

Structural Transformations and The Political Roots of Fiscal Capacities in Latin America

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Abstract

There is a very strong consensus on the role of fiscal capacities on state formation. Unfortunately, current theories focused on Latin America do not explain satisfactorily the origins of fiscal capacities. Taking a sectoral politics approach, this paper argues that the political monopoly pursued by agricultural economic elites was broken contingent on the emergence of a strong industrial sector. This major structural transformation triggered a series of institutional investments, as long as economic, political and social changes, planting the seed of states with high capacities. When agricultural monopolists were not challenged, these institutional investments never existed or were weak. We test this theory using cross-national panel data from 1900 to 2010 for a sample of Latin American countries. The Chilean example is offered as a shadow case to illustrate the mechanisms at work. Both approaches strongly confirm the theory.

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I. INTRODUCTION

*the only important coercion which is
crucial to development is taxation*

Arthur Lewis, 1965

*the budget is the skeleton of the state
stripped of all misleading ideologies*

Schumpeter, 1991

According to most political economists, fiscal sociologists, development economist and economic historians, fiscal capacities are a prerequisite for “strong” states. Much effort has been devoted to understand the relationship between the politics of taxation and state capacities in a number of the European cases. However there is still much work to do to understand the development of post-colonial Latin American fiscal capacities. For example, though the consensus on the importance of fiscal capacities exists, the political and economic *origins* of fiscal capacities in Latin America are still unclear. *Why do some countries have more effective fiscal capacities than others? What have been the factors that led post-colonial Latin American countries to self-impose a system to directly tax individuals? What is the relationship between fiscal capacities and state-building in the Latin American context?* These questions are key to understand the development of the modern state in Latin America. Particularly, it is difficult to extend models originally developed to understand the medieval European case as wars in Latin America have been insufficient to mobilize domestic resources. Moreover, elite structures were very different, challenging the standard assumptions and incentives of these models. In this paper we shall inquire what were the *conditions* that promoted the implementation of fiscal capacities and trace its origins in the Latin American context.

Taxation is one of the most important capacities a state can have. Without internal revenue, states cannot perform any of the activities states are supposed to perform. In this paper we explain the origins of fiscal capacities. This paper argues that the implementation of a modern fiscal system was possible due to an inter-elite dispute that took place around the 1900’s and a posterior bargaining process between these two elites. This dispute was between an elite invested in agriculture and an emerging and politically excluded industrial sector. We argue that when the rate of industrial output was fast enough to compensate for long-term losses relative to delayed access to liquidity, agriculture elites did not expropriated that wealth but rather imposed an income tax. That is, when industrial growth is promising in the long-run, agricultural incumbents were better off encouraging (via protectionist tariffs) and taxing it (via an income tax), rather than expropriating it (and having immediate access to those resources). In exchange for taxation, the industrial

class demanded political representation in the form of a competitive oligarchic system. Both the taxation and political representation dimensions triggered a series of institutional investments such as institutions of checks-and-balances to monitor tax spending, including the development of professional bureaucracies. The income tax law was the tipping point that transformed “weak” states in “strong” states. When industrial output was slow, landowners - who were political monopolists - faced higher opportunity costs and rather than “wait and tax” industrial output “tomorrow”, shifted to expropriation-type strategies “today”. In these cases, the agricultural political monopoly was not broken, and the endogenous incentives to invest in institutions to share political power and improve bureaucratic bodies never existed. These countries were then trapped in an underdevelopment sub-optimal equilibria. The paper tests these relationships using econometric methods for panel data, particularly hazard models, and qualitative/historical evidence. Both methodologies strongly support the argument.

II. TAXATION AND STATE FORMATION

Broadly defined, states¹ have two general capacities. On the one hand, some scholars focus on *legal capacities*, studying the role of contract enforcement and property rights protection (see Cárdenas [2010], Besley and Persson [2010] and Strayer [2005]. But for a criticism, see Kurtz [2013, 57].). On the other, the literature explores *fiscal capacities* and how states are capable (or not) to levy taxes. This paper focuses on the latter. The origins of fiscal capacities, and its relationship with state-building, are still subject to great debate. Starting with Tilly [1992]², the idea that international conflicts forced motivated kings to levy taxes to pay for regular armies, gained much scholarly support³. As the argument goes, local elites accepted to be taxed in exchange for political representation and provision of public-goods⁴. However, these mechanisms have been recently challenged⁵. Particularly, outside Europe, the relationship between war and state formation is still contested⁶. For example, Centeno [2002] finds that there were not enough wars to mobilize domestic sources of revenue, and that the few wars that existed were financed by acquiring debt. Others find that the relationship between conflict and state-building is conditional on *prior* state capacities. For example, Arias [2013, 665] finds that in México, “a focal central authority” was required prior to be

¹Following Stephens et al. [1992, 6], we define “state” as “the set of organizations involved in making and implementing binding collective decisions, if necessary by force”.

²See also Ames and Rapp [1977, 162, 170] where they argue that in Europe, “[m]edieval taxation developed from the “extraordinary” revenues, and ultimately became the fiscal basis of government [...] When governments found efficient sources of tax revenues in wartime it would have served their best interests to make these incomes permanent and unconditional”.

³See for example Ertman [1997].

⁴Stasavage [2011]. See also Levi [1989].

⁵Boucoyannis [2015].

⁶But see Besley and Persson [2009, 1218]. They find that “The United States first introduced a form of income taxation in 1861 during the Civil War, and the Internal Revenue Service (IRS) was founded on the back of this with the Revenue Act of 1862”.

able to centralize fiscal institutions in the presence of external threats. However, it is not clear where *prior* centralization comes from. Given all these theoretical and empirical difficulties, some have gone up in the “ladder of abstraction”, and replaced “war” for “interstate rivalries”⁷, while others have interacted the presence of military conflict and state-military alliances⁸. Though taxation and state-building are acknowledged to be linked, it is not clear what the *origins* of fiscal capacities are⁹.

This paper acknowledges the possible influence of external threats. However it presents an argument based on *domestic political and economic* conflicts that lead early Latin American countries to invest in fiscal institutions. If most of the state formation literature emphasizes financial *needs* caused by wars, this paper is novel since it changes the focus to *domestic incentives* elites had to to legally *robber* (i.e. “tax”) domestic profit via an income tax. We present historic evidence about how this new institution triggered a series of other institutional investments.

Building on the “fiscal sociology” paradigm, we argue that the political economy of public finances offers “the key” for a theory of the state¹⁰. According to Schumpeter [1991, 108], “[t]axes not only helped to create the state. They helped to form it”. From a historical perspective, this paradigm proposes that the great modern cleavage was not the rise of capitalism (Marx) nor the rise of modern bureaucracy (Weber), but the rise of the “tax state”, which developed institutions to penetrate private or *individual* economies¹¹. From a theoretical perspective, the mere concept of “tax state” might be misleading: “tax” has so much to do with “state” that the expression “tax state” might almost be considered a *pleonasm*¹².

Not all kind of taxes play a *formative* role. Broadly speaking, there are two general types of taxes, *indirect* and *direct* taxes. Indirect taxes are, for our purposes, are taxes that are collected by a third party, i.e. not the state. Hence indirect taxes do not need the development of strong fiscal capacities. According to, Best [1976, 53] “indirect taxes are but substitutes for direct taxes”, and hence they are typically administered by weak states¹³. Since indirect taxes are easier to levy, this kind of revenue is generally considered “unearned income”¹⁴ or “easy-to-collect source of revenues”¹⁵. Given the low costs states have to incur to collect indirect taxes, they have a nearly null impact on state-building, stable domestic alliances and bureaucratization. As Campbell [1993, 177] puts it, “[i]n Latin America [...] when the state depends heavily on the taxation of international trade [...] the state apparatus tends to be less developed because the collection of tariffs and duties does not require an elaborate fiscal structure”. One clear example is custom duties. They are very simple to levy and

⁷Thies [2005].

⁸López-Alves [2000, 37].

⁹A rather counterintuitive argument is presented by Lange and Balian [2008, 314]. They introduce the “instigating” model, where they find that states with high levels of state infrastructural power contain more violence.

¹⁰Musgrave [1992, 99].

¹¹Moore [2004b, 298]. This view is also shared by Schumpeter [1991, 100] and Lewis [1965, 42] - See epigraphs.

¹²Schumpeter [1991, 101].

¹³This view is also supported by Moore [2004a, 14].

¹⁴Moore [2004b, 304].

¹⁵Coatsworth and Williamson [2002, 10].

hence and do not require any major institutional development nor major structural transformation to collect them. As Bertola and Ocampo [2012, 132] explain, since “[c]ustoms administrations were concentrated in a few critical locations, especially ports, [c]ustoms duties seemed to be an attractive means of boosting revenues”.

Direct taxation involves a *compulsory transfer* from private hands to the government sector for public purposes¹⁶, and hence they are harder to collect¹⁷. Political alliances should exist to overcome logistic, institutional and political domestic challenges associated to direct taxation. Critically, domestic actors, and specially economic elites, should agree to comply with direct taxation, hence national agreements are required to sustain these kind of policies. This is a huge obstacle given the conflictual nature of taxation. For example, some have argued that “tax struggles are among the oldest forms of class struggle”¹⁸. These conflicts are more likely to resolve in favor of direct taxation where income inequality *within the elite* is low. As Tani [1966, 157] explains, absence of “wealth groups” makes passing the income tax law easier. In fact, among all types of direct taxes, the most invasive one (and hence the most difficult one to levy) is *income taxation*. This type of tax is quite complex since it classifies and transfers private income into public property¹⁹. From a historical standpoint its introduction “was one of the major events in fiscal history that contributed to the growth in government observed during the past 150 years”²⁰.

Income taxation is intrinsically a conflictual device. For example, Best [1976, 50] argues that “tax revenues depend upon the interests of different classes as they attempt to use political power via the state for their own needs and purposes”²¹. Building on a macro-historical and class-centered standpoints²², we argue that when inter-class inequality between economic elites is low, the political system is power-balanced and none of the elites have enough capacities to dominate over the other in a monopolistic way. In these kind of scenarios, political agreements are more likely occur. We argue that, right after the end of colonization in the early 20th century, the agriculture class, who would monopolize political power, saw the emergence of a politically excluded industrial class. When the industrial sector was strong, the initial agriculture-oriented political monopoly was contested. Neither sector was able to dominate the other. However, cooperation between the two was incentive-compatible. Agriculturalists wanted to income tax industrialists, and in exchange they wanted to be incorporated into the political system, giving way to the 20th century oligarchic republics²³. This

¹⁶Cfr. Raja Chellia, “Trends in Taxation in Developing Countries”, in Migdal [1988, 282].

¹⁷Kurtz [2013, 62].

¹⁸Goldscheid (1925), in Campbell [1993, 168].

¹⁹Musgrave [1992, 98].

²⁰Aidt and Jensen [2009, 171].

²¹Furthermore, he argues that the “actual composition of taxes can be viewed as dependent upon the distribution of power rather than as an expression of the free choice of the majority of the people” (in Best [1976, 71]). For a similar analysis, see also Campbell [1993, 169].

²²For a similar approach, see also Stephens et al. [1992].

²³We propose a roughly simultaneous process. However, Rota [2016, 43] suggests a different timing. He explains that “[t]he modernization of bureaucracy *preceded* the process of democratization”. Emphasis is mine.

political compromise between the two sectors was the critical juncture that helped to create the endogenous incentives to overcome the initial lack of administrative skills to collect direct taxes. Direct taxation required endogenous generation of know-how to be able to collect, administer and enforce income taxation. Weak states, are usually trapped in sub-optimal equilibrium and engage in low-cost and inefficient taxation methods. As others have argued, “administrative constraints are identified as the main constraint to the ability of states to collect revenues in general and direct taxes such as income tax in particular”²⁴. For example, “[i]n 1967 the national income tax office in Guatemala employed 194 people, only 9 of whom had graduated from a college”²⁵.

III. SLOW INDUSTRIAL GROWTH AND LACK OF CONTESTATION

When industrial growth was slow, the initial monopolistic conditions that agriculturalists enjoyed were not dramatically contested. Under these circumstances, the necessary structural transformations that led to institutions of state-building were not achieved. Building on the “stationary bandit” concept ²⁶, rulers are better off by encouraging investment and economic development in their territory in exchange of a tax (rather than moving from one place to another to rob). This is specially true when development is fast. Generalizing this idea, rapid industrial output outweighs the costs of delayed liquidity access, and hence a tax is imposed to capture revenue for the elites in power. Slow growth, on the contrary, shifts the incentives to capture that revenue immediately via expropriation. This idea is consistent with [Ansell and Samuels \[2014, 76\]](#) who argue that when inter-sectoral inequality is high, the landed elite expropriates indirectly through “market-distorting policies”, harming rising elites such as the industrial elites. It is also consistent with [Acemoglu and Robinson \[2000, 126\]](#) too, in that potentially political losers instead of blocking²⁷ innovation, impose a tax²⁸. In the same line, [Boix \[1999\]](#) points out that elites allow both technological and political progress only if that benefit them too. That said, we do not present an argument of *economic losers*, in which monopolies block substitute technologies. Contrary to [Acemoglu and Robinson \[2000, 127\]](#), industrial development is not blocked by agricultural elites “because there is no credible commitment to compensate them once economic changes have been implemented”. However, expropriation/blocking acts as a way for rulers to provide instantaneous liquidity (i.e. immediate access to monetary resources).

²⁴Di John [2006, 5].

²⁵Di John [2006, 5].

²⁶Olson [2000].

²⁷Inter-sectoral competition and the decision of whether expropriate or tax the industrial sector, link with the “barriers to technology adoption” literature. See [Parente and Prescott \[1994\]](#).

²⁸It is important to stress that we do *not* refer to domestic technological innovation. For the Latin American cases, technological innovation should be considered as exogenous. As [Bertola and Ocampo \[2012, 135\]](#) explain, “[t]he main two vehicles for international technology transfer [...] were foreign investment and immigration [...] [m]any immigrants already had the experience of living in an industrial civilization; they brought with them knowledge, practical experience, an entrepreneurial and technical culture, a work ethic, knowledge of new forms of commercial organization”.

Could rapid industrial growth cause expropriation? We argue that slow industrial output causes expropriation/economic blocking. However, one could argue the reverse. Given that economic changes alter the distribution of political power, when the industrial sector grows, so do the incentives for agricultural incumbents to expropriate them (rather than tax them, as we argue). For example [Robinson \[1999, 28\]](#) argues that “[i]f development changes the political equilibrium, then this may deter elites from creating institutions and adopting policies which stimulate development”, engaging in predatory policies. However, this paper presents an argument that generalizes this idea by incorporating *degrees* of development. If development is sufficiently “fast”, incumbent elites should rather impose a tax, as [Olson \[2000\]](#)’s “stationary bandits” do. We claim that when industrial growth is sufficiently “slow”, the *political* threat of being displaced by a weak economic sector is non-credible. Under these conditions, political concessions are not required and institutional investments are less likely. Though [Boix \[2015, 73\]](#) argues that “states only exist to counteract a potential situation of conflict between agents with *different* economic interests and military capacities”²⁹, we argue that there will exist “spontaneous cooperation” when there are incentives and need to cooperate, and that happens when their political, economic and military capacities are relatively *similar* (but not equally distributed)³⁰. Critically, our theory is stylized in the sense that we assume that economic, military and political power are expression of the same latent concept. Ultimately, barriers to technology adoption and industrial development were not blocked because of the fear of the elites of being politically *or* economically displaced. In the short run, expropriation meant for the elites access to immediate liquidity. In the long run, however, it meant suppressing political and military contestation. Importantly, where industrial output was slow, political or/and economic threats coming from the industrial sector were non-credible. Finally, historians confirm that expropriation was an inter-sectoral issue. [Bulmer-Thomas \[2003, 255, 342-343\]](#) explain that it was very common to nationalize non-agricultural assets such as transport companies, financial institutions, and mining industries, specially oil³¹.

IV. ISSUES IN THE LITERATURE

Though we argue that inter-elite power balance and political compromises generated the necessary conditions of institutional investments, a simple association between bureaucratization/institutionalization and political development would be incorrect. Several authors correctly argue the linkage between (“wrong”) kind of institutions and political (under)development. For example, [Mahoney \[2010, 26\]](#)

²⁹Emphasis is mine.

³⁰[Garfias \[2015\]](#) finds in México the exact opposite: *unequal* relative distribution of political and economical power causes stronger states. The proposed mechanism is that ruling elites, taking advantage of their transitory strengthened position, expropriate weaker elites and send bureaucrats to control local weakened bosses (his proxy for state capacities).

³¹One interesting possibility could be to develop a count model of number of expropriation conditional on the relative sizes of each sector. We are unaware of such dataset. We leave this for future research.

suggests that there is a negative association between “mercantilist institutions” (which did require developed bureaucracies) and political (under)development (Perú). Similarly [Acemoglu et al. \[2002\]](#) explain how colonial mercantilist countries show little economic growth. This paper explains the origins of income taxation and how it played an important role in the formation of national states *after* the independence.

Bureaucratization *per se* does not cause state capacities either. For example, [Soifer \[2016\]](#)³² explains that when bureaucratization relied in the hands of “local” elites, that created weak states as they were more likely to pursue their own personal agendas (rather than the central level’s). On the contrary, when the central state sent their own agents (in what he calls “deployed rule”), as they owed their jobs and source of income to the central level, they were more likely to pursue state goals. However, one important issue arises. Even when deployed bureaucrats depend on the central level (as Soifer correctly points out), it remains unclear the mechanisms under which principal-agent problems are solved in favor of the central level. It is still a possibility that, even when perceiving income from the central level, the agenda that is pursued in the periphery is the agent’s and not the state’s. In contexts of poor infrastructure and slow communication between the two levels, what is it that makes the agent’s agenda to coincide with the state’s? One could argue that the agent fears to be replaced, losing his source of income. However, human capital during the formative years of late 19th century run in short supply. That is, there were not enough capable individuals to perform complex administrative duties³³. In fact, [Taverne \[2014, 208\]](#) argues how the *vecinos notables* were the first skilled bureaucrats in the early stages of state building in Chile. They would usually have other important sources of income, as they were usually lawyers and businessmen. Skilled individuals were so scarce that even individuals with lack of formal training but still capable of performing well as public servants were scarce. [Sagredo \[1997, 293-294\]](#) documents how *Director Supremo* Ramón Freire practically forced, against his will, businessmen Pedro Nolasco Mena to serve as secretary of state³⁴. Income was not important at all for him. In fact, the day Nolasco Mena swear in office he stated that he was not willing to perceive income as a way to protest against Freire³⁵.

Inter-elite conflict has a disputed role in the literature. In our theory³⁶ the degree in which agricultural elites are contested (here through increasing industrial output differentials), is what

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³⁴Nolasco Mena argued that he was a “comerciante práctico, que sin las leyes del cálculo ni los principios de economía giro, como todos los del país, una casa de comercio pasivo: he ahí la historia de mis disposiciones: no conozco la estadística, no he visto siquiera la complicada legislación de hacienda, jamás serví una oficina de ella, no puedo, de consiguiente, aventurarme sin temeridad a la administración del ministerio”. Nonetheless, Freire forced him to serve.

³⁵That day, Nolasco Mena stated: “he jurado bajo la protesta siguiente: Protesto que, forzado contra mi conciencia a admitir el Ministerio de Hacienda, no soy responsable de derecho por falta de libertad, ni de hecho por la insuficiencia confesada del manejo; renuncio al sueldo que no puedo ganar sin desempeñar; que se me de testimonio de esta protesta y de mi reclamo anterior y se imprima”.

³⁶And in [Ansell and Samuels \[2014\]](#)’s theory too.

forces both parties to reach agreements. Cooperation is a conflictual outcome that is incentive-compatible due to the unbalance produced between inter-elite economic equality and inter-elite political inequality. The intuition is very simple. If one elite has more economic power³⁷, there are no incentives nor needs to cooperate with other groups, as their most preferable outcome can be obtained without cooperation. On the other hand, once each elite reaches similar levels of development, their goals depend on their mutual cooperation. Specially, when there exists a disparity between economic equality and political inequality. Kurtz [2009, 2013] builds a theory where “the oligarchic elites [...] despite [their] substantial divisions over some of the questions of the day, [agree] to maintain the capacity for the effective projection of force and to impose the necessary tax burdens on themselves to finance [a strong state]”³⁸. What makes these elites to reach a sustained agreement is the absence of repressive labor practices³⁹. That is, the existence of the legal right to leave the farm⁴⁰. Structurally, our theory follows Kurtz’s in the sense that we also believe that the organization of the economy causes (endogenous) changes in the institutional order, specially in what respects to taxation. In fact, it complements it as one possibility for why laborers do not have other choice than staying in the farm is the industrial sector not being strong enough to attract labor. Industrialists, being excluded from the political system (as they were), cannot alter these repressive institutions from the inside. Hence, in our theory, incorporation of all important elites (economic sectors in our theory) is crucial for state-building. However, it departs from Kurtz’s theory as our theory sees potential conflict as the the tipping point of eventual political agreements.

There are ongoing measurement and conceptual debates in the literature. Though many scholars find that income taxation is either one of the most important state-capabilities⁴¹ or the one characteristic that explains considerable variance of state capacities⁴², others have argued in favor of others measurements of “stateness”. For example, some scholars have argued in favor of military conscription or censuses⁴³. Multidimensional measurements are also very popular. Contrasting several existent indexes of state capacities, Fukuyama [2004, 7] argues that “stateness” is a two-dimensional concept, namely, the *scope of state activities*, which refers to different state functions and the *strength of state power*, or the ability of states to execute policies. In a later work, however, Fukuyama [2013, 347] suggests a different two-dimensional framework, *capacity* and *autonomy*. Similarly, Mann [2008, 357] argues that “stateness” is a two-dimensional concept too, one being the *despotic* and an the other one being the *infrastructural* power concept⁴⁴. Soifer [2012] proposes a three-dimensional measurement of state capacity, namely *security*, *administrative* and

³⁷Which potentially translates into military power.

³⁸Kurtz [2009, 508].

³⁹Kurtz [2013, 83].

⁴⁰Kurtz [2013, 39,67].

⁴¹See for example Besley and Persson [2011], Kurtz [2013, 2009], Cohen [1994], Gallo [1991], López-Alves [2000], Thies [2005] and Soifer and vom Hau [2008], Soifer [2008].

⁴²See for example, Kurtz [2013, 60-62], Hanson and Sigman [2013, 15] and Centeno [2002].

⁴³For the latter, see for example, Lee and Zhang [2013].

⁴⁴Soifer and vom Hau [2008, 224] argue in favor of the infrastructural approach proposed by Mann [1984].

extractive. Multidimensional conceptualizations of state capacities do improve our understanding of the complexity of state capacities⁴⁵. Beyond being a measurement commentary, this paper develops a theory for the origins of, what we believe, is one of the *main* state capacities. Moreover, from an empirical and conceptual standpoints, parsimonious explanations about a complex phenomena⁴⁶ enjoy from different advantages.

Finally, it is important to say that our theoretical model does not require European-like degrees of industrialization. As Bertola and Ocampo [2012, 131] confirm it, most Latin American countries did *not* experience a proper industrialization *process*, and hence it is inaccurate to say that the industrial sector “had become a strong engine of economic growth”. However, even when Latin America did not experience an industrial *revolution*, the modern sector did experience clusters of development⁴⁷.

The purpose of this paper is to explain the origins of *strong* and *weak state* capacities. We do so by tracing their origins of *strong* and *weak fiscal* capacities. It is important to stress that this paper does not equate *higher taxation levels* with *higher levels of “stateness”*. For example, since “American institutions [were] deliberately designed to weaken or limit the exercise of state power”⁴⁸, the U.S. taxes very little. However, it is not reasonable to say that the U.S. has a “weak state”. Rather, this paper proposes that the *development* of a direct tax system, particularly, *income taxation*, is causally related to the origins of state capacities and other institutional developments⁴⁹. Fiscal economists do not necessarily look at the actual tax-to-GDP ratio either, but rather at “tax efforts”. This index measures the ratio between the proportion of actual collection and taxable capacity⁵⁰. Moreover, as explained in the *argument* section and illustrated in our *case study*, the income tax system was fundamental for the formation of the LA states, not the for the actual tax money levied but for the set of institutions and political compromises that were needed to implement such a system.

The problem at hand is of the greatest importance. The idea that higher fiscal capacities are related to more capable states is widely accepted by many political economists. However, it is unclear what the *origins* of income taxation are. Much effort has been devoted to the study of tax reforms. For example, Fairfield [2013] studies different strategies policymakers pursue to tax elites starting in 1990. Mahon [2004] and Focanti et al. [2013] study causes of tax reform in Latin America starting around 1980s and 1990, respectively. Similarly, Ross [2004] studies the relationship between taxation and representation between 1971 and 1997. Whereas Sokoloff and Zolt [2007] study the evolution of tax institutions comparing the U.S. with Latin America. We share Di John [2006, 5]’s

⁴⁵As Fukuyama [2004, 9] explains, “[a] country like Egypt, for example, has very effective internal security apparatus and yet cannot execute simple tasks like processing visa applications or licensing small businesses efficiently”. In Singerman, (1995).

⁴⁶Mann [1984, 112] argues that “[t]he state is undeniably a messy concept”.

⁴⁷See Figure 1.

⁴⁸Fukuyama [2004, 6].

⁴⁹See for example Besley and Persson [2014, 117], where they argue that “[t]axation has played a central role in the development of states”.

⁵⁰For example, Best [1976, 54] calculates tax efforts for Central America. See also Cohen et al. [1981, 905].

diagnosis in that “[t]here is no attempt to explain *why* and *how* administrative capacities change. Second, there is no explanation as to why tax capacities differ across countries”⁵¹. Acknowledging these contributions, we expand on these prior findings by presenting a comparative macro-structural argument which traces under which conditions endogenous investments in fiscal capacities were more likely to happen in Latin America starting in 1900.

The remainder of this paper proceeds as follows. First, we present and develop our **argument**. Taking a sectoral politics approach, the paper argues that the political monopoly pursued by agricultural economic elites was broken when an emerging industrial sector accepted to be income-taxed in exchange for industrial tariffs (i.e. protectionism) and political representation, leading to the 19th century political oligarchies. These political and economic concessions between the two sectors were accelerated by unfavorable international conditions. A decline on imported goods decreased import taxes, putting internal pressures to generate internal revenue. Second, in the **historical** section, we present Chile as a shadow case to illustrate in more detail the mechanisms at work. Third, in the **econometric** section, we test the theory using cross-national panel data on sectoral outputs from 1900 to 2010 for a sample of Latin American countries. Finally, we conclude with a brief **discussion**.

V. ARGUMENT

Our argument comes in four parts for both the “weak” and “strong” state cases. This section lays out the theory in abstract. The next section develops each part of the argument in more detail. Next **section** illustrates the causal mechanisms at work.

Strong State Cases First, following the inertia of the colonial period, early independent Latin American states were governed by agricultural elites. Later around 1900s, an incipient industrial sector established. This sector was conformed by newcomers who were politically excluded. Second, in the strong state cases, industrial output rates were faster than agricultural rates. Third, political elites could play one of the next two strategies. They could either *tax* or *expropriate* industrial output. In cases where industrial output is fast, the benefit of taxing a small sum of money “today” via taxation compensates the long-term losses associated of having those resources “tomorrow”. Consequently agricultural elites are better off taxing industrial output. Fourth, in exchange, the industrial class demanded commercial protectionism (tariffs) and political representation, giving way to the Latin American oligarchic political systems. Both taxation and political representation triggered a series of institutional investments such as institutions of checks-and-balances. These institutions were able to monitor and enforce income taxation, including the development of professional bureaucracies.

⁵¹Emphases are mine

Weak State Cases Similarly, these nations were governed by agricultural monopolistic elites. However, in the weak state cases, agricultural incumbents faced slower industrial growth. This sector did not promise enough resources to tax from in the long run. It was too risky to “wait” and tax those resources in the future. Hence, incumbents were better off expropriating or blocking the small industrial output. The agricultural political monopoly was never challenged, the traditional economy was not broken and the endogenous incentives to invest in institutions designed to improve bureaucracies and split political power never existed.

I. Agricultural Political Monopoly

By definition, monopolies limit the entrance of alternative goods and services. All post-colonial Latin American countries experienced an initial situation of *political* monopoly. That is, there existed a situation where the early political system was dominated by a compact social class invested in land. This sector would impose social and economic policies favorable for them. Eventually, *all* post-colonial nations saw the emergence of a small industrial sector, which grew at different rates (see [Figure 1](#)). In countries that eventually turned into strong states, the size of the modern sector grew at faster rates and hence political competition was *artificially* limited. As in fact there *was* a competitor, agricultural elites tried first to block it. For several reasons we explain later, however, cooperation between the two was incentive-compatible. Inter-sectoral economic equality paired with inter-sectoral political inequality introduced the endogenous incentives to build both state and democratic institutions in a series of elite compromises. The end of the political monopoly and the subsequent inter-elite agreements laid the foundations of fiscal capacities and political competition, the root of strong states. However, where the size of the modern sector was small, agricultural elites were *natural* monopolists. In these cases, the modern sector was so small that there was not enough credible threats to move forward a compromise between the two classes, letting the landowners continue ruling without political opposition. This situation generated long-term political and economic distortions.

For example, Nicaragua was formed in a non-democratic context, just like any other country in the panel. However, its the industrial sector did not grow fast enough to challenge the traditional sector (see [Figure 1](#)), leaving the political system unaltered until the 1980s (see [Figure 3](#)). The lack of inter-elite contestation led this country to develop a very late fiscal system (vertical line in [Figure 1](#)). An opposite example is Ecuador, which passed the income tax just before the 1950s, which is just when it had its first “democratic” experience. Using Chile as a shadow case, we [illustrate](#) the causal mechanisms at work with further details, explaining particularly how the initial monopolistic conditions were broken in the presence of a strong industrial sector and what the inter-elite compromises were.

II. Industrial Output Speed Rates and Inter-Elite Contestation

There are many factors that explain the industrial development in Latin America. Among them, tariffs oriented to protect the *agricultural* market *unintentionally* helped protecting the industrial sector. Since the first industries processed raw agricultural materials, better conditions for the landowners helped the industrialists to make their way into the economy. Favorable international markets also boosted the demand for rudimentary processed raw products too. We provide further details in the our [case study](#). [Figure 1](#) shows output differentials (in logarithmic scales) since 1900 to 2010, for a sample of Latin American countries⁵². Contrary to [Bulmer-Thomas \[2003, 241\]](#), we do *not* find that “[e]verywhere [...] industrial growth exceeded agricultural growth”.

Sectoral competition is one of our main building blocks, and this paper measures it with output differentials ([Figure 1](#)). The first type of conflict is inter-elite political and economic competition. The literature is consistent in agreeing that “more” political competition leads to “better” outcomes when it comes to state-building. For example, [Kurtz \[2009, 481\]](#) argues that where “no faction can easily become permanently dominant”, state capacities should be stronger. Similarly, [Geddes \[1991\]](#) argues that competition between two rival parties of about the same size create clearer incentives to invest in political institutions. [Cárdenas \[2010, 40\]](#) in his formal and empirical models also finds that “concentration of political and economic power reduces the incentives to invest in state capacity”⁵³.

Though the nature of inter-elite conflicts is both political and military, the conflict itself is deeply rooted in the economic structure. Advantaged economic conditions can relatively easily be translated into better military capacities, which makes it easier for the advantaged group to impose their political agenda in a monopolistic way ([Boix \[2015\]](#)). However, the *origins* of this inter-sectoral (un)balance (expressed in sectoral output differentials) reflects structural economic dynamics between the two sectors that make them compete for limited supply of labor⁵⁴, making the competition of the two elites more evident. In fact, in order for the modern sector to develop, the traditional sector had to decay⁵⁵. For example, [Matsuyama \[1991, 642-643\]](#) explains that “a takeoff is possible in an economy with less productive agriculture, while an economy with productive

⁵²We use the *Montevideo-Oxford Latin American Economic History Data Base (MOxLAD)*, specifically the *agriculture value-added* and *manufacturing value-added* variables. The former measures “the output of the sector net of intermediate inputs and includes the cultivation of crops, livestock production, hunting, forestry and fishing”. The later “[r]eports the output of the sector net of intermediate inputs”. Both of them are expressed in local currency at 1970 constant prices. Finally, “the depreciation of reproducible assets or depletion/degradation of natural resources were not deducted”. Details about this dataset are presented in the [data section](#). The plot also shows a vertical line which indicates when the income tax law was passed (author’s data based on several reports and official information). We elaborate on the income tax law in the next [section](#).

⁵³However, he models inequality between *elites* and *citizens*. We expand on this idea by modeling the period *before* full democratization existed and also by modeling inter-elite conflicts.

⁵⁴As [Matsuyama \[1992, 318\]](#) puts it, “the manufacturing sector has to compete with the agriculture sector for labor. Low productivity in agriculture implies the abundant supply of “cheap labor” which the manufacturing can rely on”. See also [Gollin et al. \[2002, 160\]](#).

⁵⁵[Matsuyama \[1991, 621-622\]](#) argues that the process of “[i]ndustrialization [consists of] a shift of resources from agriculture to manufacturing”.

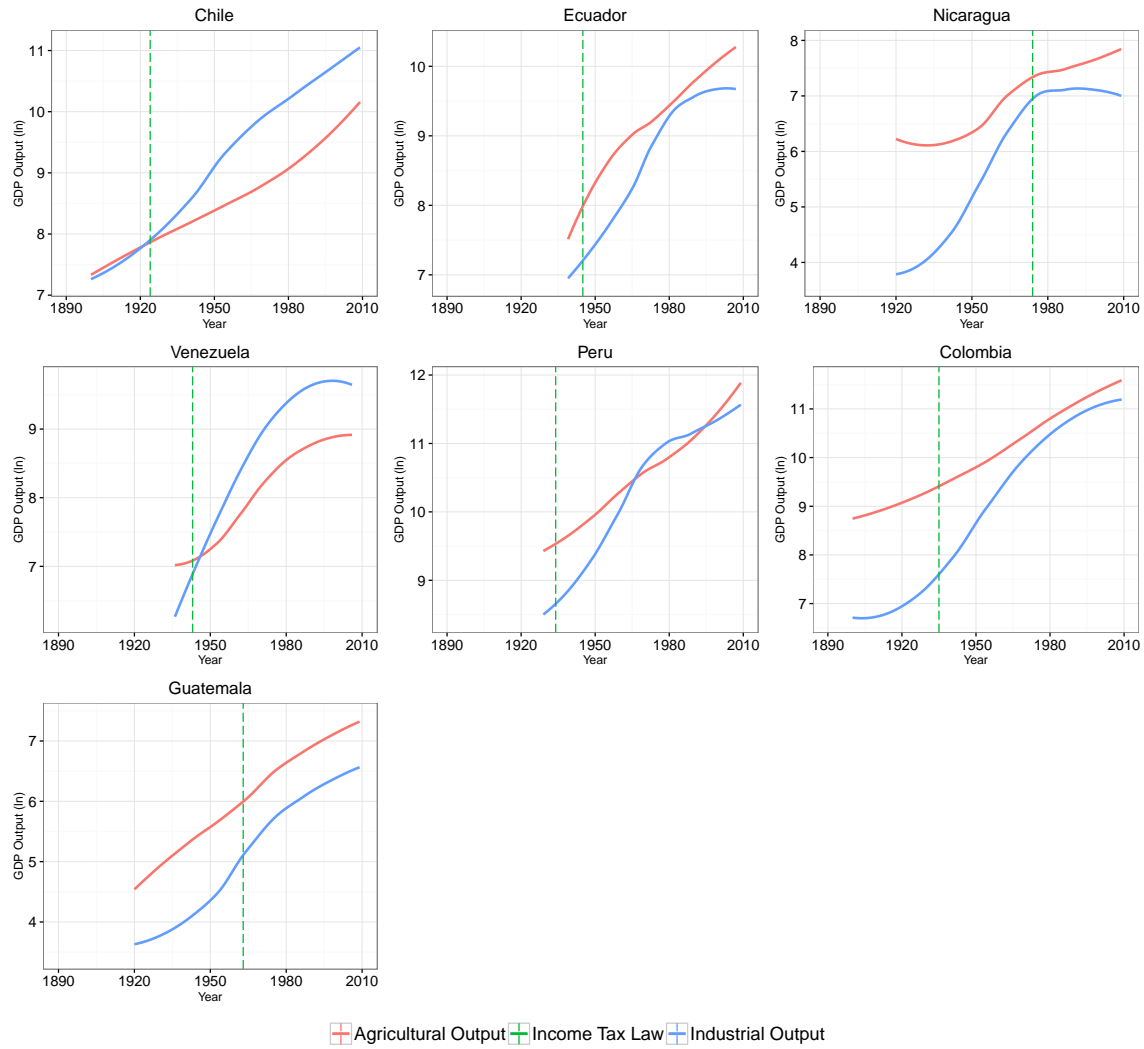


Figure 1: *Industrial and Agricultural Outputs, and The Passage of the Income Tax Law*

agriculture will be trapped into the state of preindustrialization”⁵⁶. As we will see in our *case study* section, this is true for Chile⁵⁷. However, it also applies to other Latin American economies too. For example, Bergquist [1986, 8] explains that “Colombia’s two traditional political parties crystallized in the 1840’s and reflected in many respects the dual nature of the Colombian economy”.

The second type of conflict is a reflection of the first one, and it relates to the sectoral origins of income taxation and its conflictual roots. As development economists argue, there is an intrinsic sectoral conflict between the two elites regarding generation of income and its potential taxation

⁵⁶Skott and Larudee [1998, 293] points out that “an increase in the growth rate of agricultural productivity may reduce the rate of growth of real income under free trade”.

⁵⁷But see Robles-Ortiz [2009], who argues that in Chile, one of our strong-state cases, the agricultural sector was quite productive and efficient.

(Best [1976, 55]). For example Mares and Queralt [2015] study how income taxation in Europe is associated to between-elites conflicts, particularly between the landed elite and the industrial elite. Taxation and state formation with a sector/class approach has also been studied in Africa. For example, Sanchez de la Sierra [2014] studies the relationship between taxation and state formation in Eastern Congo, and how the interplay between different sectors fostered (or not) state-building processes.

III. Taxation and Expropriation

Building on the “stationary bandit”⁵⁸ concept, this paper develops two possible strategies for agricultural political incumbents, either *tax* or *expropriate* the industrial sector. Each one is best response depending on the rate of industrial growth. It is important to stress that industrial growth is not important as it is for the modernization theory scholars. However, industrial development is a necessary cause for state-building as it starts an endogenous process of institutional investments, such as fiscal capacities and political contestation.

Expropriation is best response when the rate of industrial growth is “slow”. When industries grow slowly, the long-term benefits of having a secured, *but excessively small* source of tax revenue *do not* offset the benefits associated to have *immediate* monetary resources due to expropriation. Expropriation brings immediate liquidity (fast access to money) in the short run, but it exhausts the industrial output in the long run. That is, when industrial growth is slow, immediate liquidity becomes more attractive, even when these resources get exhausted in the long run. Moreover, since human capital and the technology necessary to administer an industry are non-transferable to the agriculture elite⁵⁹, just expelling the industrial elites and taking over the industries is not an efficient strategy, endangering industrial output in the long run. In other words, since landowners do not know how to run industries, they are better off appropriating the surplus rather than taking over the industries. This is a stylized theory. In reality, elites tended to engage not only in expropriation but also in nationalization and forced loaning. The consequences of slow industrial growth were not only economic, but political. Underdeveloped industrial sector could not transform the institutional order, leaving those countries locked in underdevelopment traps.

Taxation is best response when the rate of industrial growth is “fast”. Imposing a tax allowed agricultural incumbents to “rob” industrial output at small “doses” at a time, without exhausting or precluding industrial development. From a strategic perspective, a healthy industrial sector becomes more attractive for what it has to offer in the future rather than the present. Hence faster industrial growth shifts the focal point from the short to the long run. In these cases, it was in the agriculture sector’s interest to protect and encourage the development of this sector to perceive even higher

⁵⁸Olson [2000].

⁵⁹For example, machines used to make glass can’t be used to grow potatoes.

taxes (though most of the times keeping the same tax rate). Institutionally, the new tax had to be able to monitor closely industrial magnates and their personal incomes. Hence an *income tax* had to be implemented. This idea is consistent with the notion that political elites generally are better able to impose/raise taxes during economic booms. For example, [Campbell and Allen \[1994, 647\]](#) explain that “economic development should be directly related to individual and corporate income tax rates”, while [Besley and Persson \[2011, 59\]](#) argue that “investing in fiscal capacity becomes more attractive [...] when wages or incomes [...] are higher”. It is important to stress that income taxation did not make a difference for the new extra resources the treasury had, but because of the new institutions that were necessary to impose in order to sustain this new policy. Next section explains what those institutional investments were.

IV. Income taxation and Institutional Investments

When it comes to taxation, the public economics literature focuses mostly on tax revenues. However, the *politics* of taxation is an equally important matter⁶⁰. It is not important only because of the *process* but also because of the political *consequences* of imposing such policy. We argue that the new income tax was not important because of the extra revenue income taxation brought to the treasury but because it triggered a series of institutional investments that helped early states to consolidate. This paper identifies (though not exhaustively) two critical institutions, political competition and bureaucratic consolidation among the elite in the form of oligarchic republics.

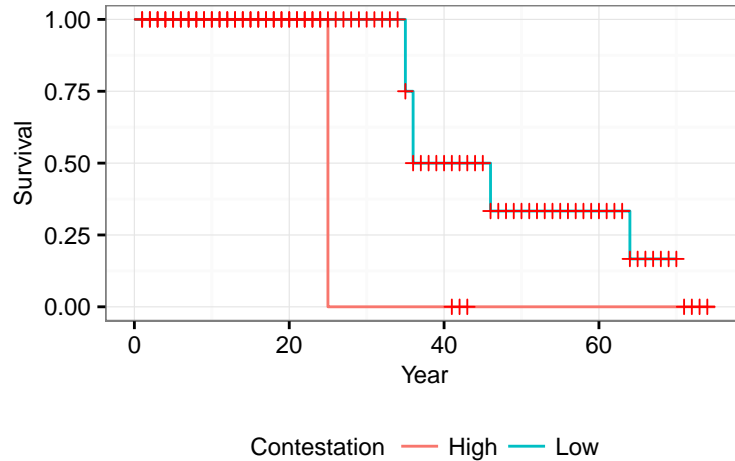


Figure 2: *Kaplan-Meier Curves: Size of the Industrial Sector and the Accelerated Rate of the Imposition of Income Tax Law*

⁶⁰[Focanti et al. \[2013\]](#).

It is important rule out the possibility that income taxation and elite contestation are not linked through a spurious duration dependence relationship. That is, the occurrence of the outcome of interest (taxation) is not directly related to time itself, but to the degree in which the agricultural sector is contested by the industrial sector. In this sense, what this paper seeks to uncover is how much the size of the industrial sector *accelerates* the imposition of the income tax law. Figure 2 shows the failure rate of the average country in our sample of implementing the income tax law if the size of the industrial sector had increased by half. When inter-elite contestation is high, countries pass the income tax law sooner than when inter-elite contestation is low. This figure strongly suggests that institutional investments are a function of inter-elite competition rather than time itself. It is also important to rule out that both outcomes (inter-elite contestation and fiscal capacities) are not a function of what modernization theorists argue about⁶¹. As we explain in section VII, economic well-being indicators do *not* predict fiscal capacities nor inter-elite political contestation. Statistical results in section VII strongly suggest that the way in which industrialization is associated to state-building is not channeled through economic “well-being” but trough inter-elite contestation.

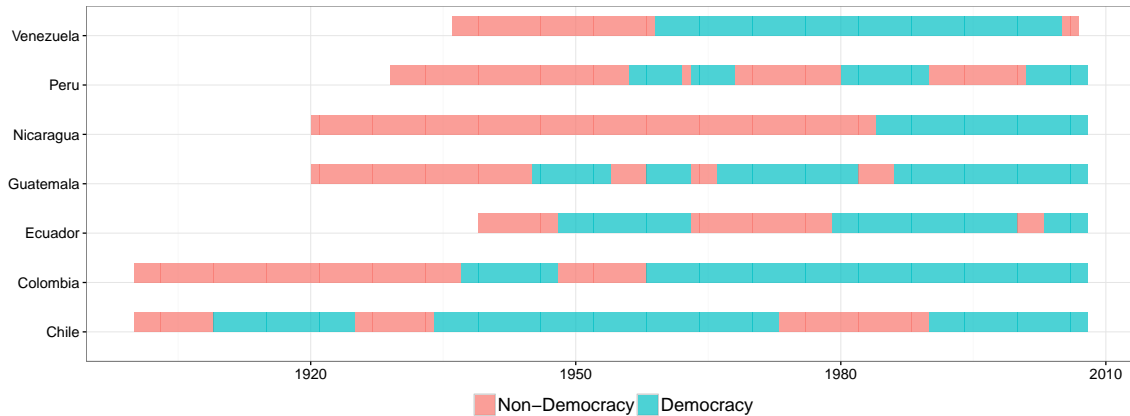


Figure 3: *Historic Regime Type*

The imposition of the income tax law opened the political system for inter-elite competition. Figure 3 shows the regime type for each country⁶². We claim that the introduction of the income tax⁶³ and the first democratic waves were part of the same process of inter-elite conflicts and eventually inter-elite compromises. The nature of this conflictual process is rooted in the unstable relationship between inter-elite political *inequality* and sectoral/economic equality. That is, both the industrial and agriculture sectors being of about the same size, but where only the latter has access to political power, i.e. state power. There have been important recent contributions

⁶¹Lipset [1981, 31] for example argues that democracy is “related to the state of the economy. The more well-to-do a nation, the greater the chances it will sustain democracy”.

⁶²Data from Boix et al. [2012].

⁶³The vertical line in Figure 1.

on the relationship between political development and inter-elite (in)equality⁶⁴. Building on this literature, this paper specifically introduces the state-building question. The argument is related to Stephens et al. [1992, 9], in that “[c]onsolidation of state power was an essential *prerequisite* for democratization”⁶⁵. However, we relax the causal direction of this mechanism by proposing an *endogenous* causal process between the two. Hence, the opening sentence of this paragraph also reads as a *competitive political system open for elites made possible the passage of the income tax law*. This endogenous outcome gave way to the a number of structural transformations and institutional investments which are detailed now and in the next section.

The mechanism by which progressive industrialization made possible investments in state capacities was the introduction of an oligarchic system that allowed industrial elites to participate in politics in exchange of being income taxed. Open political systems are the most effective ones for processing and aggregating diverse interests⁶⁶. Such system allowed both sectors to introduce institutions for macroeconomic stabilization and other regulatory institutions. An open-for-the-elites political system also solved commitment problems. As simply promising keeping income tax rates constant was not credible, industrialists sought to use their newly granted political influence to keep those tax rates where they were. This is consistent with what several political economists find. For example, Di John [2006, 8] points out that *in less developed countries*, higher tax collection levels are associated to strong political party systems. Political scientists also find that higher levels of political competition are associated with better institutional designs.

The introduction of the income tax not only brought political agreements (in the form of an oligarchic democracy), but also inter-sectoral economic compromises. The most important one was the introduction of higher/newer tariffs designed to protect the industrial sector. Protectionism boosted industrial production and enhanced other structural transformations, such as the rising of the middle class and higher levels of urbanization. A common misconception is that industrial protectionism started with the ISI. “The fact that manufacturing was alive and thriving in Latin America before the 1929 crash is now beyond question”⁶⁷. ISI in fact is a continuation of older policies. Haber [2005, 3-4] explains that “governments followed policies designed to subsidize and protect industry in the decades after 1950 precisely because industrialists and industrial workers had been protected since the 1890s”. This paper contributes to this literature by arguing that early industrialists were able to bargain tariffs in exchange for income taxation. This insight goes in line with Lederman [2005, 53] who argues that the timing of protectionist and income taxation cycles match. In fact, the industrialists *as a sector*, gathered around this issue in quite an organized way, reinforcing their class self-image. As Sokoloff and Zolt [2007, 122] argue, the expansion of the

⁶⁴See for example Acemoglu and Robinson [2009, Ch. 9], Ansell and Samuels [2014] and Boix [2015].

⁶⁵Emphasis is mine.

⁶⁶Rodrik [2000, 3].

⁶⁷Bertola and Ocampo [2012, 129].

“manufacturing production [...] helped to nurture the development of a powerful constituency for higher tariffs”. The introduction of higher/newer tariffs was key for the subsequent development of the industrial sector. As Haber [2005, 15] argues, “virtually none of [the industrial development] would have existed had it not been for tariff protection”⁶⁸.

These transformations triggered a sequence of other institutional investments. Now that both sectors had access to political and military resources, the two elites were interested in protecting each other’s property from mutual expropriation. Property rights protection has been associated to economic growth. For example, Grossman and Helpman [1994, 35] argue that secured property rights shifts the incentives to invest in “[i]nnovation [which in turns] sustains both capital accumulation and growth”⁶⁹. Economic growth expanded the tax base too. That is why taxation has also been associated to property rights protection. Timmons [2005, 531] explains that “[t]he more money a state raises from progressive taxes as a percentage of GDP [...] the better it protects property rights”⁷⁰. Alternative models developed to understand the European case suggest that the bourgeoisie sought protection against the expropriative policies of the king. However, this paper’s claim is that in Latin America *institutions protected the elite from themselves*. Regime type is also associated to human capital accumulation. Brown and Hunter [2004, 842] find that “[Latin American] democracies devote a higher percentage of their educational resources to primary education”. In turn, human capital accumulation sat down the foundations for the emergence of the middle class composed by “urban professionals, state employees in the private sector, artisans and craftsmen”⁷¹. The origins of the second critical state-building institution, namely, the formation of modern professional bureaucrats, is endogenous to the formation of the middle-class and the expansion of the state itself. As Collier and Collier [2002, 394] suggest, “the middle classes did well under [the competitive oligarchies regimes]. The size of the middle class expanded significantly not only as a result of economic growth in general, but also as a result of growing public employment as the state expanded”⁷². **Fiscal capacities, particularly, the imposition of the income tax, was the first state “builder” institution - this paper traces its origins and sketches some of the most important outcomes.**

These structural transformations, namely, accelerated urbanization rates, the formation of the middle class and the improvement of the bureaucracy, are deeply linked to the early development of a strong industrial sector. As a class, they managed to introduce protectionists tariffs and leverage access to the political system. This was possible due to the relatively similar sectoral sizes and as a

⁶⁸See also Coatsworth and Williamson [2002, 21]. There is some debate on whether protectionism is associated to economic growth, however. Coatsworth and Williamson [2002, 10] argue that “protection was associated with faster growth in the European core and their English-speaking offshoots [...] but it was *not* associated with fast growth in [...] Latin American periphery” (emphasis in the original).

⁶⁹This model has been so called “protection for sale model”.

⁷⁰See also Rodrik [2000, 6] for a general overview.

⁷¹Stephens et al. [1992, 185].

⁷²Geddes [1996, 12] explains that government officials are self-interested individuals, and hence “their responses differ”. However, we assume that the political interests of bureaucrats, presidents and congresses, are in line with their respective sectoral interests. Thus, we consider that “the state” is itself an actor.

consequence, relatively similar military capacities. Early in the process, it was in the interest of all parties to sustain both an oligarchic democracy and the income tax law as the “only game in town”, in a “*quasi-voluntary compliance*” way⁷³. On the one hand, industrialists accepted to be income taxed. On the other, agricultural incumbents granted them political representation and protectionist tariffs. Having both in the same economic/military capacities, no group tries to break the agreement. Industrialists assume a heavier fiscal burden in exchange of exercising political representation in their favor and obtaining protectionist tariffs for their sector. Agricultural elites sacrifice their political monopoly in order to rescue the economy from failure. As the next section explains, the demand of agriculture goods declined, forcing the incumbents to make a compromise with the modern sector. This process was the critical juncture that broke the early agricultural political monopoly. Eventually, the oligarchic systems turned into popular democracies. As human capital accumulated and the levels of urbanization grew, a second structural transformation occurred, the irruption of the masses. As [Stephens et al. \[1992, 7\]](#) argue, “capitalist development is associated with democracy because it transforms the class structure”. This paper focuses on the first structural transformation (the irruption of a challenging elite), however, and how that gave way to the first of many institutional investments that eventually transformed the whole economy. By no means this paper seeks to find a comprehensive causal path that includes all relevant variables, however.

VI. UNPACKING THE MECHANISMS: ILLUSTRATIVE CASE, CHILE 1850-1930

This section illustrates the theory by bringing in the Chilean case. From an economic standpoint, in all Latin American economies before and during the colonial period, agriculture was the most important sector. Besides supplying European markets with raw materials, it supplied “a variety of tropical foods and [other] goods [such as] sugar, coffee, and tobacco [...] The demand for such items was stimulated by the rising consumption of the new and prosperous European bourgeoisie”⁷⁴.

Politically, agriculturalists monopolized the political realm⁷⁵. For the Chilean case, [Collier and Collier \[2002, 106\]](#) argue that the

“national government was dominated by the central part of the country, with owners of large agricultural holdings playing a predominant role within a framework in which this cohesive elite increasingly absorbed the elites of the urban commercial and incipient manufacturing sector”.

The historiography has contradictory references, however. Some say that they were obvious antagonists. Some have argued, for example, that the landed elite conformed very strong economic

⁷³[Levi \[1989\]](#).

⁷⁴[Marichal \[1989, 74\]](#).

⁷⁵[Wright \[1975, 45-46\]](#).

and political monopolies⁷⁶. Others have claimed that this antagonism is wrong⁷⁷. The main argument against this vision is that there was a very blurry division between these “two” classes⁷⁸. For example, landowners were also invested in industry⁷⁹. However, there are some stylized facts that strongly suggest that *in general*, agricultural elites were *primus inter pares*. First, historiographic evidence suggests that the agricultural sector did monopolize politics. Zeitlin [1984, 13] argues that “landowners controlled both the vote and the labor power of the agrarian tenants (*inquilinos*) and dependent peasants (*minifundistas*), and this was the *sine qua non* of their continuing political hegemony”. In Congress, and the presidency itself, landowners were the single most important group⁸⁰, leaving the modern sector heavily under-represented. As Baland and Robinson [2008, 1748] argue, “[c]ongressional representation was heavily weighted in favor of rural districts where the peasantry historically formed a pliable and controllable mass base for conservative and reactionary groups”. Second, and as a consequence, fiscal pressures in favor of agricultural taxes were minimal as opposed to mining taxes (as we explain below, one of the first manifestations of industrial activity). As Best [1976, 56] explains, “when all central government taxes are considered, agriculture is still substantially undertaxed relative to the other sectors”⁸¹. The fiscal structure was heavily biased against non-agricultural interests. As explained by others, “public revenues came almost exclusively from taxes on mining and its exports”⁸². Though there was an agricultural income tax, it was weak and abolished after the civil war of 1891. This bias was consistent with any type of governmental interference. Historians argue that “[i]n those areas where the government did interfere in the countryside, the effect was to strengthen the position of the landowning class”⁸³. For example, the secretary of the treasury Benavente, right after the independence in 1823, addressed a mostly agricultural congress to propose an agricultural income tax. The congress rejected his idea specially due to pressures of the landowning class⁸⁴. The few public infrastructure that existed, was in favor of the agricultural sector too. The state would either invest huge amounts of money or borrow resources to build infrastructure capable to mobilize agricultural goods, starting with the gold rush

⁷⁶McBride [1936, 15] argues that “Chile’s people live on the soil. Her life is agricultural to the core. *Her government has always been of farm owners. Her Congress is made up chiefly of rich landlords.* Social life is dominated by families whose proudest possession is the ancestral estate”. Emphases are mine.

⁷⁷See for example Mamalakis [1976, 125].

⁷⁸Bauer [2008, 30, 44, 94, 108].

⁷⁹Coatsworth and Williamson [2002, 23] argue that “[t]he only landowners that mattered in 19th century Latin America politics were those for whom land represented but one asset in a much broader portfolio”. In the same line, Bauer [2008, 180] argues that “[m]iners and merchants bought haciendas but landowners in turn invested in banks, insurance companies, commercial firms and the incipient industrial sector”.

⁸⁰Bauer [2008, 45].

⁸¹Bauer [2008, 81] provides a very plausible explanation for why the agricultural sector was “structurally” protected against taxation. As he explains, “[t]he availability of an easily accountable source of public revenue - bags of nitrate or bars of cooper - meant that any need for the Chilean government to intrude into the affairs of landowners was reduced [...] the state kept its political hands off the countryside until the overwhelming urban demands for more food and political support in the 1960s”.

⁸²Zeitlin [1984, 38].

⁸³Bauer [2008, 118].

⁸⁴Sagredo [1997, 306]. It is important to stress that during this period, “political parties” did not follow very clear ideological divisions. Most of the secretaries/ministries were recruited due to their technocratic skills.

in both California and Australia⁸⁵. For instance, in Chile, a foreign investor “was contracted to build a second state-sponsored railroad that would connect Santiago with the south-central agricultural districts”⁸⁶. This was not an isolated issue, but a clear pattern. Presidents also engaged in the same deliberated practices. For example, “the Montt regime did invest in the construction of Chile’s railways but only in the Central Valley and south-central zones [b]ut there was no public investment [...] in railroads built in the Norte Chico mining provinces, which in fact provided most of the state’s tax revenues”⁸⁷.

The origins of the the industrial sector are much older than the ISI policies of the 1950s. “The development of large-scale, mechanized (and even “heavy”) industry can be dated from the 1890s in the region’s larger economies”⁸⁸. For almost 400 years, mining was the most important activity not related to agriculture. “Minerals had to be processed near the areas where they were mined in order to keep transport costs to a minimum. This led to the construction of foundries and, at times, refineries, which became the cornerstones for the early stages of the industrialization of the mining-based economies”⁸⁹. Although it was very important during the colonial period, not only “Latin American’s consumption of industrial metals continued to be very small until toward the end of the nineteenth century”, but also it was very rudimentary showing little or no technological refinement⁹⁰. Most mineral-related industry (if not all) was foreign owned, except for Chile⁹¹. Mining elites made their fortunes during the 1840s-1850s during the mining boom. After the boom, the mining elite shifted to the first “true” industrial work which actually was born under agricultural auspices, i.e. the cotton mills⁹².

The first “industries” were called *obrajes*⁹³. Though servile and slave labor were used at the end of the colonial period, all labor was free and waged starting in the independence period. “Large-scale *obrajes* existed alongside smaller units of production - modest workshops and prosperous artisan-dominated enterprises - in virtually all urban centres”⁹⁴. Beyond cotton and the textile industries, early industrialists also processed other agricultural goods⁹⁵. Other industries for domestic

⁸⁵Rippy [1971], Marichal [1989], Zeitlin [1984], Bauer [2008].

⁸⁶Rippy [1971, 85].

⁸⁷Zeitlin [1984, 41].

⁸⁸Haber [2005, 2]. For example, Rippy and Pfeiffer [1948] and Pfeiffer [1952] explain how by the 1870’s the carriage industry were put on a firm basis.

⁸⁹Bertola and Ocampo [2012, 129].

⁹⁰Rippy [1971, 230].

⁹¹Stephens et al. [1992, 165, 176, footnote 5, 324].

⁹²See Rippy [1971, 231] and Bethell [1986, 271]. As Bethell [1986, 271] argues, “[t]he first power looms were brought [in Perú, Ecuador, and Venezuela] in the 1840s, 1850s; but in all three they were a failure, some of the early mills in Ecuador being destroyed by an earthquake. It was not until after 1890 that textile industries of these nations began to operate with reasonable success. Guatemala’s first cotton mill was established in 1882, and between that date and 1910 a few mills appeared in Chile, Argentina, Uruguay, and Colombia” (Rippy [1971, 232]).

⁹³I.e., Proto-industrial redoubts.

⁹⁴Bethell [1986, 271]. Emphasis in original.

⁹⁵For instance, they processed animal grease and tallow (for soap and candles), dried and cured meats, flour, bread, beer, wines, spirits - most of these were for domestic consumption (Bethell [1986, 272]). Other food industries, such as sugar (Bertola and Ocampo [2012, 129]) to be used in the production of chocolate, candies, biscuits. Vegetable oils were also very important. “The flour mills were probably the first of the Chilean industrial plants to utilize steam

consumption too developed around 1900⁹⁶. The industrial sector was boosted by the international scenario too. For example, “[m]eat exports required the development of cold-storage technologies”⁹⁷. From an international trade perspective, Haber [2005, 5] argues that given a change in the metallic standard, “exchange rate depreciation resulted in the expansion of the tradables sectors at the expense of non-tradables”. Lower transportation costs and higher demand for processed grains in Europe also played a big role boosting early industrial production. As Bauer [2008, 68] argues, “[b]ad harvests in Europe and disruptions caused by wars were other factors that enabled Chilean grain to be sold on European Markets”.

Proper industrial activities started very small⁹⁸, progressing “from the shop to the factory during the latter half of the nineteenth century”⁹⁹. In Chile, almost all non-agricultural produce were personified by an incipient, yet strong group of individuals. As historian Francisco Encina described it,

“[i]t was precisely this segment of the dominant class that consummately personified the development of Chilean capitalism (mineowner and banker, railroad magnate and manufacturer, shipper and trader, *hacendado* and miller were most frequently not only close associates, or drawn from the same family, but they were same individuals: Ossa, Edwards, Vicuña Mackenna, Matta, Goyenechea, Cousiño, Urmeneta, Gallo, Subercasaux)”¹⁰⁰.

Most critically, the early industrial class was greatly dominated by foreign investors¹⁰¹. Pfeiffer [1952, 139] explains how “[u]nlike a majority of her neighbors, Chile was one of the few Latin-American nations which managed to make substantial progress in the development of industries other than those producing consumer goods considerably before the turn of the last century” and how the most extensive industrial operations had been dominated by English firms.

From the process of going from mineowners to proto-industrialists, this incipient elite developed a strong sense of social *class* which consistently sought political representation and influence. Collier and Collier [2002, 109] explain that the *Alianza Liberal* was

“the political expression of the new groups that began to emerge in the late 19th century with the expansion of the commerce and industry and the opening of the new mining areas [...] As these groups gained social and economic importance, they began to emerge as a political force”.

power” (Rippy and Pfeiffer [1948, 300]).

⁹⁶Some examples are tobacco, pottery, felt hats, matches, footwear, specially in Argentina, Brazil, Chile, Uruguay and Perú (Rippy [1971, 235]).

⁹⁷Bertola and Ocampo [2012, 129].

⁹⁸Marichal [1989], Rippy and Pfeiffer [1948, 68].

⁹⁹Rippy [1971, 235].

¹⁰⁰In Zeitlin [1984, 30]. Emphasis in the original. Similarly, Wright [1975, 48] supports the thesis that the nitrate development did lead to the development of an “incipient industrial establishment”.

¹⁰¹Rippy and Pfeiffer [1948, 295].

Additionally, during the 1920s industrialists started to “form trade associations to engage in lobbying and propaganda as more coherent interest groups”¹⁰², such as the *Sociedad de Fomento Fabril* (SOFOFA) founded in 1883 to represent the interests of the the industrial sector against the interests of the agricultural sector, represented by the *Sociedad Nacional de Agricultura* (SNA), founded 45 years earlier in 1838. The society “was the most powerful associational interest group in nineteenth-century Chile”¹⁰³, which was clearly self-conceived in class terms¹⁰⁴.

The first time the agriculture sector engaged in predatory practices was due to the fiscal deficit originated in the deceleration of trade taxes. The deficit put heavy fiscal pressures on rulers to draw on industrial output. Agricultural exports in Chile, such as wheat production, had a boom between 1865-1875 until 1880¹⁰⁵. However, “[t]he importance of trade taxes as sources of public revenues began a steady decline in 1918, which lasted until 1925. This downfall is explained by the fall of export revenues caused by the collapse in the prices of Chile’s major exports during the war”¹⁰⁶. Both fiscal pressures and lack of political counterpart, forced governments before the 1920s to held several confiscatory policies. These policies had many “faces”. As some historians have argued, incumbents engaged in “nationalization by means of naturalization, government intervention, and government participation”¹⁰⁷. Chile, Perú, Uruguay, among others, went through a clear processes of nationalization of non-agricultural assets around the 1920s¹⁰⁸.

In Chile, for example, these two sectors had enough antagonistic preferences that they initially confronted each other in two bloody civil wars. Zeitlin [1984, 23] argues that the civil wars challenged a “large landed property [elite against a] productive capital [elite]”. Clearly, fast industrialization brought an unstable combination: *inter-sectoral economic balance paired with inter-elite political inequality*. The sectoral balance was tested in two wars. However, given the relatively similar military capacities, both sectors were forced to redefine their strategies. The rate of speed of industrial growth leveraged the industrial elite, helping them to get better terms. Three institutional components were incorporated, an income tax, political representation for the industrial elite and protectionist policies for the industrial sector. In 1924 the income tax law was passed. As others have observed, “[t]here was visible bargaining: [the non-agricultural sector] (reluctantly) accepted taxation, *while demanding state services and expecting to influence how tax revenues were spent*”¹⁰⁹. Also, the industrial sector heavily campaigned for policies favorable to them, particularly, economic protection. The SOFOFA pursued an agenda in favor of protective industrial tariffs¹¹⁰. In particular, “by the early 1920s

¹⁰²Weaver [1980, 107].

¹⁰³Wright [1973, 244].

¹⁰⁴Wright [1975, 51].

¹⁰⁵Bauer [2008, 68-69-70]. See also Lederman [2005, 55]. Declining custom duties also happened in several other countries of Latin America. See Bulmer-Thomas [2003, 245].

¹⁰⁶Lederman [2005, 54-55].

¹⁰⁷Rippy [1971, 238].

¹⁰⁸Chua [2010].

¹⁰⁹Carmenza Gallo, in Brautigam et al. [2008, 165]. Emphases are mine. She refers specifically to nitrate producers.

¹¹⁰Lederman [2005, 54] and Haber [2005, 18].

Chile’s manufacturers were no longer just demanding (and obtaining) protective tariffs, they actively lobbied for government subsidies to establish a range of new industries”¹¹¹. Eventually, the Aguirre Cerda government in 1939 created the CORFO an agency that “undertook the responsibility for economic planning and direction by identifying certain industrial sectors to support through various sorts of credits, subsidies [and] government investments”¹¹².

Inter-elite compromises and the introduction of extractive institutions played a mayor role in the Chilean state-building process. The collapse of the agricultural market forced the traditional sector to make both political and economic agreements. The income tax law forced the state to develop skilled bureaucracies to monitor individual incomes, while tying both elites in a political compromise. During the structural transformations, the early Chilean government “was able to impose a substantial tax [...] and pay the salaries of government and military employees”¹¹³. Importantly, the income tax law was influential beyond Santiago, the capital city, but in the whole territory. *Art. 104* and *Art. 105* of the *decreto* number 1269 empowered all municipalities the collection of the tax. All municipalities had to send a detailed list of taxpayers twice a year¹¹⁴. Also, protectionist tariffs helped to develop an even stronger industrial sector, which in turn established the basis for the new middle class, the most important ingredient for the development of the modern bureaucracy. The aperture of the political system, while breaking the agricultural-led political monopoly, also helped the industrial class to gain influence in how the income tax was spent and other policies. Moreover, the incorporation of the modern sector into the political system played a fundamental role in the further industrialization process itself. That is, the industrialization process was also a *political* process too. As Collier [1977, 683] points out, “the real story of Chilean industrialization belongs to the Parliamentary period”, between 1891 and 1925, right after the civil war. Since taxation was the exchange currency of political representation, the inter-elite compromise was in the interest’s of all involved parties. As Kurtz [2013, 36], explains, the “incorporation of upper-class actors from all major factions into the national political system [was] crucial to enabling cooperation in state building and public goods provision activities”. Furthermore, the inter-elite alliance was key to centralize power and to “impos[e] substantial taxation”¹¹⁵.

VII. ECONOMETRIC ANALYSES

In this section we test that inter-elite economic equality posited challenges to agricultural political incumbents. Following Aidt and Jensen [2009], we model the conditional hazard ratio that a country which has not yet adopted the income tax adopts it in a given year as a function of the relative sizes

¹¹¹Haber [2005, 18].

¹¹²Collier and Collier [2002, 393].

¹¹³Bauer [2008, 80]. He refers particularly to taxes on “nitrate exports”, another non-agricultural source of growth.

¹¹⁴As article 104th reads, “Los municipios estarán obligados a enviar semestralmente a la Direccion de Impuestos Internos una copia autorizada del rol de patentes industriales, comerciales y profesionales”.

¹¹⁵Kurtz [2013, 37].

of the agricultural and industrial sectors. We compute these hazard ratios using several functional forms. First, we assume a Cox proportional hazard parametrization to compute the hazard rate of a country at a given year to “fail” (i.e., implement the income tax law) conditional on baseline covariates¹¹⁶. Countries drop out of the sample when they adopt the income tax.

Additionally, we employ other functional forms too. We also assumed a generalized estimating equation (GEE) functional form. Generalized estimating equations were introduced by Liang and Zeger [1986] to fit clustered, repeated/correlated and panel data¹¹⁷. This method is especially well suited when the data are binary¹¹⁸. GEE methods require analysts to parameterize the working correlation matrix. Though Hedeker and Gibbons [2006, 139] explain that “the GEE is robust to misspecification of the correlation structure”¹¹⁹, Zorn [2006, 338] explains that whereas the choice of estimator makes little or not difference, the unit on which the data are grouped introduces a great deal of differences. Hence, following the advice of Hardin and Hilbe [2013, 166], who point out that when “the observations are clustered (not collected over time) [...] the exchangeable correlation structure” should be used, we assume an “independence” working covariance structure, that is, there are “no within-unit correlation”¹²⁰. From a substantive standpoint, GEE models provide an estimated marginal mean, that is, the weighted average of all cluster-specific effects (or conditional means).

We also employ a conditional logit form (“fixed effects” model). One important advantage of this strategy is to be able to account for country-specific effects. For example, fiscal capacities could be a function of prior state-building capacities¹²¹. A number of scholars rightly argue that state capacities at time t are in part a function of state-capacities at time $t - 1$ (Wimmer [2015, 10], Mahoney [2010] and Lange et al. [2006, 1426]). Fixed-effects should be able to account for this and other unobserved or/and hard-to-measure covariates, which if left unaccounted for would introduce omitted variable biases¹²².

In order to account for time dependency, we included different time-transformed variables, in the form of a lagged dependent variable to account for partial adjustment of behavior¹²³ and also time-transformed functions¹²⁴ “through the use of the natural log transformation [and] polynomials [to capture] different forms (or “shapes”) of the baseline hazard”¹²⁵.

Additionally, in order to test that income taxation initiated a *path* of institutional investments,

¹¹⁶Box-Steffensmeier and Jones [2004].

¹¹⁷Zorn [2006, 322].

¹¹⁸Hanley et al. [2003].

¹¹⁹Carlin et al. [2001, 402], argue that “[r]elatively minor differences in estimates may arise depending on how the estimating equations are weighted, in particular within the generalized estimating equation (GEE) framework”. Westgate and Burchett [2016] and Gardiner et al. [2009, 227] make the same point.

¹²⁰Zorn [2006, 332].

¹²¹I thank Matthias vom Hau for this suggestion.

¹²²Angrist and Pischke [2008].

¹²³Wawro [2002].

¹²⁴Carter and Signorino [2010].

¹²⁵Box-Steffensmeier and Jones [2004, 75].

particularly opening the political system for oligarchic competition, Andersen-Gill models¹²⁶, a generalization of the Cox models¹²⁷, were incorporated. Using a slightly different data structure¹²⁸ and within a multiple failure-time framework, the *jointly* occurrence of income taxation *and* democracy was estimated. One drawback of AG models is that both events are assumed to be the same and independent¹²⁹. Though this paper proposed an endogenous relationship between both outcomes, here we adopt a strategy that tries to break this possible endogeneity “problem”¹³⁰. We fit two Cox models, having taxation on the RHS and political competition on the LHS for the first model, and then we invert these two covariates for the second model.

Another model to account for spatial dependence was included¹³¹. Given that the set of countries we are modeling are all contiguous neighbors, it is reasonable to expect a “domino” effect. Theoretically, being the first country in implementing the income tax cannot have the first effect than being the last one. There are clearly diminishing returns which should be accounted for. First-implementers have no prior experience and hence it should be harder for them to pass the law in the first place. For last-implementers it should be easier. To account for spatial dependence, a cumulative count of countries which have implemented the law at time t was included¹³².

Finally, to rule out modernization-like theory outcomes, a last model including annual per capita GDP was included. Modernization theory argues that higher levels of education, income and urbanization make democratization more likely. Annual per capita GDP is a good proxy of aggregate well-being.

All these models strongly suggest that larger industrial sectoral outputs accelerate the passage of the income tax law and the implementation of the first democratic waves.

I. Data and Sample

We estimate all models using the MOxLAD dataset¹³³. This dataset provides extended comparable sectoral value-added series in constant purchasing power parity prices¹³⁴. Our sample is given by all Pacific coast countries for which we have available data, that is, Chile, Ecuador, Nicaragua,

¹²⁶Andersen and Gill [1982].

¹²⁷Therneau and Grambsch [2000, 185]. Box-Steffensmeier et al. [2014, 2] explain that AG models are “Cox model[s] with robust standard errors”.

¹²⁸This data structure is different in the sense that countries drop out of the sample once *both* income taxation *and* democracy occur.

¹²⁹Box-Steffensmeier et al. [2006, 240].

¹³⁰I thank Christopher Zorn for this suggestion.

¹³¹I thank both Christopher Zorn and David Darmofal for this suggestion.

¹³²Given the small number of events (no event, democracy or taxation, and taxation and democracy) and the small panel (just seven countries, where some of them experience taxation/democratization rather early, shortening the panel length), the variable could not be introduced on the RHS due to a perfect classification problem. Rather than that, we opted for clustering the results at the counting variable level. The intuition is that countries are exposed to a cluster number that increases with time.

¹³³These data build on the studies and statistical abstracts of the Economic Commission for Latin America, but also rely on Mitchell’s International Historical Statistics, International Monetary Fund’s International Financial Statistics, the World Bank’s World Development Indicators and a variety of national sources”.

¹³⁴See Astorga et al. [2005, 790].

Venezuela, Perú, Colombia and Guatemala (see [Figure 1](#)). The time span goes from 1900 to (potentially) 2010. Observations are left-censored before the timespan, and right-censored once they impose the tax income for the Cox models, and when *both* democracy and the income tax occur (for the “multiple failure” models¹³⁵).

II. Results

[Table 1](#) shows six models¹³⁶. The first three are Cox models, under different time-transformations (splines, logged and log-lagged). The fourth model is a conditional logistic regression (“fixed effects” model). The fifth model is an Andersen-Gill model which predicts the jointly realization of both the income tax and democratization. The sixth model shows a GEE logistic regression model. The seventh and eight models show results for standard Cox models, where the outcome (whether taxation or democracy) is switched. The ninth model controls for spatial dependence while the tenth model controls for a per capita GDP. For the Cox, Andersen-Gill models, taxation-democracy, democracy-taxation, spatial dependence and modernization theory models, the coefficients are expressed in hazard ratios. That means that “a positive coefficient indicates that the hazard is increasing as a function of the covariate (and hence, the survival time is decreasing) and a negative sign indicates the hazard is decreasing as a function of the covariate”¹³⁷. In this application, the hazard is either implementing the income tax law or switching to a democratic state, or both (depending on the model). For the conditional logit and GEE models, the coefficients are in logit scales.

These results strongly suggest that higher levels of industrial output are associated to the imposition of the income tax. In substantive terms, as the industrial sector developed, it challenged the agricultural political monopolists, making the passage of the income tax was more likely. Once unobserved sources of heterogeneity are accounted for (in the “fixed effects” model), past stateness levels do not alter the mechanisms presented in this paper. The AG model suggests that once we assume taxation and early oligarchic electoral competition are the same process, the sizes, signs and statistical significances do not change either. However, once we assume them to be different and try to break the endogeneity “problem”, we see that oligarchic competition “causes”¹³⁸ income taxation, but not the other way around (model 7 and model 8, respectively). Once we cluster by early and late-implementers, results remain substantively identical. Finally, once per capita GDP is included, the model crashes, neither this measure of well-being nor more industrialization

¹³⁵“Taxation-Democracy”, “Democracy-Taxation”, “Spatial Dependence” and “Modernization Theory” models.

¹³⁶All tables were produced using the `texreg` package ([Leifeld \[2013\]](#)). All Cox models were computed using the `survival` R package ([Therneau \[2015\]](#)). The GEE logistic regression was computed using the `geepack` package ([Hojsgaard et al. \[2016\]](#)). This paper was written in L^AT_EX using the dynamic report R package `knitr` ([Xie \[2016\]](#)), for fully replicable research.

¹³⁷[Box-Steffensmeier and Jones \[2004, 50\]](#).

¹³⁸We use the term loosely, without claiming any causal inference in this paper.

	(1) Cox	(2) Cox	(3) Cox	(4) Cond. Logit	(5) And.-Gill	(6) GEE	(7) Tax.-Dem.	(8) Dem.-Tax.	(9) Spat. Dep.	(10) Modern. Th.
Manufacture Output _{it}	0.742** (0.236)									
Agricultural Output _{it}	-0.440 (0.239)									
Manufacture Output (ln)		2.193* (0.861)		0.921*** (0.157)	0.710** (0.236)	2.640** (0.950)			2.193* (1.111)	
Agricultural Output (ln)		-1.347 (0.816)		-0.433 (0.230)	-0.411 (0.232)	-2.605* (1.098)			-1.347 (0.910)	
Manufacture Output _{t-1} (ln)			2.193* (0.861)							
Agricultural Output _{t-1} (ln)			-1.347 (0.816)							
Total Population (ln)						5.432** (1.837)				
Manufacture Output							0.003** (0.001)	-0.000 (0.000)		0.000 (0.000)
Agricultural Output							-0.000 (0.000)	0.000 (0.000)		-0.000 (0.000)
Democracy (cum. sum) ²							0.027*** (0.005)			
Income Tax (cum. sum) ²								0.004 (0.005)		-0.004 (0.005)
Per Capita GDP										
AIC	12.963	9.271	9.271	3248.152	30.677		8.944	21.704	9.271	21.655
R ²	0.028	0.048	0.049	0.323	0.021		0.060	0.006	0.048	0.006
Max. R ²	0.075	0.075	0.078	0.996	0.127		0.075	0.079	0.075	0.079
Num. events	7	7	7	447	14		7	8	7	8
Num. obs.	181	181	174	621	234	621	181	207	181	207
Missings	0	0	0	0	0		53	27	0	27
PH test							1.000	0.778	0.854	0.981
Num. clust.	0.795	0.966	0.966		0.817	7				

***p < 0.001, **p < 0.01, *p < 0.05. Robust Standard Errors in All Models

Table 1: *Structural Origins of Income Taxation: Income Tax Law and Democratic Development*

levels predict oligarchic competition/democracy nor fiscal development. The GEE model includes a measurement of population density. Population has been associated to the probability in which elites expanded the franchise. Denser populations also expand the tax base. The scarcity of people meant that local and state governments were extremely concerned with attracting migrants. Because population inflows would lower the cost of labor, and boost land values and tax revenues, these societies were induced to adopt institutions attractive to immigrants. Among these, were cheap land and political participation¹³⁹.

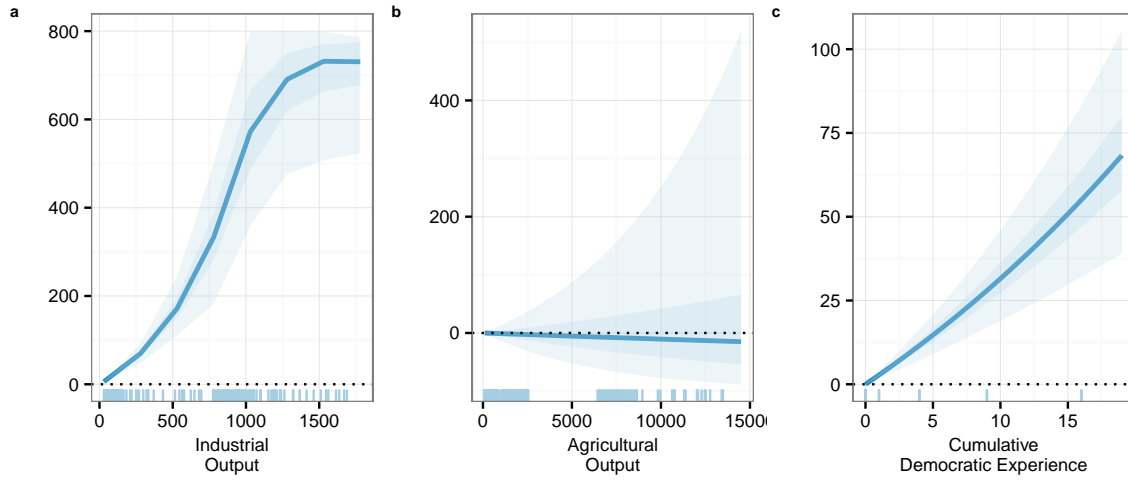


Figure 4: *First Differences of Industrial Output, Agricultural Output and Democratic Experience*

Following Gandrud [2015] and King et al. [2000], Figure 4 shows in three panels, different variable of interests simulated 2,000 times. Using a variant of model 2 in Table 1¹⁴⁰, panel a and b simulate the average effect of industrial and agricultural outputs on the passage of the income tax. Using the estimations of the seventh model in Table 1, panel c simulates the effect of the cumulative democratic experience on the passage of the income tax law. These plots strongly suggest that higher industrial output substantively boosted the introduction of the income tax, while higher agricultural output did not play a role in the modernization of the fiscal system. We argued in favor of an endogenous process between oligarchic electoral competition and the development of a fiscal system. However, model 7 in Table 1 suggests that once we include oligarchic electoral competition on the right-hand-side we find statistically significant results. Panel c in Figure 4 simulates those effects. However, income tax adoption does not fit oligarchic electoral competition (model 8). We leave this question open for future research.

¹³⁹Engerman and Sokoloff [2005, 892-893].

¹⁴⁰The `simPH` package does not handle natural logs well. The only difference was the inclusion of the unlogged variable. It is important to stress that *both* sectors were included in the model, and hence, one sector acts as the control variable of the other sector. In the appendix section, Table 2 shows the results of the model employed to generate the 2,000 simulations. The numbers differ from the main results in Table 1 because the scales are different.

III. Robustness Checks

Cox *proportional* models rest on the assumption that hazard rates are *proportional* to time dynamics¹⁴¹. Non-proportional hazard model are becoming an increasing problem across all subfields in political science¹⁴². In this section, we test whether this assumption holds. Non-significant p-values indicate that the proportionality assumption holds. Also, Figure 5 shows how the spline fitted lines are constant across time. Each of the seven dots represent the regression coefficients of our seven countries¹⁴³. All in all, steady splines confirm that the hazard rates are, in fact, *proportional*.

```
##          rho chisq    p
## log(constmanufact) -0.365 0.111 0.739
## log(constagricult)  0.360 0.107 0.744
## GLOBAL              NA 0.117 0.943
```

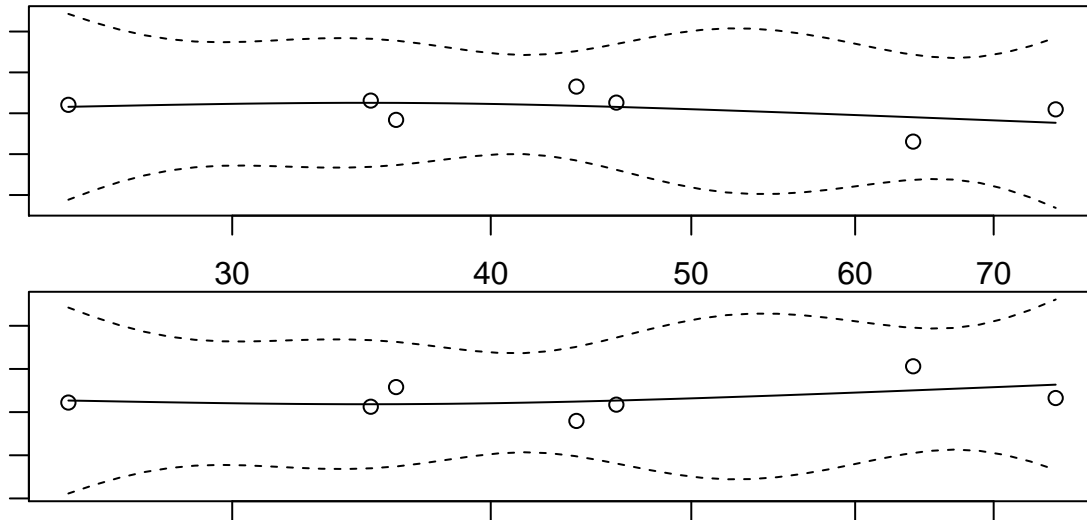


Figure 5: Graphical Plots of the Estimates against Time

VIII. DISCUSSION

The paper argued that in order to understand state capacities, it is necessary to understand the origins of the main “state-builder” institution, i.e. income taxation. Direct taxation, and specially, income taxation (being a much more complicated tax to collect), requires the development of better

¹⁴¹Box-Steffensmeier and Jones [2004].

¹⁴²Licht [2011].

¹⁴³This is for our main model, column 2 in Table 1.

bureaucracies, a fundamental part of the modern state. Its introduction was not important because of the new resources the treasury acquired, but because it triggered a series of inter-elite compromises and other institutional investments too. Our theory claims that the countries that made the big jump, sustained fast industrial growth rates. These rates challenged the traditional sector forcing them to make political concessions with the modern sector. One of the most important ones, was the aperture of the closed post-colonial political system, granting access to industrial organized groups. Specifically, the industrial class accepted to be income taxed in exchange of being allowed to participate in politics. In terms of economic compromises, the industrial elite managed to articulate its demands as a coherent class, eventually passing industrial tariffs to protect their sector. In this sense, the analytical device that allowed the rupture of the old political monopoly was similar sectoral output levels between elites. It is inter-elite *equality* what causes state formation and cooperation, not inter-elite inequality as other scholars have claimed. A situation of balanced growth potentially allowed each sector to acquire the same level of military power, deterring sustained conflict and forcing both political and economic compromises. Importantly, it is in this way in which industrialization is important (as a contestation device), not in the way modernization theorists have argued.

IX. APPENDIX

I. Model used for Simulation Plot

Table 2 shows the estimates used to compute the 2,000 simulations in the Figure 4 (panels **a** and **b**).

	Cox-PH
Manufacture Output	0.00*** (0.00)
Agricultural Output	-0.00 (0.00)
AIC	9.26
R ²	0.05
Max. R ²	0.07
Num. events	7
Num. obs.	181
Missings	0
PH test	1.00
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Robust Standard Errors in All Models	

Table 2: *Structural Origins of Income Taxation: Model Used to Compute Simulations*

REFERENCES

- Daron Acemoglu and James Robinson. Political Losers as a Barrier to Economic Development. *The American Economic Review*, 90(2):126–, 2000. URL <http://www.jstor.org/stable/117205>.
- Daron Acemoglu and James Robinson. *Economic Origins of Dictatorship and Democracy*. Cambridge University Press, 2009.
- Daron Acemoglu, Simon Johnson, and James Robinson. Reversal Fortune: Geography and Institutions in the Making of the Modern World Income Distribution. *The Quarterly Journal of Economics*, 117(4):1231–1294, 2002.
- Toke Aidt and Peter Jensen. The Taxman Tools Up: An Event History Study of the Introduction of the Personal Income Tax. *Journal of Public Economics*, 93(1-2):160–175, 2009. ISSN 00472727. doi: 10.1016/j.jpubeco.2008.07.006. URL <http://www.sciencedirect.com/science/article/pii/S0047272708001229>.
- Edward Ames and Richard Rapp. The Birth and Death of Taxes: A Hypothesis. *The Journal of Economic History*, 37(1):161–178, 1977.
- Per Andersen and Richard Gill. Cox’s Regression Model for Counting Processes: A Large Sample Study. *The Annals of Statistics*, 10(4):1100–1120, dec 1982. ISSN 0090-5364. doi: 10.1214/aos/1176345976. URL <http://projecteuclid.org/euclid.aos/1176345976>.
- Joshua Angrist and Jörn-Steffen Pischke. *Mostly Harmless Econometrics: An Empiricist’s Companion*. Princeton University Press, 1st. edition, 2008.
- Ben Ansell and David Samuels. *Inequality and Democratization: An Elite-Competition Approach*. Cambridge University Press, 2014.
- Luz Marina Arias. Building Fiscal Capacity in Colonial Mexico: From Fragmentation to Centralization. *The Journal of Economic History*, 73(3):662–693, 2013. ISSN 00220507. doi: 10.1017/S0022050713000570.
- Pablo Astorga, Ame Berges, and Valpy Fitzgerald. The Standard of Living in Latin America During the Twentieth Century. *Economic History Review*, 58(4):765–796, nov 2005. ISSN 0013-0117. doi: 10.1111/j.1468-0289.2005.00321.x. URL <http://doi.wiley.com/10.1111/j.1468-0289.2005.00321.x>.
- Jean Marie Baland and James Robinson. Land and Power: Theory and Evidence from Chile. *American Economic Review*, 98(5):1737–1765, 2008. ISSN 00028282. doi: 10.1257/aer.98.5.1737.

- Arnold Bauer. *Chilean Rural Society: From the Spanish Conquest to 1930*. Cambridge University Press, 2008.
- Charles Bergquist. *Coffee and Conflict in Colombia, 1886-1910*. Duke University Press, oct 1986. doi: 10.1215/9780822381488.
- Luis Bertola and Jose Antonio Ocampo. *The Economic Development of Latin America since Independence*. Oxford University Press, 2012. URL <https://global.oup.com/academic/product/the-economic-development-of-latin-america-since-independence-9780199662142?cc=us{%&}lang=en{%&}}>.
- Timothy Besley and Torsten Persson. The Origins of State Capacity: Property Rights, Taxation, and Politics. *American Economic Review*, 99(4):1218–1244, aug 2009. ISSN 0002-8282. doi: 10.1257/aer.99.4.1218. URL <http://pubs.aeaweb.org/doi/abs/10.1257/aer.99.4.1218>.
- Timothy Besley and Torsten Persson. State Capacity, Conflict, and Development. *Econometrica*, 78(1):1–34, 2010. ISSN 0012-9682. doi: 10.3982/ECTA8073. URL <http://www.wiley.com/bw/journal.asp?ref=0012-9682http://doi.wiley.com/10.3982/ECTA8073>.
- Timothy Besley and Torsten Persson. *Pillars of Prosperity: The Political Economics of Development Clusters*. Princeton University Press, 2011.
- Timothy Besley and Torsten Persson. Why Do Developing Countries Tax So Little? *Journal of Economic Perspectives*, 28(4):99–120, 2014.
- Michael Best. Political Power and Tax Revenues in Central America. *Journal of Development Economics*, 3(1):49–82, 1976. ISSN 03043878. doi: 10.1016/0304-3878(76)90040-7.
- Leslie Bethell. *The Cambridge History of Latin America, Volume 4: c. 1870-1930*, volume IV. Cambridge University Press, 1986. ISBN 978-0521232258.
- Carles Boix. Setting the Rules of the Game: The Choice of Electoral Systems in Advanced Democracies. *The American Political Science Review*, 93(3):609–624, 1999. ISSN 1556-5068. doi: 10.2139/ssrn.159213. URL <http://www.ssrn.com/abstract=159213>.
- Carles Boix. *Political Order and Inequality: Their Foundations and their Consequences for Human Welfare*. Cambridge Studies in Comparative Politics, 2015.
- Carles Boix, Michael Miller, and Sebastian Rosato. A Complete Data Set of Political Regimes, 1800-2007. *Comparative Political Studies*, 46(12):1523–1554, nov 2012. ISSN 0010-4140. doi: 10.1177/0010414012463905. URL <http://cps.sagepub.com/cgi/doi/10.1177/0010414012463905>.

- Deborah Boucoyannis. Power, Taxation, and Representation: The Limits of Bargaining and the Endogeneity of Institutions to State Capacity to Tax, Especially the Most Powerful. 2015.
- Janet Box-Steffensmeier and Bradford Jones. *Event History Modeling A Guide for Social Scientists*. Cambridge University Press, Cambridge, 2004. ISBN 9780521546737.
- Janet Box-Steffensmeier, Suzanna De Boef, and Kyle Joyce. Event Dependence and Heterogeneity in Duration Models: The Conditional Frailty Model. *Political Analysis*, 15(3):237–256, dec 2006. ISSN 1047-1987. doi: 10.1093/pan/mpm013. URL <http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpm013>.
- Janet Box-Steffensmeier, Suzanna Linn, and Corwin Smidt. Analyzing the Robustness of Semi-Parametric Duration Models for the Study of Repeated Events. *Political Analysis*, 22(2):183–204, 2014. ISSN 14764989. doi: 10.1093/pan/mpt015.
- Deborah Brautigam, Odd-Helge Fjeldstad, and Mick Moore. *Taxation and State-Building in Developing Countries: Capacity and Consent*. Cambridge University Press, 2008. ISBN 9781139469258. URL <http://books.google.be/books?id=yKqioeqwsTkC>.
- David Brown and Wendy Hunter. Democracy and Human Capital Formation: Education Spending in Latin America, 1980 to 1997. *Comparative Political Studies*, 37(7):842–864, sep 2004. ISSN 0010-4140. doi: 10.1177/0010414004266870. URL <http://cps.sagepub.com/cgi/doi/10.1177/0010414004266870>.
- Victor Bulmer-Thomas. *The Economic History of Latin America since Independence*. Cambridge University Press, 2003. ISBN 9780521532747.
- John Campbell. The State and Fiscal Sociology. *Annual Review of Sociology*, 19(1):163–185, aug 1993. ISSN 0360-0572. doi: 10.1146/annurev.so.19.080193.001115. URL <http://www.annualreviews.org/doi/abs/10.1146/annurev.so.19.080193.001115>.
- John Campbell and Michael Allen. The Political Economy of Revenue Extraction in the Modern State: A Time-Series Analysis of U.S. Income Taxes, 1916-1986. *Social Forces*, 72(3):643, mar 1994. ISSN 00377732. doi: 10.2307/2579775. URL [http://links.jstor.org/sici?sici=0037-7732\(199403\)72:3;1-0;FT2579775](http://links.jstor.org/sici?sici=0037-7732(199403)72:3;1-0;FT2579775). URL <http://www.jstor.org/stable/2579775?origin=crossref>.
- Mauricio Cárdenas. State Capacity in Latin America. *Economía*, 10(2):1–45, 2010. ISSN 1533-6239. doi: 10.1353/eco.2010.0003. URL <http://muse.jhu.edu/content/crossref/journals/economia/v010/10.2.cardenas.html>.

- John Carlin, Rory Wolfe, C. Hendricks Brown, and Andrew Gelman. A Case Study on the Choice, Interpretation and Checking of Multilevel Models for Longitudinal Binary Outcomes. *Biostatistics*, 2(4):397–416, dec 2001. ISSN 14654644. doi: 10.1093/biostatistics/2.4.397. URL <http://www.ncbi.nlm.nih.gov/pubmed/12933632><http://biostatistics.oupjournals.org/cgi/doi/10.1093/biostatistics/2.4.397>.
- David Carter and Curtis Signorino. Back to the Future: Modeling Time Dependence in Binary Data. *Political Analysis*, 18(3):271–292, jul 2010. ISSN 1047-1987. doi: 10.1093/pan/mpq013. URL <http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpq013>.
- Miguel Angel Centeno. *Blood and Debt: War and the Nation-State in Latin America*. Penn State University Press, 2002.
- Amy Chua. The Privatization-Nationalization Cycle: The Link between markets and Ethnicity in Developing Countries. *Columbia Law Review*, 95(2):223–303, 2010. ISSN 00101958. doi: 10.2307/1123231.
- John Coatsworth and Jeffrey Williamson. The Roots of Latin American Protectionism: Looking Before the Great Depression. Technical report, National Bureau of Economic Research, Cambridge, MA, jun 2002. URL <http://www.nber.org/papers/w8999.pdf>.
- Jacob Cohen. The Earth is Round ($p < .05$). *American Psychologist*, 49(12):997–1003, 1994. ISSN 1935-990X. doi: 10.1037/0003-066X.49.12.997. URL <http://content.apa.org/journals/bul/66/6/423><http://doi.apa.org/getdoi.cfm?doi=10.1037/0003-066X.49.12.997>.
- Youssef Cohen, Brian Brown, and A. F. K. Organski. The Paradoxical Nature of State Making: The Violent Creation of Order. *The American Political Science Review*, 75(4):901–910, 1981. URL <http://www.jstor.org/stable/1962291>.
- Ruth Collier and David Collier. *Shaping The Political Arena: Critical Junctures, the Labor Movement, and Regime Dynamics in Latin America*. University of Notre Dame Press, 2002.
- Simon Collier. The Historiography of the "Portalian" Period (1830-1891) in Chile. *The Hispanic American Historical Review*, 57(4):660–690, 1977. URL <http://www.jstor.org/stable/2513483>.
- Jonathan Di John. The Political Economy of Taxation and Tax Reform in Developing Countries. 2006.
- Stanley Engerman and Kenneth Sokoloff. The Evolution of Suffrage Institutions in the New World. *The Journal of Economic History*, 65(04):891, dec 2005. ISSN 0022-0507. doi: 10.1017/S0022050705000343. URL <http://journals.cambridge.org/production/>

[action/cjoGetFulltext?fulltextid=354329http://www.journals.cambridge.org/abstract/_S0022050705000343](http://www.journals.cambridge.org/abstract/_S0022050705000343).

Thomas Ertman. *Birth of the Leviathan: Building States and Regimes in Medieval and Early Modern Europe*. Cambridge University Press, 1997.

Tasha Fairfield. Going Where the Money Is: Strategies for Taxing Economic Elites in Unequal Democracies. *World Development*, 47:42–57, jul 2013. ISSN 0305750X. doi: 10.1016/j.worlddev.2013.02.011. URL <http://linkinghub.elsevier.com/retrieve/pii/S0305750X13000648>.

Diego Focanti, Mark Hallerberg, and Carlos Scartascini. Tax Reforms in Latin America in an Era of Democracy. 2013.

Francis Fukuyama. *State-Building: Governance and World Order in the 21st Century*. Cornell University Press, 2004.

Francis Fukuyama. What Is Governance? *Governance*, 26(3):347–368, jul 2013. ISSN 09521895. doi: 10.1111/gove.12035. URL <http://doi.wiley.com/10.1111/gove.12035>.

Carmenza Gallo. *Taxes and state power: Political instability in Bolivia, 1900-1950*. Temple University Press, 1991.

Christopher Gandrud. simPH: An R Package for Illustrating Estimates from Cox Proportional Hazard Models Including. *Journal of Statistical Software*, 65(3):1–20, 2015. ISSN 1548-7660. doi: 10.2139/ssrn.2318977. URL <http://www.jstatsoft.org/v65/i03/>.

Joseph Gardiner, Zhehui Luo, and Lee Anne Roman. Fixed Effects, Random effects and GEE: What Are The Differences? *Statistics in Medicine*, 28(2):221–239, jan 2009. ISSN 02776715. doi: 10.1002/sim.3478. URL <http://doi.wiley.com/10.1002/sim.3478>.

Francisco Garfias. Elite Competition and State Capacity Development: Theory and Evidence from Post-Revolutionary Mexico. 2015.

Barbara Geddes. A Game Theoretic Model of Reform in Latin American Democracies. *The American Political Science Review*, 85(2):371, jun 1991. ISSN 00030554. doi: 10.2307/1963165. URL <http://www.jstor.org/stable/1963165?origin=crossref>.

Barbara Geddes. *Politician's Dilemma: Building State Capacity in Latin America*. University of California Press, 1996.

Douglas Gollin, Stephen Parente, and Richard Rogerson. The Role of Agriculture in Development. *The American Economic Review*, 92(2):160–164, 2002. URL <http://www.jstor.org/stable/3083394>.

- Gene Grossman and Elhanan Helpman. Endogenous Innovation in the Theory of Growth. *Journal of Economic Perspectives*, 8(1):23–44, feb 1994. ISSN 0895-3309. doi: 10.1257/jep.8.1.23. URL <http://pubs.aeaweb.org/doi/abs/10.1257/jep.8.1.23>.
- Stephen Haber. Development Strategy or Endogenous Process? The Industrialization of Latin America. 2005.
- James Hanley, Abdissa Negassa, Michael Edwardes, and Janet Forrester. Statistical Analysis of Correlated Data Using Generalized Estimating Equations: An Orientation. *American Journal of Epidemiology*, 157(4):364–375, 2003. ISSN 00029262. doi: 10.1093/aje/kwf215.
- Jonathan Hanson and Rachel Sigman. Leviathan’s Latent Dimensions: Measuring State Capacity for Comparative Political Research. *Manuscript, Maxwell School of Citizenship and Public Affairs, Syracuse University*, pages 1–41, 2013. URL http://faculty.maxwell.syr.edu/johanson/papers/hanson_{_}sigman13.pdf.
- James Hardin and Joseph Hilbe. *Generalized Estimating Equations*. CRC Press, Boca Raton, FL, 2nd. edition, 2013. doi: 10.1002/0470013192.bsa250.
- Donald Hedeker and Robert Gibbons. *Longitudinal Data Analysis*. Wiley Series in Probability and Statistics. John Wiley & Sons, Inc., Hoboken, NJ, USA, mar 2006. ISBN 9780470036488. doi: 10.1002/0470036486. URL <http://doi.wiley.com/10.1002/0470036486>.
- Soren Hojsgaard, Ulrich Halekoh, and Jun Yan. *geepack: Generalized Estimating Equation Package*, 2016.
- Gary King, Michael Tomz, and Jason Wittenberg. Making the Most of Statistical Analyses: Improving Interpretation and Presentation. *American Journal of Political Science*, 44(2):341–355, apr 2000. ISSN 00925853. doi: 10.2307/2669316. URL <http://www.jstor.org/stable/2669316?origin=crossref>.
- Marcus Kurtz. The Social Foundations of Institutional Order: Reconsidering War and the "Resource Curse" in Third World State Building. *Politics & Society*, 37(4):479–520, 2009. ISSN 0032-3292. doi: 10.1177/0032329209349223. URL <http://pas.sagepub.com/cgi/doi/10.1177/0032329209349223>.
- Marcus Kurtz. *Latin American State Building in Comparative Perspective: Social Foundations of Institutional Order*. Cambridge University Press, 2013.
- Matthew Lange and Hrag Balian. Containing Conflict or Instigating Unrest? A Test of the Effects of State Infrastructural Power on Civil Violence. *Studies in Comparative International*

- Development*, 43(3-4):314–333, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9025-9. URL <http://link.springer.com/10.1007/s12116-008-9025-9>.
- Matthew Lange, James Mahoney, and Matthias vom Hau. Colonialism and Development: A Comparative Analysis of Spanish and British Colonies1. *American Journal of Sociology*, 111(5):1412–1462, mar 2006. ISSN 0002-9602. doi: 10.1086/499510. URL <http://www.journals.uchicago.edu/doi/10.1086/499510>.
- Daniel Lederman. *The Political Economy of Protection: Theory and the Chilean Experience*. Stanford University Press, Stanford, CA, 2005. ISBN 9780804749176.
- Melissa Lee and Nan Zhang. The Art of Counting the Governed: Census Accuracy, Civil War, and State Presence. 2013. URL <http://cddrl.stanford.edu/>.
- Philip Leifeld. texreg: Conversion of statistical model output in r to L^AT_EX and html tables. *Journal of Statistical Software*, 55(8):1–24, 2013. URL <http://www.jstatsoft.org/v55/i08/>.
- Margaret Levi. *Of Rule and Revenue*. University of California Press, 1989.
- Arthur Lewis. *The Theory of Economic Growth*. Harper & Row, 1965.
- Kung-Yee Liang and Scott Zeger. Longitudinal Data Analysis Using Generalized Linear Models. *Biometrika*, 73(1):13–22, 1986.
- Amanda Licht. Change Comes with Time: Substantive Interpretation of Nonproportional Hazards in Event History Analysis. *Political Analysis*, 19(2):227–243, apr 2011. ISSN 1047-1987. doi: 10.1093/pan/mpq039. URL <http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpq039>.
- Seymour Martin Lipset. *Political Man: The Social Bases of Politics*. The Johns Hopkins University Press, expanded edition edition, 1981.
- Fernando López-Alves. *State Formation and Democracy in Latin America, 1810-1900*. Duke University Press Books, 2000.
- James Mahon. Causes of Tax Reform in Latin America, 1977-95. *Latin American Research Review*, 39(1):3–30, 2004. ISSN 1542-4278. doi: 10.1353/lar.2004.0014. URL <http://muse.jhu.edu/content/crossref/journals/latin{ }american{ }research{ }review/v039/39.1mahon.html>.
- James Mahoney. *Colonialism and Postcolonial Development: Spanish America in Comparative Perspective*. Cambridge University Press, 2010.
- Markos Mamalakis. *Growth and Structure of the Chilean Economy: From Independence to Allende*. Yale University Press, 1976.

- Michael Mann. The Autonomous Power of the State: Its Origins, Mechanisms and Results. *European Journal of Sociology*, 25(02):185, 1984. ISSN 0003-9756. doi: 10.1017/S0003975600004239.
- Michael Mann. Infrastructural Power Revisited. *Studies in Comparative International Development*, 43(3-4):355–365, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9027-7. URL <http://link.springer.com/10.1007/s12116-008-9027-7>.
- Isabela Mares and Didac Queralt. The Non-Democratic Origins of Income Taxation. *Comparative Political Studies*, jul 2015. ISSN 0010-4140. doi: 10.1177/0010414015592646. URL <http://cps.sagepub.com/cgi/doi/10.1177/0010414015592646>.
- Carlos Marichal. *A Century of Debt Crises in Latin America: From Independence to the Great Depression, 1820-1930*. Princeton University Press, 1989.
- Kiminori Matsuyama. Increasing Returns, Industrialization, and Indeterminacy of Equilibrium. *The Quarterly Journal of Economics*, 106(2):617–650, 1991. URL <http://www.jstor.org/stable/2937949>.
- Kiminori Matsuyama. Agricultural Productivity, Comparative Advantage, and Economic Growth. *Journal of Economic Theory*, 58(2):317–334, dec 1992. ISSN 00220531. doi: 10.1016/0022-0531(92)90057-O. URL <http://linkinghub.elsevier.com/retrieve/pii/0022053192900570>.
- George McCutchen McBride. *Chile: Land and Society*. Octagon Books, 1936.
- Joel Migdal. *Strong Societies and Weak States*. Princeton University Press, 1988.
- Mick Moore. Taxation and the Political Agenda, North and South. *Forum for Development Studies*, 1:7–32, 2004a. ISSN 0803-9410. doi: 10.1080/08039410.2004.9666262.
- Mick Moore. Revenues, State Formation, and The Quality of Governance in Developing Countries. *International Political Science Review*, 25(3):297–319, 2004b. ISSN 01925121. doi: 10.1177/0192512104043018.
- Richard Musgrave. Schumpeter’s Crisis of The Tax State: An Essay in Fiscal Sociology. *Journal of Evolutionary Economics*, 2(2):89–113, jun 1992. ISSN 0936-9937. doi: 10.1007/BF01193535. URL <http://link.springer.com/10.1007/BF01193535>.
- Mancur Olson. *Power And Prosperity: Outgrowing Communist And Capitalist Dictatorships*. Basic Books, 2000.
- Stephen Parente and Edward Prescott. Barriers to Technology Adoption and Development. *Journal of Political Economy*, 102(2):298–321, apr 1994. ISSN 0022-3808. doi: 10.1086/261933. URL <http://www.journals.uchicago.edu/doi/10.1086/261933>.

- Jack Pfeiffer. Notes on the Heavy Equipment Industry in Chile, 1800-1910. *The Hispanic American Historical Review*, 32(1):139–144, 1952. URL <http://www.jstor.org/stable/2508942>.
- Fred Rippy and Jack Pfeiffer. Notes on the Dawn of Manufacturing in Chile. *The Hispanic American Historical Review*, 28(2):292–303, 1948. URL <http://www.jstor.org/stable/2507747>.
- James Rippy. *Latin America and the Industrial Age*. Greenwood Press, 1971.
- James Robinson. When is a State Predatory? 1999. URL <http://hdl.handle.net/10419/75563>.
- Claudio Robles-Ortiz. La Producción Agropecuaria Chilena en la "Era del Salitre" (1880-1930). *América Latina en la Historia Económica*, (32):113–134, 2009. ISSN 2007-3496. doi: 10.18232/alhe.v16i2.418.
- Dani Rodrik. Institutions for High-Quality Growth: What They Are and How to Acquire Them. *Studies In Comparative International Development*, 35(3):3–31, 2000.
- Michael Ross. Does Taxation Lead to Representation? *British Journal of Political Science*, 34(2):229–249, apr 2004. ISSN 0007-1234. doi: 10.1017/S0007123404000031. URL http://www.journals.cambridge.org/abstract/_jS0007123404000031.
- Mauro Rota. Military spending, Fiscal Capacity and The Democracy Puzzle. *Explorations in Economic History*, 60(November):41–51, apr 2016. ISSN 00144983. doi: 10.1016/j.eeh.2015.11.002. URL <http://dx.doi.org/10.1016/j.eeh.2015.11.002><http://linkinghub.elsevier.com/retrieve/pii/S0014498315000595>.
- Rafael Sagredo. Chile: 1823-1831: El Desafio de la Administracion y la Organizacion de la Hacienda Publica. *Historia*, 30:287–312, 1997.
- Raul Sanchez de la Sierra. On the Origin of States: Stationary Bandits and Taxation in Eastern Congo. 2014. URL <http://www.columbia.edu/~rs2861/Jobmarketpaper.pdf>.
- Joseph Schumpeter. *Joseph A. Schumpeter: The Economics and Sociology of Capitalism*. Princeton University Press, 1991.
- Peter Skott and Mehrene Larudee. Uneven Development and the Liberalisation of Trade and Capital Flows: The Case of Mexico. *Cambridge Journal of Economics*, 22(3):277–295, 1998. ISSN 0309166X.
- Hillel Soifer. State Infrastructural Power: Approaches to Conceptualization and Measurement. *Studies in Comparative International Development*, 43(3-4):231–251, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9028-6. URL <http://link.springer.com/10.1007/s12116-008-9028-6>.

- Hillel Soifer. Measuring State Capacity in Contemporary Latin America. *Revista de Ciencia Política*, 32(3):585–598, 2012.
- Hillel Soifer. *State Building in Latin America*. Cambridge University Press, 2016.
- Hillel Soifer and Matthias vom Hau. Unpacking the Strength of the State: The Utility of State Infrastructural Power. *Studies in Comparative International Development*, 43(3-4):219–230, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9030-z. URL <http://link.springer.com/10.1007/s12116-008-9030-z>.
- Kenneth Sokoloff and Eric Zolt. *Inequality and the Evolution of Institutions of Taxation: Evidence from the Economic History of the Americas*. Number July. 2007. ISBN 0226185001. URL <http://www.nber.org/chapters/c10654>.
- David Stasavage. *States of Credit: Size, Power, and the Development of European Politics*. Princeton University Press, 2011.
- John Stephens, Dietrich Rueschemeyer, and Evelyne Huber Stephens. *Capitalist Development and Democracy*. University of Chicago Press, 1992.
- Joseph Strayer. *On the Medieval Origins of the Modern State*. Princeton University Press, 2005.
- Vito Tani. Personal Income Taxation in Latin America: Obstacles and Possibilities. *National Tax Journal*, 19(2):156–162, 1966.
- Elvira Lopez Taverne. *El Proceso de Construcción Estatal En Chile, Hacienda Pública y Burocracia (1817-1860)*. dibam, Santiago, Chile, 2014.
- Terry Therneau. *survival: Package for Survival Analysis*, 2015. URL <https://cran.r-project.org/web/packages/survival/>. R package version 2.38-3.
- Terry Therneau and Patricia Grambsch. *Modeling Survival Data: Extending the Cox Model*. Statistics for Biology and Health. Springer New York, New York, NY, 2000. ISBN 978-1-4419-3161-0. doi: 10.1007/978-1-4757-3294-8. URL <http://link.springer.com/10.1007/978-1-4757-3294-8>.
- Cameron Thies. War, Rivalry, and State Building in Latin America. *American Journal of Political Science*, 49(3):451–465, jul 2005. ISSN 0092-5853. doi: 10.1111/j.1540-5907.2005.00134.x. URL <http://doi.wiley.com/10.1111/j.1540-5907.2005.00134.x>.
- Charles Tilly. *Coercion, Capital and European States: AD 990 - 1992*. Wiley-Blackwell, 1992.
- Jeffrey Timmons. The Fiscal Contract: States, Taxes, and Public Services. *World Politics*, 57(4): 530–567, 2005. ISSN 00438871. doi: 10.2307/40060117. URL <http://www.jstor.org/stable/40060117>.

- Gregory Wawro. Estimating Dynamic Panel Data Models in Political Science. *Political Analysis*, 10(1):25–48, feb 2002. ISSN 10471987. doi: 10.1093/pan/10.1.25. URL <http://pan.oupjournals.org/cgi/doi/10.1093/pan/10.1.25>.
- Frederic Weaver. *Class, State, and Industrial Structure: The Historical Process of South American Industrial Growth*. Praeger, 1980.
- Philip Westgate and Woodrow Burchett. A Comparison of Correlation Structure Selection Penalties for Generalized Estimating Equations. *The American Statistician*, 1305(June):0–00, jun 2016. ISSN 0003-1305. doi: 10.1080/00031305.2016.1200490. URL <http://www.tandfonline.com/doi/full/10.1080/00031305.2016.1200490>.
- Andreas Wimmer. Is Diversity Detrimental? Ethnic Fractionalization, Public Goods Provision, and the Historical Legacies of Stateness. *Comparative Political Studies*, pages 0010414015592645–, jul 2015. ISSN 0010-4140. doi: 10.1177/0010414015592645. URL <http://cps.sagepub.com/content/early/2015/07/27/0010414015592645.abstract><http://cps.sagepub.com/cgi/doi/10.1177/0010414015592645>.
- Thomas Wright. Origins of the Politics of Inflation in Chile, 1888-1918. *The Hispanic American Historical Review*, 53(2):239–259, 1973.
- Thomas Wright. Agriculture and Protectionism in Chile, 1880-1930. *Journal of Latin American Studies*, 7(1):45–58, 1975. ISSN 1469767X. doi: 10.1017/S0022216X00016655.
- Yihui Xie. *knitr: A General-Purpose Package for Dynamic Report Generation in R*, 2016. URL <http://yihui.name/knitr/>. R package version 1.12.3.
- Maurice Zeitlin. *The Civil Wars in Chile: (or The Bourgeois Revolutions that Never Were)*. Maurice Zeitlin, 1984.
- Christopher Zorn. Comparing GEE and Robust Standard Errors for Conditionally Dependent Data. *Political Research Quarterly*, 59(3):329–341, sep 2006. ISSN 1065-9129. doi: 10.1177/106591290605900301. URL <http://prq.sagepub.com/cgi/doi/10.1177/106591290605900301>.