

Sectoral Origins of Income Taxation: Industrial Development in Latin America and The Case of Chile (1900-2010)

HÉCTOR BAHAMONDE, PHD

*Postdoctoral Fellow • Center For Inter-American Policy & Research • Tulane University

e: hbahamonde@tulane.edu

w: www.hectorbahamonde.com

November 21, 2017

Abstract

Building on the fiscal sociology and sectoral approaches, this paper outlines the conditions under which the timing of the implementation of the income tax was most likely to happen. The argument stresses the role of sectoral contestation, and how the tax was an important critical juncture for state-building in Latin America. My quantitative analyses cover almost a hundred years of sectoral outputs. I also examine the Chilean case to illustrate the causal mechanisms at work. I find that higher levels of sectoral contestation—characterized by the rising of the industrial class—posed credible threats to incumbent landowners elites, in turn accelerating inter-sectoral alliances. I focus on one such agreement, the income tax, and explain why this institution was important for state consolidation.

Please consider downloading the last version of the paper [here](#).

*I thank Robert Kaufman, Daniel Kelemen, Matthias vom Hau, Dídac Queralt, James Mahon, Florian Hollenbach, Douglas Blair, Christopher Zorn, Paul Poast, William Young, Mart Trasberg, Jose Pablo Silva, and the participants of the 50th LASA Congress for all the useful comments. I also thank the School of Arts and Sciences at Rutgers for a pre-doctoral research grant and the Department of Political Science at Rutgers University for conference travel funds. All errors are my own.

There seems to be a strong agreement on that fiscal capacities are a prerequisite for state-building. Unfortunately, there have not been many attempts to explain *when* fiscal capacities in the developing world emerged.¹ Except for a few exceptions, most efforts have been devoted to understanding the relationship between the politics of taxation and state development only in a limited number of European cases.² In a recently edited volume, [Monson and Scheidel \[2015, 3\]](#) explain that the “New Fiscal History has furnished a valuable set of concepts and questions but so far its scope has been limited to post-classical Europe.”³ In fact, the bulk of the research done on Latin America has mostly focused on recent tax reforms,⁴ leaving the timing of fiscal expansion in Latin America relatively unclear. Building on the fiscal sociology approach, I develop an argument centered on the development of the modern fiscal apparatus in Latin America, explaining that it was product of sectoral conflicts and compromises, between the industrial and agricultural elites. The paper presents several panel-data analyses covering almost 100 years of sectoral outputs for a number of Latin American countries, and the Chilean case to illustrate the causal mechanisms at work. I find that the emergence of the industrial sector *accelerated* the implementation of the income tax, while the expansion of the agricultural sector *retarded*, or even *precluded* fiscal development. These findings go in line with [Beramendi et al. \[2016\]](#), particularly, in that as long as agriculture is the leading economic sector, the fiscal apparatus is less likely to emerge.⁵

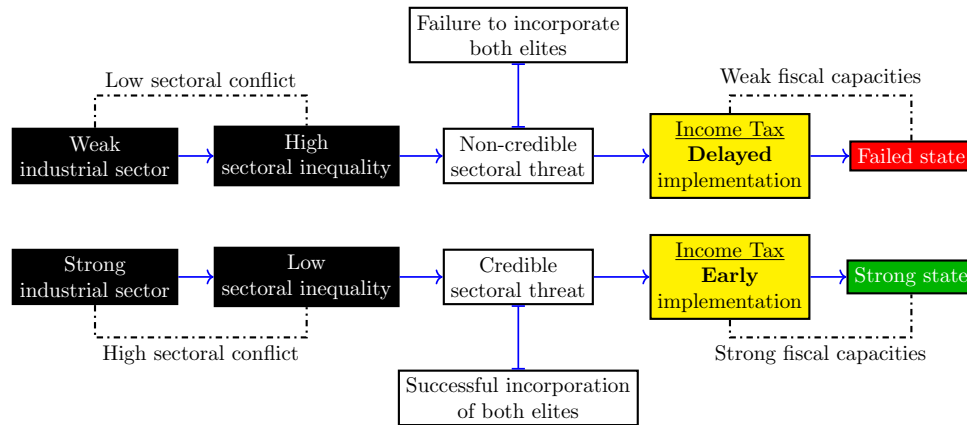


Figure 1: Causal Argument

¹Di John [2006, 5].

²Schneider [2012, 2] explains that even when we have gained considerable knowledge of fiscal expansion in the European cases, the study of developing countries is lacking especially in the presence of ‘new leading sectors.’

³Some important exceptions are [Yun-Casalilla et al. \[2015\]](#) and [Monson and Scheidel \[2015\]](#) who study a number of premodern Latin American states.

⁴Flores-Macías, in [Flores-Macias \[2017\]](#). For instance, [Fairfield \[2013\]](#) studies different strategies policymakers pursue to tax elites starting in 1990, [Mahon et al. \[2014, 3\]](#), [Mahon \[2004\]](#) and [Focanti et al. \[2013\]](#) study the causes of tax reform in Latin America starting in the 1960s, 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. See also [Sanchez \[2011\]](#) and [Bergman \[2003\]](#).

⁵See for similar results [Pessino and Fenochietto \[2010, 78\]](#).

I argue that the early implementation of the income tax in Latin America was product of an inter-sectoral conflict that took place around in the early 1900's between the agricultural and industrial sectors. Initially, Latin American political institutions and social norms—largely inherited from the colonial period—were designed to serve the interests of the landowning elites.⁶ However, the economic structural transformation characterized by “a secular decline of agriculture and substantial expansion of manufacturing,”⁷ imposed tight constraints on the way politics was run by the incumbent agricultural political elites. Given the initial advantage of the landed elites, the emergence of the industrial sector lead to the reduction of inter-sectoral inequality and the rise of bargaining power of the challenger elites, e.g. the industrial class.⁸ In other words, the agricultural monopoly was disturbed with the culturing of a new and strong political elite backed by favorable material conditions. Industrial emergence in turn posed credible political, economic and military threats to agricultural incumbents, increasing the opportunity costs of conflict, generating pressures for inter-elite compromises, particularly, the implementation of the income tax. In Mamalakis [1971, 111]’s words, in Latin America, economic equality reduced political inequality.

I. SECTORAL CONFLICTS AND THE ROLE OF TAXATION ON STATE FORMATION

The paper examines the well-established link between direct taxation and state-making, but it emphasizes the role of sectoral conflicts in the Latin American context. Consequently, it follows Schumpeter, who sees “taxation in terms of group conflicts [and] class interests,”⁹ and Musgrave [1992, 99], who explains that since taxation (especially on incomes) requires such a high degree of state penetration, public finances offer *the* key for a theory of state development.

Indirect taxes not necessarily develop a strong fiscal apparatus.¹⁰ According to Best [1976, 53], “indirect taxes are but substitutes for direct taxes,”¹¹ and hence they are typically administered by weak states.¹² Since indirect taxes are easier to levy,¹³ this kind of revenue is generally considered

⁶Mamalakis [1971, 90,109].

⁷Johnston and Mellor [1961, 567].

⁸Mamalakis [1971, 112] explains that in “Latin America, agriculture-linked parties lost power between 1900-1960, while those parties linked with mining, industrial, and service sectors gained power.”

⁹Monson and Scheidel [2015, 14].

¹⁰However, see Brewer [1990, 56]. The English state made extensive use of its navy to prevent smuggling and enforce the excise, an indirect tax. The excise employed an important number of state agents and helped to develop skilled state bureaucracies and an efficient fiscal system.

¹¹However, under certain circumstances, indirect taxes are more efficient. Kiser [1994, 291] explains that when the levels of tax variability are high, direct taxation can actually have negative effects, especially when overtaxation is a possibility.

¹²This view is also supported by Moore [2004a, 14].

¹³Krasner [1985, 46] explains that “tariffs and export taxes are easier to obtain than direct taxes, which require high levels of bureaucratic skill and voluntary compliance.” See also Flores-Macias in Flores-Macias [2017].

“unearned income”¹⁴ or “easy-to-collect source of revenues.”¹⁵ Given the relatively lower costs states have to incur to collect them, indirect taxes—particularly tariffs—have a very low impact on state-building. In fact, when early Latin American states depended heavily on international trade taxes, the state apparatus tended to be less developed.¹⁶ Since customs administrations in the region have always been concentrated in a few critical locations, especially ports, tariffs and customs duties did not require an elaborate fiscal structure.¹⁷ Instead, direct taxes—and particularly, income taxes—are more likely to produce long-lasting positive externalities on state-building. Since income taxation involves a compulsory transfer from private hands to the government sector for public purposes,¹⁸ it is harder to collect,¹⁹ requiring stronger domestic alliances to sustain these kinds of policies.

Hechter and Brustein [1980, 1085] explain that “state formation will be most likely to the degree that powerful individual actors form two groups on the basis of *divergent* economic and political interests.”²⁰ I contend that since state centralization affects landowners and industrialists in different ways, both sectors have different preferences towards taxation and state centralization.²¹ On the one hand, land fixity increases the risk premium of the landed elite’s main asset,²² so they systematically resist taxation. In turn, as capital can be reinvested in nontaxable sectors,²³ industrialists’ preferences toward taxation are more elastic. These cross-sectoral tensions are most likely to resolve in favor of inter-sectoral cooperation—particularly, implementing the income tax law—when income inequality among the elites is low.²⁴ In Latin America, the post-colonial institutional and economical order was designed to give an unfair advantage to the agricultural sector.²⁵ However, the emergence of a strong industrial class put heavier pressures for higher levels of state centralization and investment in public goods at the local level.²⁶ In fact, not only sustained industrial expansion depended on the implementation of the income tax. Beramendi et al. [2016, 18] explain that as industrialists depended more on infrastructure implemented at the local level such as roads, railroads and bridges, they “[*preferred*] to shoulder a higher tax burden through progressive direct taxation.” But also,

¹⁴Moore [2004b, 304].

¹⁵Coatsworth and Williamson [2002, 10].

¹⁶Campbell [1993, 177].

¹⁷Bertola and Ocampo [2012, 132].

¹⁸*Cfr.* Raja Chellia, “Trends in Taxation in Developing Countries,” in Migdal [1988, 282].

¹⁹Kurtz [2013, 62].

²⁰Emphasis is mine.

²¹See Acemoglu and Robinson [2009, 289] and Best [1976, 50].

²²Robinson [2006, 512]. However, see Freeman and Quinn [2012].

²³Hirschman [1970]. See Ronald Rogowski in Drake and McCubbins [1998, ch. 4]. However, see Bates and Lien [1985, 15].

²⁴Tani [1966, 157] explains that the absence of “wealth groups” makes passing an income tax law easier.

²⁵Bahamonde [2017a].

²⁶Bahamonde [2017b].

lower levels of inter-elite economic inequality implied similar degrees of military capabilities.²⁷ Under these circumstances, war was most likely to exhaust all existent assets without producing positive outcomes for either sector,²⁸ putting heavier pressures to reach agreements instead of engaging in armed conflicts. Here I focus on one such agreement, the implementation of the income tax law.

Income taxation was not only important because of the new revenue it collected, however. While Humud (1969, p. 154) explains that the tax generated considerable resources for the Chilean treasury,²⁹ it was also important for state consolidation. Not only observing individual economies, but transforming them into public property, fostered state expansion.³⁰ This argument goes in line with Besley et al. [2013] who explain that *implementing* the income tax law has been “associated with investments in public administrative structures that support tax collection” in a number of countries, including Chile. Similarly, Dincecco and Troiano [2015, 3] find “a positive and significant relationship between the *introduction* of the income tax and (1) per capita total expenditures, (2) per capita education expenditures, and (3) per capita health expenditures.”³¹ I contend that the acquired institutional knowledge associated with income taxation was transferred to other state institutions via spillovers, augmenting the overall levels of *stateness*.³² Levi [1989, 1] explains for the continental cases that “the history of state revenue production is the history of the evolution of the state.” In the same line, economist Nicholas Kaldor pointed out that the revenue service is the “point of entry.” Once this institution is secured, securing the rest is easier.³³ In the case of Chile, particularly, it was necessary to send official emissaries to check on accounting books of the refinery in the north, the winery in the central valley and the *hacienda* in the south. Eventually, these delegations became more complex, increasing the density of state presence in the territory. Similarly, but for the European cases, Strayer [2005] explains how official state delegations traveled the territory dispensing judicial decisions, fostering state centralization. In turn, Dincecco [2015] explains that states became effective organisms upon centralizing a system of direct taxation and implementing some kind of checks-and-balances system. As explained in section III, the Chilean case met these two conditions. Analytically, the *effectiveness* of income taxation on fiscal capacities increased due to the nature of the implementation of the income tax. Aghion et al. [2004, 566] explain how optimal institutional choices result from political settings where all involved actors “had a voice in the choice of institutions,” essentially contributing to an equilibrium of quasi-voluntary

²⁷Boix [2015].

²⁸Richard Salvucci in Uribe-Uran [2001, 48].

²⁹Bowman and Wallerstein [1982, 451-452].

³⁰Moore [2004b, 298].

³¹Emphasis is mine.

³²While emphasizing a different channel, Baskaran and Bigsten [2013] find that fiscal capacities improved levels of governance in 31 sub-Saharan African countries between 1990 and 2005. See also Altunbas and Thornton [2011].

³³In Brautigam et al. [2008, 15].

compliance.³⁴ In fact, Flores-Macias [2014] finds that Colombian elites were willing to impose higher taxation levels, upon the establishment of an elite-government alliance, fostering closer monitoring levels, particularly regarding public spending. In line with this literature, I find in section III that higher levels of sectoral contestation fostered the incorporation of both elites into the same national project (white boxes in Figure 1). This sectoral alliance, specially regarding the implementation of the income tax, fostered higher levels of tax compliance, and state-building.

II. THE TIMING OF THE IMPLEMENTATION OF THE INCOME TAX: LATE AND EARLY IMPLEMENTERS

When countries implement the income tax is an analytically important quantity of interest. For instance, Chile imposed the income tax law very early, in 1924, and the Chilean *Servicio de Impuestos Internos* is among the finest tax institutions in Latin America. Unlike Chile, Guatemala imposed the income tax law very late in 1963. By 1967, the national income tax office employed only 194 people, with only 9 of them with a college degree.³⁵ In fact, Cabrera and Schneider not only find that “Guatemala collects among the lowest tax levels in Latin America,” but also that “the revenues it does collect are gathered inefficiently.”³⁶ From a theoretical perspective, I explain this variation focusing on how implementing the income tax early, was an important critical juncture for state consolidation. As explained later, fiscal sociologists contend that an important feature of income taxation are its positive externalities for state-capacities. I focus on how differences in levels of sectoral contestation delayed or accelerated the timing of the implementation of the tax.

Some scholars situate the relevant state-building critical juncture either before the colonial period,³⁷ or at the end of it.³⁸ While the literature situates these critical moments before the class compromises I identify in this paper, the paper identifies the income tax as an important *additional building block* in that process. Hence, here the focus is on state *consolidation*, rather than pure state *formation*. Particularly, I explain how early implementers were able to crystallize a series of reforms and inter-elite compromises that fostered state consolidation in the long run. Late implementers, however, due to their lower levels of sectoral contestation, reproduced the legacy of post-colonial institutions. In these cases, the conflict was too low to trigger a critical juncture, reinforcing the institutional order inherited during colonial times. Even when the tax was (lately) implemented,

³⁴Levi [1989].

³⁵Di John [2006, 5].

³⁶In Mahon et al. [2014, 128].

³⁷Mahoney [2010].

³⁸Kurtz [2009, 2013] explains that the first critical juncture corresponded to the post independence political economy, stressing whether local rural elites recruited their workers through servile means. In turn, Soifer [2015, 6] argues that the critical tipping point was whether “local administrators were outsiders in the communities in which they served.”

the process of implementing it did not reflect the domestic sectoral dynamics, but other forces. Importantly, late implementers introduced the income tax *after* the nation's formative period, missing a key historical opportunity for state consolidation, and great divergence. For instance, the income tax in Chile was implemented under circumstances of political contestation, replacing the old institutional order, producing not only long-term economic growth,³⁹ but also state-capacities overtime.⁴⁰ However, while Guatemala did eventually implement the tax, the process did not reflect the foundational sectoral cleavage, truncating the development of state institutions in the long run. In fact, the law responded to exogenous forces. Particularly, the law was implemented by the US-backed dictator Colonel Enrique Peralta Azurdia, not necessarily reflecting the inter-sectoral domestic dynamics. In these kinds of scenarios, landowners were never challenged and there were less pressures to centralize the state, making further institutional investments less likely. This argument, centered on the timing of income taxation—as an important critical juncture for state consolidation—is a novel argument.⁴¹ The paper is situated with other relevant research, such as Beramendi et al. [2016, 7], who argue that “so long as agricultural elites are the dominant political power-holders in society, then fiscal capacity should remain relatively small, because such elites will prefer *not* to invest in greater fiscal capacity.”⁴² Consequently, the tax was not (only) important because of the new revenue it collected, but because its implementation required a series of inter-elite compromises, triggering a series of other institutional investments, such as the implementation of checks-and-balances (to monitor tax spending) and the development of skilled bureaucracies.

III. UNPACKING THE MECHANISMS: CHILE 1850-1950

Historians still debate whether agriculturalists and industrialists comprised two *different* elites. Some claim that this dualism is incorrect.⁴³ They argue that since landowners also invested in industry,⁴⁴ there was a blurry class division between the mining, banking and agricultural sectors.⁴⁵ I contend that there are a series of stylized facts that suggest that there was indeed a structural cleavage between the two sectors. Here I explain how there were certain practices that mask the sectoral dualism. For example, it was common that industrialists invested in real estate. However, in

³⁹Bahamonde [2017a].

⁴⁰Bahamonde [2017b].

⁴¹Gabriel Ondetti explains in Flores-Macias [2017] that to “[his] knowledge, there is no study that explicitly applies [the] notion [of path dependence] to explain variance in contemporary tax burdens.”

⁴²Emphasis in original. See also for a similar approach Ansell and Samuels [2014] and Collier and Collier [2002].

⁴³See for example Mamalakis [1976, 125].

⁴⁴Kirsch [1977, 57, 95] who cites Bauer [2008]. See also Coatsworth and Williamson [2002, 23] argue that “[t]he only landowners that mattered in 19th century Latin American politics were those for whom land represented but one asset in a much broader portfolio.” In the same vein, 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.”

⁴⁵Bauer [2008, 30, 44, 94, 108].

many instances they did so *just* to obtain credit. Kirsch [1977, 59] explains that “in a *rural society* land offered one of the best guarantees for loans [since] loans could not be secured by equipment, machinery, or inventory. Only real estate was acceptable collateral.”⁴⁶ In fact, this practice shows how the credit system was oriented to give unfair advantage to the landed elites.⁴⁷ Similarly, Zeitlin [1984, 174] finds that while there were some instances where there were mixed investments, “the combined ownership of capital and landed property was a distinctive quality of *certain* [elites] actors.”⁴⁸ There were also other instances where miners invested in banking. However, Segall [1953] argues that Chilean bankers, after the crisis of the mining sector around the 1870s, acquired a number of mineral deposits given as collateral years before, again suggesting that the lack of economic dualism is rather apparent. Similarly, but for the Argentinean case, Hora [2002, 609] explains that “the image of an entrepreneurial elite with assets *scattered throughout several spheres of investment* does not appear entirely correct.”⁴⁹ I contend that the nature of the main factors of production of agriculturalists and industrialists (land v. capital), in addition to their preferences regarding fiscal policy, produced a strong sectoral cleavage. In fact, borrowing from the Lewis model of economic growth, I explain elsewhere that the agricultural sector’s role in the economy is to supply labor to the industrial sector, limiting agriculture’s expansion relative to industry’s growth,⁵⁰ evidencing the lack of incentives for crossed investments.

In all Latin American economies during and right after the colonial period, agriculture was the most important sector.⁵¹ And by extension, the economic interests of the agricultural elite were the only economic interests represented in politics.⁵² For example, Collier and Collier [2002, 106] argue that initially the “national government was dominated by the central part of the country, with owners of large agricultural holdings playing a predominant role.”⁵³ Moreover, political institutions and social norms inherited from the colonial period were designed to allocate economic inputs (and hence *growth*) in a way that benefited the landowning class only.⁵⁴ Even though the industrial sector was growing, industrial political elites were kept from participating in politics with the same

⁴⁶Emphases are mine.

⁴⁷Unda [2017, 9] explains that in Mexico the lack of credit had previously been one of the industrial sector’s main obstacles. In fact, industrial elites started to comply with the income tax in exchange of having credit policies more adequate to the industrial sector. Similarly, Mamalakis [1969, 11] develops a theory of sectoral clashes. The leading sector becomes dominant thanks to the interplay between the government, the dominant sector, and the central bank.

⁴⁸Emphasis is mine.

⁴⁹Emphasis is mine.

⁵⁰Bahamonde [2017a].

⁵¹Keller [1931, 13].

⁵²Wright [1975, 45-46]. Mamalakis [1969, 19] refers to this period as the *traditional pattern of government-export sector coalition*.

⁵³Similarly, McBride [1936, 15] explains 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.

⁵⁴Bahamonde [2017a].

privileges and conditions the landowning political elites had. Consequently, the opportunity costs of implementing policies designed to enhance the agricultural sector were low. 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 group,⁵⁵ leaving the modern sector heavily under-represented.⁵⁶ Consequently, fiscal pressures in favor of agricultural taxes were minimal compared with mining taxes,⁵⁷ leaving the agricultural sector systematically—and substantially—undertaxed relative to other sectors.⁵⁸ Historians explain that “[i]n those areas where the government did interfere in the countryside, the effect was to strengthen the position of the landowning class.”⁵⁹ For example, the little public infrastructure that existed benefited the agricultural sector.⁶⁰

Both economic sectors were similarly developed but only agriculturalists had access to fair political representation. This asymmetry led these two “antagonistic elites”⁶¹ to confront in the civil wars of 1851-1859 and 1891 between a “large landed property [elite against a] productive capital [elite].”⁶² President Balmaceda’s overthrowing explains the sectoral nature of these conflicts. On the one hand, he was mainly supported by the landed elites, but later overthrown in 1891 by a mainly industrial/mining coalition.⁶³ While his agenda on “industrial” infrastructure (mainly roads and railroads) benefited mostly agricultural areas,⁶⁴ his attitude towards the banking sector (closely linked to the mining sector)⁶⁵ was “all but confiscatory.”⁶⁶ On the other hand, however, he failed to secure a coalition with his own sector. Zeitlin [1984, 127] explains that the “decline of wheat exports [...] came precisely when a vast new market for agriculture was growing in the nitrate territory.” As the agricultural sector supplied the industrial areas with foodstuff, it simultaneously increased the sectoral dependence of the agricultural elites on the industrial sector, forcing the

⁵⁵Bauer [2008, 45].

⁵⁶As Baland and Robinson [2008, 1748] argue, “[c]ongressional representation was heavily weighted in favor of rural districts.”

⁵⁷Mining was one of the first manifestations of industrial activity. For example, while an agricultural income tax was imposed, it was weak and abolished after the civil war of 1891.

⁵⁸Best [1976, 56]. Bauer [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.” Zeitlin [1984, 38] also points out that “public revenues came almost exclusively from taxes on mining and its exports.”

⁵⁹Bauer [2008, 118].

⁶⁰Rippy [1971], Marichal [1989], Zeitlin [1984], Bauer [2008].

⁶¹Keller [1931, 37-38].

⁶²Zeitlin [1984, 23].

⁶³Zeitlin [1984, 186].

⁶⁴Zeitlin [1984, 124].

⁶⁵Zeitlin [1984, 118].

⁶⁶Zeitlin [1984, 175].

“landed proprietors [to] become dependent to a considerable extent on the continuing prosperity of the major nitrate capitalists.”⁶⁷ While it would be inaccurate to say that Balmaceda was *completely* supported by agriculturalists and *completely* opposed by industrialists, this example illustrates how a failed inter-sectoral alliance, and a biased strategy regarding the provision of public goods against industrialists, led these two groups to a series of military conflicts.

Additionally, lower levels of inter-elite inequality gave both elites access to similar military resources. While *Balmacedistas* managed to secure the support of the army, *congresistas* (the anti-Balmaceda group) managed to gather support of the navy. Ultimately, the conflict left a permanent scar in the Chilean society. While the civil war lasted only nine months, it took 10,000 lives (out of a total population of 3 million people), and cost more than \$ 100 million,⁶⁸ a significant amount for a small country. This legacy materialized in an inefficient, but politically stable political system for several years. In part, the immobilism was due to the fact that the political reforms that gave way to the “parliamentary” period, came out from inter-elite alliances.⁶⁹ However, the intention to avoid more violence (at least among the elites) tended to persist. For instance, while all “ministers, counselors of state, members of the constituent congress [,] municipal officials, provincial governors and intendants, members of the judiciary and even the lowest functionaries and ordinary employees of Balmaceda’s government were investigated [or] brought to trial,”⁷⁰ there were a number of amnesties issued. Similarly, there were a number of *aborted* coups in 1907, 1912, 1915 and 1919.⁷¹ I identify a third additional factor. War was more likely to exhaust all existent assets without producing positive outcomes for either sector, putting pressures for a sectoral compromise.⁷² Three institutional components were considered: an income tax, industrial protectionism, and equal access to the state. Here I focus on the first component.⁷³ The faster the industrial growth, the higher the pressures to impose a tax to capture increasing industrial incomes. This is in line with [Besley and Persson \[2011, 59\]](#) who argue that “investing in fiscal capacity becomes more attractive [...] when wages or incomes [...] are higher.”⁷⁴ [Beramendi et al. \[2016\]](#) also find that investments in fiscal capacities are conditional on the expansion of the industrial sector.

⁶⁷Zeitlin [1984, 129].

⁶⁸Zeitlin [1984, 86].

⁶⁹Collier and Collier [2002, 108].

⁷⁰Zeitlin [1984, 87].

⁷¹Collier and Collier [2002, 109].

⁷²Similarly, [Geddes \[1991\]](#) argues that competition between two rival parties of about the same size creates clearer incentives to invest in political institutions.

⁷³The SOFOFA pursued a very strong protectionist agenda. [Sokoloff and Zolt \[2007, 122\]](#) explain that the expansion of “manufacturing production [...] helped to nurture the development of a powerful constituency for higher tariffs.” In fact, [Lederman \[2005, 53\]](#) finds that in Chile the timing of protectionist and income taxation cycles matches, suggesting the plausibility of the sectoral bargains that took place around in the 1920’s between the two elites. See for a similar view [Haber \[2005, 18\]](#).

⁷⁴Similarly, see [Campbell and Allen \[1994, 647\]](#) who explain that “economic development should be directly related to individual and corporate income tax rates.”

The income tax law was passed in Chile in the middle of big political instability. In 1920, President Alessandri obtained a very close victory against Luis Barros Borgoño,⁷⁵ who was supported by “the dominant political and landed aristocracy.”⁷⁶ Governability was seriously compromised as the election let the senate in control of the landowning class, who roundly opposed tax reforms.⁷⁷ Particularly, the opposition had “serious differences [...] over [Alessandri’s] legislative program, especially in connection with the proposed income tax.”⁷⁸ In 1924, the income tax law was passed. As others explain, the non-agricultural “accepted taxation, *while demanding state services and expecting to influence how tax revenues were spent.*”⁷⁹ The law taxed 2% on professional income above 2,400 pesos, 3.5% on net profits in industry and commerce above the same sum, 5% on income from mining, and 9% per cent on incomes from real estate.⁸⁰ Humud (1969, p. 154) explains that the income tax generated considerable resources, and that the tax in “1930 [it] would become second only to import duties in size.”⁸¹

The Chilean case suggests a number of hypotheses. First, there existed a structural economic cleavage between the industrial and agricultural sectors. Second, agricultural political elites implemented policies that played in their own favor, without necessarily considering industrial preferences. Third, the rising of the industrial class challenged the *status quo* promoted by the landowning group. Fourth, given their similar degree of economic and military resources, both elites compromised the income tax which was beneficial for both the industrial and agricultural classes. Next section is an attempt to generalize this argument in a quantitative manner. Particularly, it tests the third and fourth hypotheses combined, that is, the rising of a strong industrial sector—characterized by higher levels of sectoral conflicts—accelerated the implementation of the income tax law. In reverse, uncontested polities did not have the endogenous incentives to invest in fiscal institutions, which are key for state development.

IV. ECONOMETRIC ANALYSES

Following the economic development typology suggested in Mahoney [2010, 5], nine polities were selected. Three “higher level” countries (Argentina, Chile and Venezuela), three “intermediate level” countries (Mexico, Colombia and Perú), and three “lower level” countries (Ecuador, Nicaragua and Guatemala). I proxy sectoral conflicts, and specifically the degree in which the industrial elites

⁷⁵Collier [1999, 111].

⁷⁶Haring [1931, 2].

⁷⁷Haring [1931, 5].

⁷⁸Haring [1931, 3].

⁷⁹Carmenza Gallo, in Brautigam et al. [2008, 165]. Emphases are mine. She refers specifically to the mining elites.

⁸⁰James [1924, 552].

⁸¹Bowman and Wallerstein [1982, 451-452].

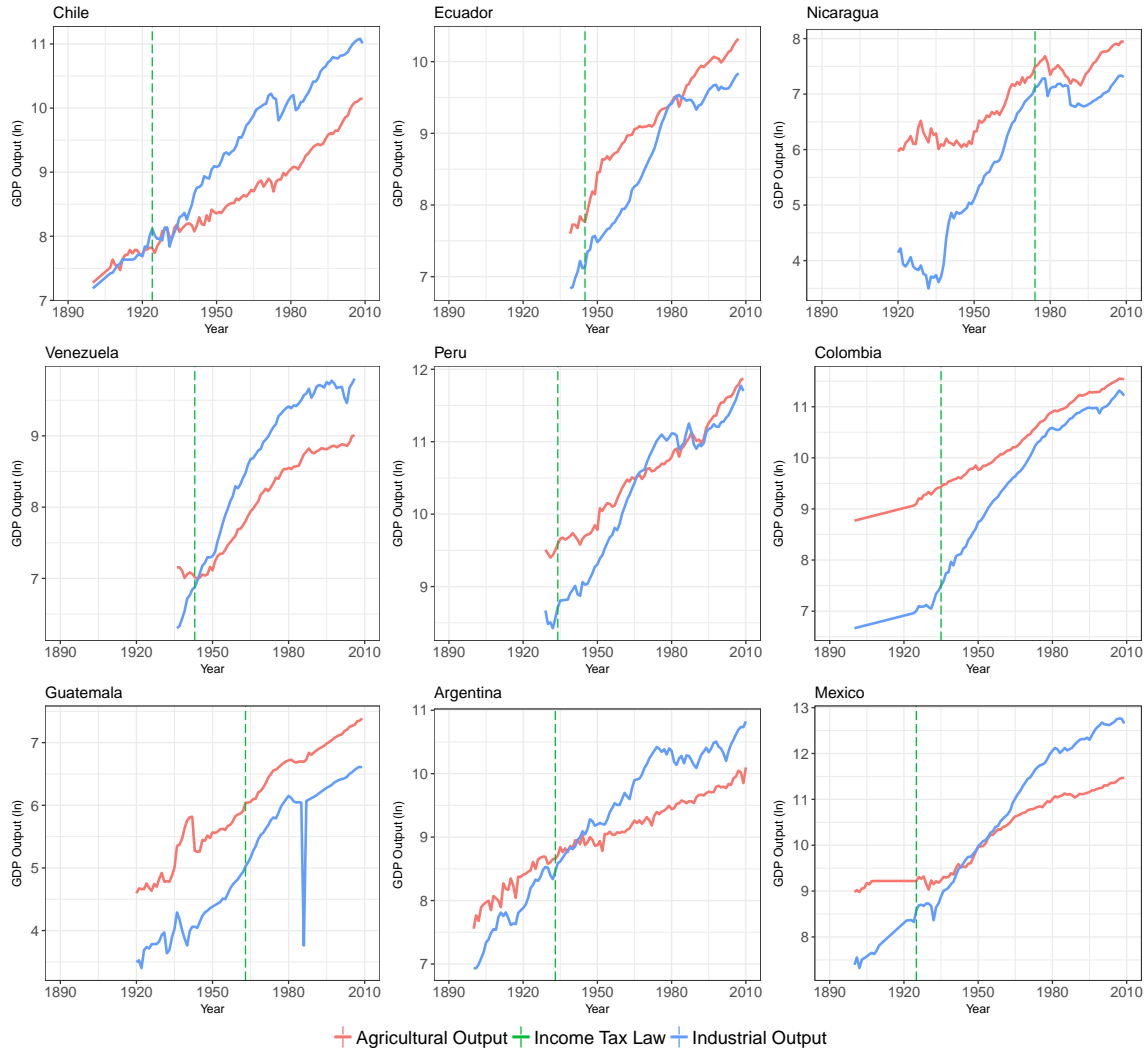


Figure 2: *Industrial and Agricultural Outputs, and The Passage of the Income Tax Law*

challenged incumbent landowners, by using industrial and agricultural sectoral growth rates as presented in the MOxLAD data.⁸² The dataset spans from 1900 to (potentially) 2010.⁸³ According to Astorga et al. [2005, 790], these data provide extended comparable sectoral value-added series in constant purchasing power parity prices.⁸⁴ Using secondary information, Table 1 states *when* the income tax was implemented, which was the specific law, and its corresponding source(s). Figure 2 shows both sectoral outputs (independent variables) and the year when the income tax law was passed (dependent variable). Since population has been associated with the probability elites expand the franchise,⁸⁵ and consequently the tax base, I include total country-year population as a control

variable.

When countries implement the tax, that is, how early or late they do so, is a substantively important quantity of interest. From an historical institutionalist perspective, early implementers were able to crystallize a series of inter-elite compromises during the formative years of the state. In these cases, the state was built *in light* of taxation. Late implementers, however, did not trigger these inter-elite compromises, reproducing the legacies of post-colonial institutions, and compromising the expansion of the state.

Country	Available Data	Year Income Tax	Law	Source
Chile	1900 - 2009	1924	<i>Ley</i> 3996	Mamalakis [1976, 20] and <i>LeyChile.Cl</i> (official)
Peru	1929 - 2009	1934	<i>Ley</i> 7904	Gobierno del Perú [1934] (official)
Venezuela	1936 - 2006	1943	<i>Ley</i> 20851	<i>Gaceta Oficial</i> (official) and Ventura and Armas [2013, 27]
Colombia	1900 - 2009	1935	<i>Ley</i> 78	Figueroa [2008, 9]
Argentina	1900 - 2010	1933	<i>Ley</i> 11682	<i>Infoleg.Gob.Ar</i> (official)
Mexico	1900 - 2009	1925	<i>Ley de Impuesto sobre la Renta</i>	Unda [2017, 8]
Ecuador	1939 - 2007	1945	-	Aguilera and Vera [2013, 135]
Nicaragua	1920 - 2009	1974	<i>Ley</i> 662	Legislacion.Asamblea.Gob.Ni (official)
Guatemala	1920 - 2009	1963	<i>Decreto</i> 1559	Instituto Centroamericano de Estudios Fiscales [2007, 165]

Table 1: *Sample, Data Available and Year the Income Tax was Implemented*

Before estimate the models, it is important to rule out the possibility that income taxation and sectoral development, are not linked through a spurious, time-dependent relationship. In other words, the occurrence of the outcome of interest (income taxation), should not be directly related to time itself, but to the rise of the industrial elite. Within the framework of survival analyses, **Figure 3** shows the failure rate of the sample average country of implementing the income tax, if

⁸²“These 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.” I used 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.

⁸³As I explain later, I test this argument within the duration model approach. Since countries are censored once they implement the income tax law, they leave the sample (potentially) before 2010.

⁸⁴Using a similar strategy, Thies [2005] also uses data on taxation and compare those data between cross sections.

⁸⁵Engerman and Sokoloff [2005, 892-893].

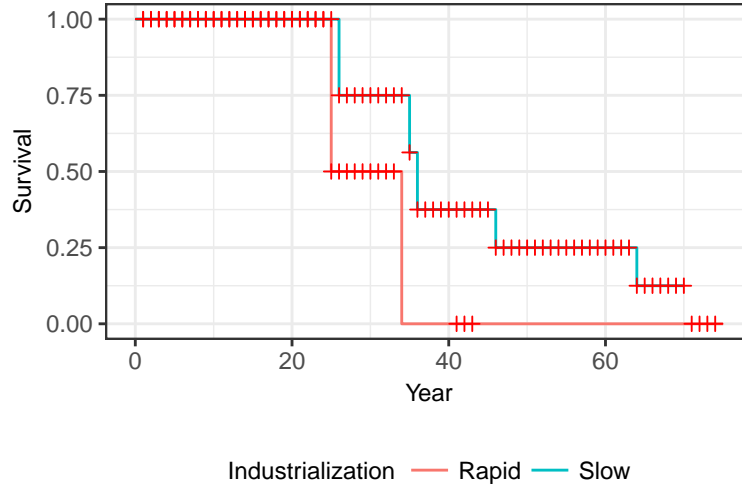


Figure 3: *Kaplan-Meier Curves: Size of the Industrial Sector and the Accelerated Rate of the Imposition of Income Tax Law*

industrial development had increased/decreased by half (rapid/slow).⁸⁶ This preliminary analysis clearly shows that the implementation of the income tax law is largely accelerated when the size of the industrial sector increases, and that this relationship does not depend directly on time.

Table 2 shows 5 models.⁸⁷ Following Aidt and Jensen [2009], Model 1 computes the lagged conditional hazard ratio of a country which has not yet adopted the income tax, adopts it in a given year, as a function of industrial and agricultural outputs.⁸⁸ Countries drop out of the sample when they adopt the income tax. Model 2 is also a Cox regression, but with lagged logged variables. By including time-transformed variables, in the form of a lagged dependent variable (to account for partial adjustment of behavior)⁸⁹ or “the use of the natural log transformation [to capture] different forms (or “shapes”) of the baseline hazard,”⁹⁰ Models 1 and 2 are especially well-equipped to account for possible time dependency. Model 3 shows the estimated coefficients of a generalized estimating equation (GEE). Generalized estimating equations were introduced by Liang and Zeger [1986] to fit clustered, repeated/correlated, and panel data.⁹¹ This method is especially well suited to analyze

⁸⁶“Failure” in this case means “implementing” the income tax law.

⁸⁷All 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. The simulations were performed using the `simPH` R package (Gandrud [2015]).

⁸⁸I do not combine both variables nor do I construct an index. Since I am interested in the *contribution* of each individual sector in the acceleration of the implementation of the income tax law (keeping constant the other), keeping both variables separately is a better strategy.

⁸⁹Wawro [2002].

⁹⁰Box-Steffensmeier and Jones [2004, 75].

⁹¹Zorn [2006, 322].

binary data.⁹² 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,”⁹³ [Zorn \[2006, 338\]](#) explains that whereas the choice of estimator makes little or no difference, the unit on which the data are grouped makes a big difference. 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, I assume an “independence” working covariance structure, which also corrects for small-sized panel designs.⁹⁴ From a substantive standpoint, GEE models provide an estimated marginal mean, or the *weighted average* of all cluster-specific effects (or conditional means). Model 4 is a conditional logit (or “fixed effects” model). One important advantage of this strategy is the ability to account for country-specific effects. For example, fiscal development could be a function of country-specific prior state-building capacities.⁹⁵ A number of scholars rightly argue that post-colonial state capacities are in part a function of pre-colonial state-capacities.⁹⁶ Fixed-effects should be able to account for these, and other unobserved or hard-to-measure covariates, which if left unaccounted for, would introduce omitted variable biases.⁹⁷ Model 5 accounts for possible spatial-temporal dependence.⁹⁸ Given that most countries in the sample are contiguous neighbors, it is reasonable to expect a “domino” effect.⁹⁹ Theoretically, being the first country in implementing the income tax, might not require the same level of domestic “effort” than being the last one. Early-implementers might not have prior experience, being harder for them to pass the law. To account for this possible spatial-temporal dependence, a cumulative count of countries which have implemented the law at time t was included.¹⁰⁰

All models suggest that the rise of a strong industrial sector largely accelerated the implementation of the income tax law. Moreover, a strong agricultural sector not only has zero impact on fiscal development, but a negative one (models 1, 3 and 4). Both pooled results in model 3 and model 4 give the same results. I do not find that there was spatial-temporal dependence (model 5).

Using the estimations from Model 1 in [Table 2](#), I follow [Gandrud \[2015\]](#) and [King et al. \[2000\]](#), and

⁹²[Hanley et al. \[2003\]](#).

⁹³[Carlin 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.

⁹⁴[Hardin and Hilbe \[2013, 166\]](#) explains that if “the number of panels is small, then the independence model may be the best; but [analysts should] calculate the sandwich estimate of variance for use with hypothesis tests and interpretation of coefficient,” which is what I report in [Table 2](#).

⁹⁵I thank Matthias vom Hau for this suggestion.

⁹⁶[Wimmer \[2015, 10\]](#), [Mahoney \[2010\]](#) and [Lange et al. \[2006, 1426\]](#).

⁹⁷[Angrist and Pischke \[2008\]](#).

⁹⁸I thank both Christopher Zorn and David Darmofal for this suggestion.

⁹⁹For a more detailed spatial take on fiscal expansion, see [Thies et al. \[2016\]](#).

¹⁰⁰I clustered the standard errors at the counting variable level. Clustering by the counting variable allows me to cluster by early or late implementers.

	(1) Cox (1 lag)	(2) Cox (1 lag, ln)	(3) Logit GEE	(4) Conditional Logit (FE)	(5) Spatial Dependence
Manufacture Output _{t-1}	4.923** (1.851)				
Agricultural Output _{t-1}	-4.208* (1.638)				
Total Population	0.000*** (0.000)				
Manufacture Output _{t-1} (ln)		7.685* (3.333)			
Agricultural Output _{t-1} (ln)		-6.971* (3.227)			
Total Population (ln)		5.059* (2.228)	1.259 (1.052)	1.030** (0.391)	4.676* (2.682)
Manufacture Output (ln)			1.924*** (0.514)	0.668*** (0.143)	7.148 (4.815)
Agricultural Output (ln)			-1.596** (0.603)	-0.941*** (0.281)	-6.465 (4.636)
AIC	12.796	10.894		4505.538	11.056
R ²	0.059	0.068		0.341	0.065
Max. R ²	0.085	0.088		0.997	0.085
Num. events	9	9		610	9
Num. obs.	241	232	842	842	241
Missings	0	0		0	0
PH test					
Num. clust.	0.388	0.877	9		0.667

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, *cdot* $p < 0.1$. Robust standard errors in all models

Table 2: Sectoral Origins of Income Taxation: Income Tax Law and Industrial Development

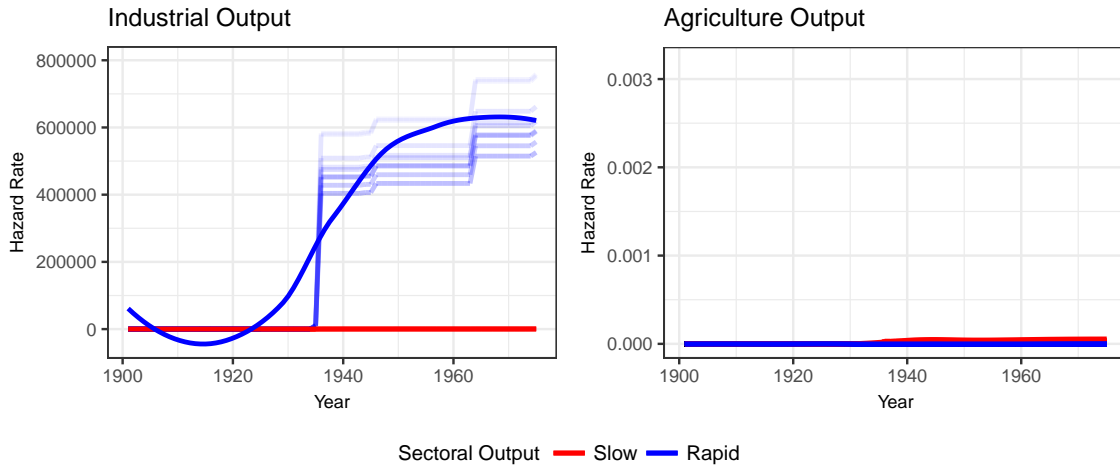


Figure 4: *Hazard Rates of Implementing the Income Tax Law*

in Figure 4, simulate 5000 times the Hazard Rate of implementing the income tax law conditional on industrial and agricultural growth rates.¹⁰¹ While the outcome of interest does *not* depend *directly* on time,¹⁰² sectoral outputs do grow in time.¹⁰³ Consequently, it will be necessary to account for this tendency by allowing estimations to vary with time as well.¹⁰⁴ Since the Hazard Rate “is the probability that a case will fail at time t ,”¹⁰⁵ I take advantage of this quantity of interest which allows some dependency on both time *and* the covariates.¹⁰⁶ Figure 4 strongly suggest that the faster the agricultural sector develops, the less likely the implementation of the income tax. This relationship does *not* change at later stages of development, suggesting that polities with a strong agricultural elite are not associated with fiscal development. However, rapid industrial development is associated with the acceleration of the implementation of the income tax law. In sum, *the stronger the industrial sector, the faster the tax is implemented.*

In sum, the quantitative analyses of a sample of Latin American countries, suggest that higher levels of sectoral competition, characterized by the emergence of the industrial sector, are associated with earlier times of implementation of the income tax law. In turn, the Chilean example illustrates the causal mechanisms at work. The case particularly explains why industrial elites put heavier pressures in favor of direct taxation, while the fiscal sociology approach provides an analytical framework to explaining why and how direct taxation fostered state centralization. Both types

¹⁰¹Box-Steffensmeier and Jones [2004, 15] explain that the Hazard Rate is the most common quantity of interest analysts focus on. Figure 4 shows 90% confidence intervals.

¹⁰²Please refer to Figure 3.

¹⁰³Please refer to Figure 2.

¹⁰⁴The economics literature refers to these kinds of time series “integrated” or I(1) processes.

¹⁰⁵Licht [2011, 231].

¹⁰⁶Box-Steffensmeier and Jones [2004, 15].

of analyses combined provide a theory of state formation centered around the idea of the role of sectoral contestation and state formation.

V. DISCUSSION: SLOW INDUSTRIAL GROWTH AND LACK OF CONTESTATION

Historically, agriculturalists were a hegemonic group protected by practices inherited from institutions originated in colonial times. These norms survived due to institutional inertia, perpetuating their advantaged position. However, the emergence of a strong industrial elite altered the inter-sectoral balance of political power, making unsustainable the political monopoly run by the landed elites. Given the initial advantage of the landed elites, the emergence of the industrial sector reduced the levels of inter-sectoral inequality, in turn generating political, economic and military threats to agricultural incumbents. Moreover, low inequality also increased the opportunity costs of conflict, putting pressures for inter-elite compromises.

The data analyses suggested that faster industrial growth accelerated the hazard of implementing the income tax. I interpreted the Chilean case through the lenses of the fiscal sociology paradigm. Leveraging historical evidence, I find that industrial elites accepted to be income taxed by agriculturalist incumbents in exchange of having access to state politics. Importantly, all these elite compromises took place during the formative years of the Chilean state, and during a period of structural indetermination, where no elite had a clear economic/military/political advantage, fostering the incorporation of all major economic elites into the same national project. When the income tax was implemented under politically contested circumstances, this institution expanded the overall state capacities by crystallizing a series of reforms, dismantling the old institutional order inherited since colonial times. Given the initial advantage of the landed elites, the emergence of a strong industrial sector increased levels of sectoral contestation. Countries with low levels of state-capacities did eventually implement the tax. However, later implementation had to do more with exogenous forces, leaving unaltered the backwards institutional order inherited since colonial times.

Both the argument, and the empirical findings, are situated within the broader literature on political and economic development, particularly within the fiscal sociology paradigm, emphasizing how fiscal development fosters state-making. Concretely, this paradigm proportionates a theory of state-building as it links the mechanics between the state-led effort of taxing incomes, and the expansion of other state services. Future research should explore more avenues of fiscal expansion, emphasizing domestic channels of political development, particularly considering different types of bargaining dynamics between the agricultural and industrial elites. To the best of my knowledge,

Beramendi et al. [2016] and this paper, are among the few of such accounts.¹⁰⁷

¹⁰⁷In p. 19, they argue that their “paper is among the first to systematically establish that fiscal development may take place even in the absence of interstate military competition and warfare.”

..... **Word count: 9,695**

REFERENCES

- Daron Acemoglu and James Robinson. *Economic Origins of Dictatorship and Democracy*. Cambridge University Press, 2009.
- Philippe Aghion, Alberto Alesina, and Francesco Trebbi. Endogenous Political Institutions. *The Quarterly Journal of Economics*, 119(2):565–611, may 2004. ISSN 0033-5533. doi: 10.1162/0033553041382148. URL <https://academic.oup.com/qje/article-lookup/doi/10.1162/0033553041382148>.
- Xavier Aguilera and Efren Vera. Analisis del Impacto de las Variaciones del Anticipo del Impuesto a la Renta en Sociedades del Austro Periodo 2007-2012, 2013.
- 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>.
- Yener Altunbas and John Thornton. Does Paying Taxes Improve the Quality of Governance? Cross-Country Evidence. *Poverty & Public Policy*, 3(3):1–17, jan 2011. ISSN 1944-2858. doi: 10.2202/1944-2858.1155. URL <http://doi.wiley.com/10.2202/1944-2858.1155>.
- 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.
- 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>.
- Hector Bahamonde. Structural transformations and state institutions in latin america, 1900-2010. 2017a. URL https://github.com/hbahamonde/Negative_Link_Paper/blob/master/Bahamonde_NegativeLink.pdf.
- Hector Bahamonde. Income taxation and state capacities in chile: Measuring institutional development using historical earthquake data. 2017b. URL https://github.com/hbahamonde/Earthquake_Paper/raw/master/Bahamonde_Earthquake_Paper.pdf.

- 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.
- Thushyanthan Baskaran and Arne Bigsten. Fiscal Capacity and the Quality of Government in Sub-Saharan Africa. *World Development*, 45:92–107, 2013. doi: 10.1016/j.worlddev.2012.09.018.
- Robert Bates and Donald Lien. A Note on Taxation, Development, and Representative Government. *Politics & Society*, 14(1):53–70, jan 1985. ISSN 0032-3292. doi: 10.1177/003232928501400102. URL <http://pas.sagepub.com/cgi/doi/10.1177/003232928501400102>.
- Arnold Bauer. *Chilean Rural Society: From the Spanish Conquest to 1930*. Cambridge University Press, 2008.
- Pablo Beramendi, Mark Dincecco, and Melissa Rogers. Intra-Elite Competition and Long-Run Fiscal Development. 2016.
- Marcelo Bergman. Tax Reforms and Tax Compliance: The Divergent Paths of Chile and Argentina. *Journal of Latin American Studies*, 35(3):593–624, 2003. URL <http://www.jstor.org/stable/3875313>.
- 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. *Pillars of Prosperity: The Political Economics of Development Clusters*. Princeton University Press, 2011.
- Timothy Besley, Ethan Ilzetzki, and Torsten Persson. Weak States and Steady States: The Dynamics of Fiscal Capacity. *American Economic Journal: Macroeconomics*, 5(4):205–235, oct 2013. ISSN 1945-7707. doi: 10.1257/mac.5.4.205. URL <http://pubs.aeaweb.org/doi/10.1257/mac.5.4.205>.
- 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.
- Carles Boix. *Political Order and Inequality: Their Foundations and their Consequences for Human Welfare*. Cambridge Studies in Comparative Politics, 2015.

- John Bowman and Michael Wallerstein. The Fall of Balmaceda and Public Finance in Chile: New Data for an Old Debate. *Journal of Interamerican Studies and World Affairs*, 24(4):421–460, 1982.
- Janet Box-Steffensmeier and Bradford Jones. *Event History Modeling A Guide for Social Scientists*. Cambridge University Press, Cambridge, 2004. ISBN 9780521546737.
- 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>.
- John Brewer. *The Sinews of Power: War, Money and the English State, 1688-1783*. Harvard University Press, 1990. ISBN 0674809300. doi: 10.2307/204418. URL <https://books.google.com/books?id=uqzA-Xp416YC{&}pgis=1>.
- 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{&}28199403{&}2972{&}3A3{&}3C643{&}3ATPEORE{&}3E2.0.CO{&}3B2-9http://www.jstor.org/stable/2579775?origin=crossref>.
- 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/12933632http://biostatistics.oupjournals.org/cgi/doi/10.1093/biostatistics/2.4.397>.
- 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>.
- Ruth Collier. *Paths toward Democracy: The Working Class and Elites in Western Europe and South America*. Cambridge University Press, 1999.
- 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.

- Jonathan Di John. The Political Economy of Taxation and Tax Reform in Developing Countries. 2006.
- Mark Dincecco. The Rise of Effective States in Europe. *The Journal of Economic History*, 75(03):901–918, sep 2015. ISSN 0022-0507. doi: 10.1017/S002205071500114X. URL <http://www.jstor.org.ezproxy2.library.arizona.edu/stable/41678585>[http://www.journals.cambridge.org/abstract{_jS002205071500114X}](http://www.journals.cambridge.org/abstract/_jS002205071500114X).
- Mark Dincecco and Ugo Troiano. Broadening the State: Policy Responses to the Introduction of the Income Tax. *NBER Working Paper*, (21373):1–25, 2015. doi: 10.3386/w21373. URL <http://www.nber.org/papers/w21373>.
- Paul Drake and Mathew McCubbins, editors. *The Origins of Liberty: Political and Economic Liberalization in the Modern World*. Princeton University Press, 1998.
- 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=354329>[http://www.journals.cambridge.org/abstract{_jS0022050705000343}](http://www.journals.cambridge.org/abstract/_jS0022050705000343).
- 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>.
- Alfredo Lewin Figueroa. Historia de las Reformas Tributarias en Colombia. In *Fundamentos de la Tributación*, page 371. Universidad de los Andes Editorial Temis, Bogotá, 2008. ISBN 9789583507069.
- Gustavo Flores-Macias. Financing Security Through Elite Taxation: The Case of Colombia's 'Democratic Security Taxes'. *Studies in Comparative International Development*, 49(4):477–500, dec 2014. ISSN 0039-3606. doi: 10.1007/s12116-013-9146-7. URL <http://link.springer.com/10.1007/s12116-013-9146-7>.
- Gustavo Flores-Macias, editor. *The Political Economy of Taxation in Latin America*. 2017.
- Diego Focanti, Mark Hallerberg, and Carlos Scartascini. Tax Reforms in Latin America in an Era of Democracy. 2013.

- John Freeman and Dennis Quinn. The Economic Origins of Democracy Reconsidered. *American Political Science Review*, 106(01):58–80, feb 2012. ISSN 0003-0554. doi: 10.1017/S0003055411000505. URL http://www.journals.cambridge.org/abstract/{_}S0003055411000505.
- 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>.
- 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>.
- Gobierno del Perú. Ley N^o 7904, Ley de Impuestos a la Renta, 1934. URL <http://docs.peru.justia.com/federales/leyes/7904-jul-26-1934.pdf>.
- 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.
- James Hardin and Joseph Hilbe. *Generalized Estimating Equations*. CRC Press, Boca Raton, FL, 2nd. edition, 2013. doi: 10.1002/0470013192.bsa250.
- Clarence Haring. Chilean Politics, 1920-1928. *The Hispanic American Historical Review*, 11(1):1–26, 1931. URL <http://www.jstor.org/stable/250648>.
- Michael Hechter and William Brustein. Regional Modes of Production and Patterns of State Formation in Western Europe. *American Journal of Sociology*, 85(5):1061–1094, mar 1980. ISSN 0002-9602. doi: 10.1086/227125. URL <http://www.journals.uchicago.edu/doi/10.1086/227125>.
- 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>.

- Albert Hirschman. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press, 1970.
- Soren Hojsgaard, Ulrich Halekoh, and Jun Yan. *geepack: Generalized Estimating Equation Package*, 2016.
- Roy Hora. Landowning Bourgeoisie or Business Bourgeoisie? On the Peculiarities of the Argentine Economic Elite, 1880-1945. *Journal of Latin American Studies*, 34(03):587–623, 2002. ISSN 0022-216X. doi: 10.1017/S0022216X02006491. URL http://www.journals.cambridge.org/abstract/_S0022216X02006491.
- Instituto Centroamericano de Estudios Fiscales. Historia de la Tributacion en Guatemala. Technical report, Instituto Centroamericano de Estudios Fiscales, 2007.
- Herman James. Latin America in 1923. *American Political Science Review*, 18(03):541–552, aug 1924. ISSN 0003-0554. doi: 10.2307/1944176. URL http://www.journals.cambridge.org/abstract/_S0003055400109062.
- Bruce Johnston and John Mellor. The Role of Agriculture in Economic Development. *The American Economic Review*, 51(4):566–593, 1961. URL <http://www.jstor.org/stable/1812786>.
- Carlos Keller. *La eterna crisis chilena*. Nascimento, Santiago, Chile, 1931.
- 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>.
- Henry Kirsch. *Industrial Development in a Traditional Society: The Conflict of Entrepreneurship and Modernization in Chile*. The University Presses of Florida, 1977.
- Edgar Kiser. Markets and Hierarchies in Early Modern Tax Systems: A Principal-Agent Analysis. *Politics & Society*, 22(3):284–315, sep 1994. ISSN 0032-3292. doi: 10.1177/0032329294022003003. URL <http://pas.sagepub.com/cgi/doi/10.1177/0032329294022003003>.
- Stephen Krasner. *Structural Conflict: The Third World Against Global Liberalism*. University of California Press, 1985.
- 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, James Mahoney, and Matthias vom Hau. Colonialism and Development: A Comparative Analysis of Spanish and British Colonies. *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.

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.

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>.

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 Mahon, Marcelo Bergman, and Cynthia Arnson. *Progressive Tax Reform and Equality in Latin America*. 2014. ISBN 9781938027437. URL <http://www.wilsoncenter.org/publication/ProgressiveTaxLATAM?mkt{ }tok=3RkMMJWwfF9wsRonua/IcO/hmjTEU5z17uQkWa0g38431UFwdcjKpMjr1YIETMpkI+SLDwEYGJlv6SgFSLHMa12z7gLXxI=>.

James Mahoney. *Colonialism and Postcolonial Development: Spanish America in Comparative Perspective*. Cambridge University Press, 2010.

Markos Mamalakis. The Theory of Sectoral Clashes. *Latin American Research Review*, 4(3):9–46, 1969. URL <http://www.jstor.org/stable/2502284>.

- Markos Mamalakis. The Theory of Sectoral Clashes and Coalitions Revisited. *Latin American Research Review*, 6(3):89–126, 1971. URL <http://www.jstor.org/stable/2502271>.
- Markos Mamalakis. *Growth and Structure of the Chilean Economy: From Independence to Allende*. Yale University Press, 1976.
- Carlos Marichal. *A Century of Debt Crises in Latin America: From Independence to the Great Depression, 1820-1930*. Princeton University Press, 1989.
- George McCutchen McBride. *Chile: Land and Society*. Octagon Books, 1936.
- Joel Migdal. *Strong Societies and Weak States*. Princeton University Press, 1988.
- Andrew Monson and Walter Scheidel, editors. *Fiscal Regimes and the Political Economy of Premodern States*. Cambridge University Press, 2015. ISBN 978-1-107-08920-4. doi: 10.1017/CBO9781107415324.004. URL <https://books.google.co.uk/books?id=YQ3UBwAAQBAJ>.
- 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>.
- Carola Pessino and Ricardo Fenochietto. Determining Countries' Tax Effort. *Hacienda Publica Espanola / Revista de Economía Pública*, 195(4):65–87, 2010. ISSN 02101173.
- James Rippy. *Latin America and the Industrial Age*. Greenwood Press, 1971.
- James Robinson. Economic Development and Democracy. *Annual Review of Political Science*, 9(1):503–527, jun 2006. ISSN 1094-2939. doi: 10.1146/annurev.polisci.9.092704.171256. URL <http://www.annualreviews.org/doi/abs/10.1146/annurev.polisci.9.092704.171256>.
- 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/_S0007123404000031.

- Omar Sanchez. *Mobilizing Resources in Latin America: The Political Economy of Tax Reform in Chile and Argentina*. Palgrave Macmillan, New York, NY, 2011. URL <http://link.springer.com/10.1057/9780230119659>.
- Aaron Schneider. *State-Building and Tax Regimes in Central America*. Cambridge University Press, 2012.
- Marcelo Segall. *Desarrollo del Capitalismo en Chile: Cinco Ensayos Dialécticos*. Santiago, Chile, del pacífi edition, 1953.
- Hillel Soifer. *State Building in Latin America*. 2015. ISBN 9781316257289.
- 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>.
- 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.
- Terry Therneau. *survival: Package for Survival Analysis*, 2015. URL <https://cran.r-project.org/web/packages/survival/>. R package version 2.38-3.
- 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>.
- Cameron Thies, Olga Chyzh, and Mark Nieman. The Spatial Dimensions of State Fiscal Capacity The Mechanisms of International Influence on Domestic Extractive Efforts. *Political Science Research and Methods*, 4(01):5–26, jan 2016. ISSN 2049-8470. doi: 10.1017/psrm.2015.27. URL [http://journals.cambridge.org/article_{_}S2049847015000278{%}5Cnhttp://journals.cambridge.org/action/displayAbstract?fromPage=online{%}&aid=10064145{%}&fileId=S2049847015000278{%}&utm{}_source=Issue{%}Alert{%}&utm{}_medium=Email{%}&utm{}_campaign=RAM{%}5Cnhttp://journals.cambridge.org](http://journals.cambridge.org/article/_S2049847015000278{%}5Cnhttp://journals.cambridge.org/action/displayAbstract?fromPage=online{%}&aid=10064145{%}&fileId=S2049847015000278{%}&utm{}_source=Issue{%}Alert{%}&utm{}_medium=Email{%}&utm{}_campaign=RAM{%}5Cnhttp://journals.cambridge.org).
- Mónica Unda. A Tale of Two Taxes: The Diverging Fates of the Federal Property and Income Tax Decrees in Post-Revolutionary Mexico. *Investigaciones de Historia Económica - Economic History Research*, 13(2):107–116, jun 2017. ISSN 16986989. doi: 10.1016/j.ihe.2016.02.002. URL <http://linkinghub.elsevier.com/retrieve/pii/S1698698916000102>.

- Victor Uribe-Uran. *State and Society in Spanish America during the Age of Revolution*. Rowman & Littlefield Publishers, 2001.
- Juan Ventura and María Elena Armas. Beneficios Tributarios en la Ley del Impuesto Sobre la Renta. *Comercium et Tributum*, 10:25–44, 2013.
- 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>.
- 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. 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.
- Bartolomé Yun-Casalilla, Patrick O'Brien, and Francisco Comín Comín, editors. *The Rise of Fiscal States: A Global History, 1500-1914*. Cambridge University Press, 2015.
- 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>.