tremendous differences in the way their taxation systems are structured. This paper adds to the research about the origins of these differences and argues that these differences can in part be attributed to the institutional and political circumstances under which income taxes were initially introduced. Importantly, I contend that variations in the circumstances under which tax innovations were implemented can have lasting effects on the way tax systems are structured and may help explain differential patterns of fiscal capacity across space and time.

One of the most significant expansions of the capacity to tax - the introduction of income taxation - often took place under the auspices of non-democratic systems. I argue that wealthy elites in oligarchic regimes implement income taxes in anticipation of later efforts of income taxation in more representative settings.

Using a new dataset on historical government revenues for 31 countries in Latin America, Europe, Oceania, and Japan as well as the timing of the introduction of income taxes starting in 1800 or the time of independence I test these ideas. Overall, the analysis finds support for the claim that income tax laws are shaped by the type of regime and ideological persuasion of the government that introduces them. Income tax laws introduced by non-democratic and conservative governments appear to permanently reduce the ability to collect income taxes. These differences remain over time, even as countries become democratic, change governments, and abandon some of the elite biased institutional restrictions present earlier on.

Rather than rejecting the original intuition about a positive association between democracy and fiscal capacity, the results confirm that democracy indeed threatens elites with high taxation. This paper shows that in addition to preventing democracy outright, under some circumstances elites also appear to have the ability to lock in poorly functioning tax regimes that reduce the tax take from the income tax long after it has been introduced. Given these results, the introduction of such an ineffective income tax regime, even under non-democracy, is thus no longer an unexpected result.

TABLE 2. Introduction of Income Taxes - Regime Type and Franchise Restrictions

| Dependent Variable | Income Tax Share of GDP | | | | Income Tax Share of Budget | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $Y_{t-1}$ | 0.93*** | 0.93*** | 0.93*** | 0.93*** | 0.93*** | 0.93*** | 0.92*** | 0.92*** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) |
| Income Tax Exists | -0.05 | 0.04 | -0.06 | 0.01 | 1.26*** | 1.68*** | 1.27*** | 1.37** |
| | (0.07) | (0.09) | (0.10) | (0.10) | (0.39) | (0.54) | (0.46) | (0.50) |
| Tax under Non-Democracy | | -0.17** | | -0.21** | | -0.80* | | -0.28 |
| | | (0.08) | | (0.08) | | (0.46) | | (0.43) |
| Tax with Franchise Property Restriction | | | -0.05 | 0.10 | | | -0.22 | -0.02 |
| | | | (0.14) | (0.15) | | | (0.46) | (0.56) |
| Democracy (0/1) | 0.05 | 0.07 | 0.07 | 0.07 | 0.23 | 0.31 | 0.69** | 0.69** |
| | (0.05) | (0.05) | (0.06) | (0.06) | (0.40) | (0.34) | (0.31) | (0.31) |
| Log(Real GDP per cap) | 0.17 | 0.18 | 0.22* | 0.21* | 1.39*** | 1.48*** | 1.24** | 1.23** |
| | (0.11) | (0.11) | (0.12) | (0.12) | (0.42) | (0.41) | (0.49) | (0.49) |
| War | 0.09* | 0.09* | 0.08 | 0.08 | 0.24 | 0.25 | 0.25 | 0.25 |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.17) | (0.18) | (0.19) | (0.19) |
| Country Fixed Effects | YES | YES | YES | YES | YES | YES | YES | YES |
| Time Fixed Effects | YES | YES | YES | YES | YES | YES | YES | YES |
| Number of Countries | 30 | 29 | 28 | 28 | 30 | 29 | 28 | 28 |
| Observations | 3283 | 3201 | 2941 | 2941 | 3468 | 3382 | 3113 | 3113 |

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed)
Hetereoscedasticity robust standard errors, clustered by country, in parentheses. Constants estimated but not reported.
All variables are lagged by one period.

TABLE 3. Introduction of Income Taxes - Length of Tax in Existence

| Dependent Variable | Income Tax Share of GDP | | Income Tax Share of Budget | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| $Y_{t-1}$ | 0.92*** | 0.92*** | 0.93*** | 0.93*** |
| | (0.01) | (0.01) | (0.01) | (0.02) |
| Income Tax Exists | 0.21** | 0.09 | 1.95*** | 1.71** |
| | (0.10) | (0.11) | (0.56) | (0.62) |
| Years after tax | -0.44 | -0.33 | -3.60 | -3.43 |
| | (0.60) | (0.57) | (2.29) | (2.38) |
| Years after Tax sq. | 0.34*** | 0.64*** | 0.43 | 1.22 |
| | (0.09) | (0.23) | (0.38) | (0.77) |
| Tax under Non-Democracy | -0.25*** | -0.07 | -0.87* | -0.50 |
| | (0.07) | (0.10) | (0.46) | (0.63) |
| Tax under Non-Democracy X Years after Tax | | -0.39 | | -0.55 |
| | | (0.29) | | (1.37) |
| Tax under Non-Democracy X Years after Tax sq. | | -0.13 | | -0.63 |
| | | (0.25) | | (0.92) |
| Democracy (0/1) | 0.07 | 0.11 | 0.32 | 0.39 |
| | (0.06) | (0.07) | (0.35) | (0.39) |
| Log(Real GDP per cap) | 0.19 | 0.18 | 1.56*** | 1.55*** |
| | (0.11) | (0.11) | (0.44) | (0.44) |
| War | 0.11** | 0.13** | 0.27 | 0.30 |
| | (0.05) | (0.05) | (0.18) | (0.19) |
| Country Fixed Effects | YES | YES | YES | YES |
| Time Fixed Effects | YES | YES | YES | YES |
| Number of Countries | 28 | 28 | 28 | 28 |
| Observations | 3183 | 3183 | 3364 | 3364 |

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed)
Hetereoscedasticity robust standard errors, clustered by country, in parentheses.
Constants estimated but not reported. All variables are lagged by one period.

TABLE 4. Introduction of Income Taxes - Ideology of Government

| Dependent Variable | Income Taxes Share of GDP | | | Income Tax Share of Budget | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $Y_{t-1}$ | 0.93*** | 0.92*** | 0.92*** | 0.93*** | 0.92*** | 0.92*** |
| | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Income Tax Exists | -0.05 | -0.00 | 0.03 | 1.34*** | 1.74** | 1.82** |
| | (0.08) | (0.11) | (0.11) | (0.43) | (0.65) | (0.67) |
| Right Executive | 0.03 | 0.04 | 0.04 | 0.10 | 0.13 | 0.14 |
| | (0.07) | (0.09) | (0.09) | (0.21) | (0.26) | (0.26) |
| Tax established by Right Govt | | -0.11 | 0.06 | | -1.43** | -1.23** |
| | | (0.11) | (0.12) | | (0.57) | (0.55) |
| Tax under Non-Democracy | | | -0.31*** | | | -0.42 |
| | | | (0.09) | | | (0.35) |
| Democracy (0/1) | 0.05 | 0.08 | 0.09 | 0.32 | 0.42 | 0.44 |
| | (0.07) | (0.08) | (0.09) | (0.37) | (0.40) | (0.39) |
| Log(Real GDP per cap) | 0.23* | 0.14 | 0.16 | 1.40*** | 1.44*** | 1.47*** |
| | (0.12) | (0.13) | (0.13) | (0.39) | (0.51) | (0.50) |
| War | 0.10* | 0.11 | 0.11 | 0.23 | 0.36 | 0.37 |
| | (0.06) | (0.07) | (0.07) | (0.19) | (0.22) | (0.22) |
| Country Fixed Effects | YES | YES | YES | YES | YES | YES |
| Time Fixed Effects | YES | YES | YES | YES | YES | YES |
| Number of Countries | 30 | 25 | 25 | 30 | 25 | 25 |
| Observations | 2981 | 2465 | 2465 | 3084 | 2558 | 2558 |

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (two-tailed)

Hetereoscedasticity robust standard errors, clustered by country, in parentheses.

Constants estimated but not reported. All variables are lagged by one period.

# Appendices

A. ADDITIONAL TABLES AND FIGURES

TABLE 5. Model Setup: Time and Country Fixed Effects, Controls, and the Main Independent Variables

|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| $Y_{t-1}$ | 0.98*** | 0.96*** | 0.94*** | 0.94*** | 0.93*** | 0.93*** | 0.93*** |
|  | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.02) | (0.02) |
| Income Tax Exists | 0.20*** | 0.12*** | 0.07 | 0.15** | 0.04 | -0.06 | 0.01 |
|  | (0.04) | (0.05) | (0.05) | (0.07) | (0.09) | (0.10) | (0.10) |
| Tax under Non-Democracy |  |  |  | -0.15* | -0.17** |  | -0.21** |
|  |  |  |  | (0.07) | (0.08) |  | (0.08) |
| Tax with Franchise Property Restriction |  |  |  |  |  | -0.05 | 0.10 |
|  |  |  |  |  |  | (0.14) | (0.15) |
| Democracy (0/1) |  |  | 0.05 | 0.05 | 0.07 | 0.07 | 0.07 |
|  |  |  | (0.05) | (0.05) | (0.05) | (0.06) | (0.06) |
| Log(Real GDP per cap) |  | 0.13*** | 0.24*** | 0.24*** | 0.18 | 0.22* | 0.21* |
|  |  | (0.03) | (0.07) | (0.07) | (0.11) | (0.12) | (0.12) |
| War |  | 0.07 | 0.10* | 0.10* | 0.09* | 0.08 | 0.08 |
|  |  | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) | (0.05) |
| Country Fixed Effects | NO | NO | YES | YES | YES | YES | YES |
| Time Fixed Effects | NO | NO | NO | NO | YES | YES | YES |
| Number of Countries | 30 | 30 | 30 | 29 | 29 | 28 | 28 |
| Observations | 3808 | 3283 | 3283 | 3201 | 3201 | 2941 | 2941 |

\* $p < 0.10$; \*\* $p < 0.05$; \*\*\* $p < 0.01$ (two-tailed)

Hetereoscedasticity robust standard errors, clustered by country, in parentheses.

Constants estimated but not reported. All variables are lagged by one period.

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