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

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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 the implementation of the income tax.

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There seems to be strong agreement that fiscal capacities are a prerequisite for state-building. For instance, Levi (1989, p. 1) explains for the continental cases that, "the history of state revenue production is the history of of the evolution of the state." Unfortunately, however, 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,[1] overlooking the origins of fiscal and state expansion in the developing world; and particularly, in Latin America (Di John 2006, p. 5). In fact, in a recently edited volume, Monson and Scheidel (2015, p. 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."[2] Moreover, the bulk of the research done on Latin America has mostly focused on *recent* tax reforms (Flores-Macías, in Flores-Macías 2017). For instance, Fairfield (2013) studies different strategies policymakers pursue to tax elites starting in 1990, Mahon, Bergman, and Arnson (2014, p. 3), Mahon (2004) and Focanti, Hallerberg, and Scartascini (2013) have studied 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 (Sánchez 2011; Bergman 2003a). However, comparative time series studies focusing on the structural *origins* of income taxation in Latin America seem scarce. By providing a set of broader consequences for state consolidation, this paper is an effort to fill this gap in the literature.

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 data for a number of Latin American countries. It also presents 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, Dincecco, and Rogers (2016), particularly, in that as long as agriculture is the leading economic sector, the fiscal apparatus is less likely to emerge.[3]

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 1900s between the agricultural and industrial sectors.

Initially, Latin American political institutions and social norms—largely inherited from the

[1] Schneider (2012, p. 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."

[2] Some important exceptions are Yun-Casalilla, O'Brien, and Comín (2015) and Monson and Scheidel (2015) who study a number of premodern Latin American states.

[3] See for similar results Pessino and Fenochietto (2010, p. 78).

colonial period—were designed to serve the interests of the landowning elites (Mamalakis 1971, pp. 90,109). However, the economic structural transformation, characterized by "a secular decline of agriculture and substantial expansion of manufacturing" (Johnston and Mellor 1961, p. 567), 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. It also lead to the rise of bargaining power of the industrial class, positioning them as challenger elites.[4] In other words, the political monopoly of agricultural elites was disturbed with the rising of a new, and strong political elite backed by favorable material conditions rooted in industrial expansion. Industrial emergence, in turn, posed credible political, economic, and military threats to agricultural incumbents. Threats increased the opportunity costs of conflict, generating pressures for inter-elite compromises, in particularly, the implementation of the income tax. The paper also explains why industrial elites actually preferred to impose the income tax, and links this to state consolidation.

Some scholars situate the relevant state-building critical juncture either before the colonial period (Mahoney 2010), or at the end of it (Kurtz 2009; Kurtz 2013; Soifer 2015). While the literature situates these critical moments before the class compromises identified in this paper, the argument identifies the income tax as an important *additional building block* in that process. Hence, here the focus is on state *consolidation*, rather than on state *formation*.

The paper is organized as follows. The argument is explained in two different sections. The first section explains the nature, and mechanics of the sectoral conflicts that lead to income taxation, paying special attention to the role of taxation on state consolidation in Latin America. The following section explains that the timing of implementing the income tax acted as a critical juncture, setting countries in a development/underdevelopment path. To contextualize the theoretical argument, the following section presents the case of Chile between 1900 and 1950, focusing particularly on the cross-class economic and political dynamics that led to the implementation of the income tax. In an effort to generalize this historical evidence, the quantitative section presents several panel-data analyses (duration models and Cox regressions) covering almost 100 years of data, for a number of Latin American countries. Lastly, the paper provides some concluding remarks, and discusses some pending issues.

[4] Mamalakis (1971, p. 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."

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 path-dependent consequences of sectoral conflicts on state consolidation in the Latin American context, filling an important gap in the literature of the political economy of the developing world.[5] And such, it sees the implementation of the income taxation as an important critical juncture for state consolidation.

The opening premise is that income taxation fosters state consolidation. Following Schumpeter who sees "taxation in terms of group conflicts [and] class interests " (Monson and Scheidel 2015, p. 14), and Musgrave (1992, p. 99) who explains that since taxation—especially on incomes—requires such a high degree of state penetration, this article contends that public finances offer an important element for any theory of state development.

According to fiscal sociologists, indirect taxes do not foster a strong fiscal apparatus.[6] According to Best (1976, p. 53), "indirect taxes are but substitutes for direct taxes,"[7] and hence they are typically administered by weak states (Moore 2004b, p. 14). Since indirect taxes are easier to levy (Krasner 1985, p. 46),[8] this kind of revenue is generally considered "unearned income" (Moore 2004a, p. 304), or an "easy-to-collect source of revenues" (Coatsworth and Williamson 2002, p. 10). Given the relatively lower costs states have to incur to collect them, indirect taxes—particularly tariffs—have a very low impact on state-building. Since customs administrations have always been concentrated in a few critical locations—especially ports, tariffs and customs duties—they did not require an elaborate fiscal structure (Bertola and Ocampo 2012, p. 132), compromising state consolidation. In fact, when early Latin American states depended heavily on international trade taxes, the state apparatus tended to be less developed (Campbell 1993, p. 177).

Industrial and agricultural elites have different preferences towards taxation (Acemoglu and Robinson 2009, p. 289, Best 1976, p. 50). Since land fixity increases the risk premium of the landed elite's main asset (Robinson 2006, p. 512),[9] they systematically resist taxation. In turn, as capital can be reinvested in nontaxable sectors (Hirschman 1970),[10] industrialists' preferences toward taxation are more elastic.

[5] Gabriel Ondetti explains in (Flores-Macías 2017) that to "[his] knowledge, there is no study that explicitly applies [the] notion [of path dependence] to explain variance in contemporary tax burdens."

[6] However, see Brewer (1990, p. 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.

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

[8] See also Flores-Macías, in Flores-Macías (2017).

[9] However, see Freeman and Quinn (2012).

[10] See Ronald Rogowski in Drake and McCubbins (1998, ch. 4). However, see Bates and Lien (1985, p. 15).

These conflicting sectoral preferences about taxation have broader implications for state centralization, and consolidation (Hechter and Brustein 1980, p. 1085). Since the landowning classes opposed taxation, and since taxation fostered state centralization, ultimately, the sectoral conflict over taxation had bigger consequences for state consolidation. Where the landowning class was powerful, income taxation came in late, compromising state formation. However, when the emergence of a challenger capitalist class posed credible threats to agricultural incumbents, the conflict was likely to be resolved in favor of expanding the early fiscal apparatus, particularly, by implementing the income tax, fostering state building. This particular paper builds on Mares and Queralt (2015, p. 3), who find that the income tax was adopted "at a time when the economic power of incumbent landowning elites was severely threatened by the rise of a new economic elite linked to the emerging manufacturing sector." Similarly, leveraging a number of cases, including some Latin American countries, Beramendi, Dincecco, and Rogers (2016, p. 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." Relatedly, Flores-Macías (2014) finds that Colombian elites were willing to impose higher taxation levels on themselves, upon the establishment of an elite-government alliance, fostering closer monitoring levels, particularly regarding public spending.

The nature of the sectoral threats is rooted in the greater access industrialists had to military resources. Favorable material conditions permitted the capitalist class to buy off factions of the early state armies (as the Chilean case illustrates). From a sectoral inequality point of view, the emergence of strong industrial political elites implied a reduction in levels of inter-elite economic inequality, closing the gap respect to access to military resources each elite had. Importantly, having both elites access to similar military resources, war was most likely to exhaust all existent assets without producing positive outcomes for either sector,[11] putting heavier pressures to reach agreements rather than engaging in armed conflicts. Here I focus on one such agreement, the implementation of the income tax law. Critically, credible sectoral threats—as the paper contends—made the political incorporation of non-agricultural political elites more likely.

The implementation of the income tax law had positive spillovers on state consolidation. Income taxation was not only important because of the new revenue it collected, but also for state consolidation (Musgrave 1992, p. 98, Moore 2004a, p. 298). Kaldor points out that the revenue service is the "point of entry." Once this institution is established, the expected marginal cost of improving/implementing other "state-capacities" is lower (Brautigam, Fjeldstad, and Moore 2008,

[11] Richard Salvucci in Uribe-Uran (2001, p. 48).

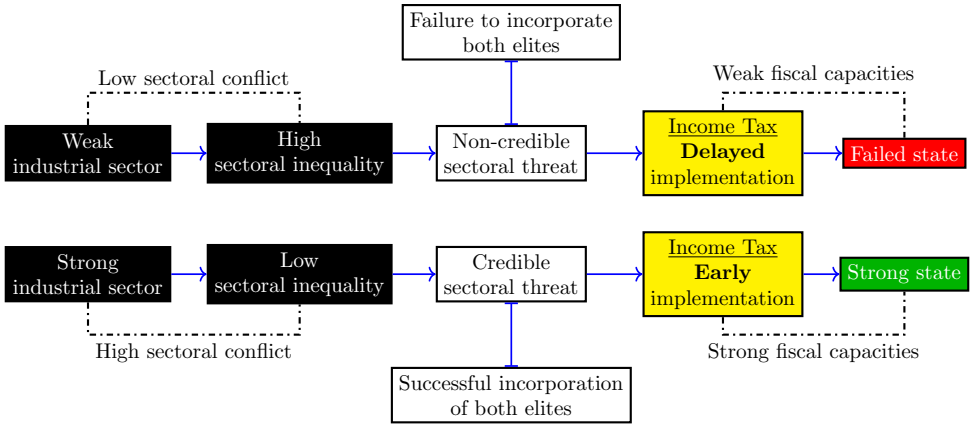

Figure 1: *Causal Argument*

p. 15). In other words, there were *technical complementarities*[12] between implementing the income tax, and fostering overall levels of state institutionalization. The literature is consistent in that the *introduction* of the income tax is associated with state expansion. For instance, Besley, Ilzetzki, and Persson (2013, p. 208) explain that *implementing* the income tax law is "associated with investments in public administrative structures that support tax collection" in a number of countries, including Chile, while Dincecco and Troiano (2015, p. 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." In Chile, bureaucrats that were sent to collect and administer taxes eventually learned to solve land disputes and dispense justice, among other state tasks. For instance, 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. Others have found that literacy levels rose in 1907 from 40% to 66% in 1925 (Engerman, Sokoloff and Mariscal, in Engerman and Sokoloff 2011, ch. 5). The share of national revenue accounted for by income taxes after implementing the income tax in 1924 rose from 6% in 1920 to 23.7% in 1940 (Engerman, Sokoloff and Zolt, in Engerman and Sokoloff 2011, p. 178). Humud (1969, p. 154) documents that the income tax was widely enforced, generating considerable resources for the Chilean treasury (in Bowman and Wallerstein 1982, pp. 451-452). The dependence on custom taxes decreased from 70.2% to 41.1% during those same years (Engerman, Sokoloff and Zolt, in Engerman and Sokoloff 2011, ch. 6). Finally, I find in a different project that the income tax in Chile produced state-capacities over time (Bahamonde n.d.[a]). All these developments suggest that policies that

[12] Which are situations in which "an increase in the output of [a] commodity [...] lowers the marginal costs of producing [other] commodity" (Hirschman 1958, p. 67).

expanded the reach of the state increased considerably *after* implementing the income tax.

II. The Timing of the Implementation of the Income Tax: Late and Early Implementers

When countries implement the income tax is a substantively important quantity of interest. Income taxation should have positive spillover effects on state development only if its implementation is situated during the formative years of the polity. Early implementers should have persistent comparative advantages through learning-by-doing, and agglomeration effects. Otherwise, once other major institutions are set in place (and once there is a clear set of winners and losers), even if some kind of direct taxation is (belatedly) imposed, it should be very costly to alter the underlying incentives of that particular institutional order. Since late implementers had lower levels of sectoral conflict—too low to trigger a critical juncture—they kept reproducing the legacies of the post-colonial backwards institutions.

While all countries in the region eventually implemented some system of direct taxation (see Figure 2), the process late implementers went through did not reflect the domestic sectoral dynamics explained in this paper, but other forces. While early implementers consolidated the state *in light* of taxation, late implementers evolved *despite* taxation. Moreover, implementing the income tax in contexts where the post-colonial agricultural economic elites were still the ruling political elites represents a missed opportunity to transform the state. In fact, I find somewhere else that in a number of Latin American countries that, when the income tax is adopted under contexts of sectoral contestation, economic growth is more likely to be sustained in the long run (Bahamonde n.d.[b]).

The political incorporation of industrial elites promoted lower levels of defection. Industrial elites were willing to impose an income tax on their own incomes, in exchange for being able to participate in the political life of the polity. In turn, political incorporation altered the post-colonial (backwards) institutional order by crystallizing a process of state consolidation via the expansion of the fiscal system. This reasoning is in line with Beramendi, Dincecco, and Rogers (2016, p. 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."[13]

To add some context, a brief example about two divergent cases is presented. 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 (Bergman 2003b, Fairfield 2010, p. 38). Unlike Chile,

[13]Emphasis in original. See also for a similar approach Ansell and Samuels (2014) and R. Collier and D. Collier (2002).

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 having a college degree (Di John 2006, p. 5). 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" (Mahon, Bergman, and Arnson 2014, p. 128). That is, while Guatemala did eventually implement income taxation, the persistence of backwards institutions have precluded Guatemala's ability to implement a modern fiscal apparatus. This paper contends that endogenous sectoral conflicts played an important role in explaining fiscal modernization. In this case in particular, non-agricultural elites have not been strong enough to trigger a critical juncture. When these endogenous forces have been weak or inexistent, income taxation was implemented for other reasons, not transforming the state. In fact, the income tax law in Guatemala was implemented exogenously by the US-backed dictator Colonel Enrique Peralta Azurdia, not necessarily reflecting the inter-sectoral domestic dynamics. The next section expands the Chilean case.

III. Unpacking the Mechanisms: Chile 1850-1950

A two-sector society Historians still debate whether agriculturalists and industrialists comprised two *different* elites. Some claim that this dualism is incorrect (Mamalakis 1976, p. 125). They argue that since landowners also invested in industry (Kirsch 1977, pp. 57, 95, Bauer 2008, p. 180, Coatsworth and Williamson 2002, p. 23),[14] there was a blurry class division between the mining, banking, and agricultural sectors (Bauer 2008, pp. 30, 44, 94, 108). I contend that there is a series of stylized facts that suggests that there was indeed a structural cleavage between the two sectors.

However, there were certain practices that masked the sectoral cleavage. For example, it was common that industrialists invested in real estate. However, in many instances they did so *just* to obtain credit. Kirsch (1977, p. 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."[15] In fact, this practice shows how the credit system was oriented to give unfair advantage to the landed elites (Unda 2017, p. 9, Mamalakis 1969, p. 11). Similarly, Zeitlin (1984, p. 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."[16] There were also other instances where miners invested in banking. However,

[14] Coatsworth and Williamson (2002, p. 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." Similarlt, Bauer (2008, p. 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."

[15] Emphases are mine.

[16] Emphasis is mine.

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, p. 609) explains that "the image of an entrepreneurial elite with assets *scattered throughout several spheres of investment* does not appear entirely correct."[17]

In addition to that, the nature of the main factors of production of agriculturalists (land), and industrialists (capital), accelerated the sectoral cleavage. Borrowing from the Lewis model of economic growth, I explain elsewhere that there were a number of structural conditions that should have prevented massive cross-sectoral investments (Bahamonde n.d.[b]). Given the transference of labor from agriculture to the industrial sector,[18] and given that the agricultural sector is determined to lag behind the industrial sector,[19] elites invested in both sectors should experiment important allocative inefficiencies, and deadweight losses. This puts heavy pressures to invest in one sector, or the other, but not both. Granger-causality tests and VAR models (not shown here) show that in developed Latin American countries, agricultural expansion caused industrial expansion (modern growth). The opposite is true in non-developed Latin American countries: industrial expansion caused agricultural expansion (backwards growth).[20]

Sectoral Antagonism In all Latin American economies during, and right after the colonial period, agriculture was the most important sector, economically and politically (Keller 1931, p. 13). And by extension, the economic interests of the agricultural elite were the only economic interests represented in politics (Wright 1975, pp. 45-46).[21] For example, R. Collier and D. Collier (2002, p. 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" (see also McBride 1936, p. 15). 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 (Bahamonde n.d.[b]).

However, despite that in some cases a strong industrial sector emerged, their corresponding elites were kept from participating in politics with the same privileges and conditions that the

[17] Emphasis is mine.

[18] The industrial sector uses capital and labor with increasing returns to scale, while agriculture uses land (which is fixed) as the main input (Jorgenson 1961, p. 311, Ranis and Fei 1964, p. 59, Jorgenson 1967, p. 291, Skott and Larudee 1998, pp. 279-280, Vollrath 2009, p. 290).

[19] To clarify, "the agricultural sector declines relative to the overall economy but continues to expand absolutely" (Nerlove 1994, p. 14). In other words, it is the "the proportional contribution of agriculture to the growth" that decays (Kuznets 1961, p. 45), implying that in the long run the agricultural sector "must also grow" (Ranis and Fei 1961, p. 534), especially given the continuing dependence on a constant supply of food (Nicholls 1963, p. 2).

[20] The developed/non-developed typology presented in Mahoney (2010, p. 5) was used.

[21] Mamalakis (1969, p. 19) refers to this period as the *traditional pattern of government-export sector coalition.*

landowning political elites had. Consequently, the opportunity costs of implementing policies designed to enhance the agricultural sector were low. Zeitlin (1984, p. 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 (Bauer 2008, p. 45), leaving the modern sector heavily under-represented (Baland and Robinson 2008, p. 1748). Consequently, fiscal pressures in favor of agricultural taxes were minimal compared with mining taxes,[22] leaving the agricultural sector systematically—and substantially—undertaxed relative to other sectors (Best 1976, p. 56).[23] Bauer (2008, p. 118) 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." For example, the little public infrastructure that existed, mostly benefited the agricultural sector (Rippy 1971; Marichal 1989; Zeitlin 1984; Bauer 2008).

This asymmetry led these two "antagonistic elites" (Keller 1931, pp. 37-38) to confront in the civil wars of 1851-1859 and 1891, between a "large landed property [elite against a] productive capital [elite]" (Zeitlin 1984, p. 23). 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 (Zeitlin 1984, p. 186). While his agenda on "industrial" infrastructure (mainly roads and railroads) benefited mostly agricultural areas (Zeitlin 1984, p. 124), his attitude towards the banking sector—closely linked to the mining sector, Zeitlin 1984, p. 118—was "all but confiscatory" (Zeitlin 1984, p. 175). On the other hand, however, he failed to secure a coalition with his own sector. Zeitlin (1984, p. 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 "landed proprietors [to] become dependent to a considerable extent on the continuing prosperity of the major nitrate capitalists" (Zeitlin 1984, p. 129). 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

[22] Mining 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.

[23] Bauer (2008, p. 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, p. 38) also points out that "public revenues came almost exclusively from taxes on mining and its exports."

military conflicts.

However, lower levels of inter-elite inequality gave both elites access to similar military resources, preventing subsequent conflicts. While *Balmacedistas* managed to secure the support of the army, *congresistas* (the anti-Balmaceda group) managed to gather support of the navy (Leonard et al. 2013, p. 176). 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 (Zeitlin 1984, p. 86), a significant amount for a small country. This legacy materialized in an inefficient, but politically stable 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 (R. Collier and D. Collier 2002, p. 108). 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" (Zeitlin 1984, p. 87), there were a number of amnesties issued. Similarly, there were a number of *aborted* coups in 1907, 1912, 1915 and 1919 (R. Collier and D. Collier 2002, p. 109). All in all, there seemed to be a clear avoidance of more conflict.[24]

Under such circumstances, there were heavier pressures for a sectoral compromise. Three institutional components were considered: an income tax, industrial protectionism, and equal access to the state.[25] In fact, Lederman (2005, p. 53) and Haber (2005, p. 18) find that in Chile, the timing of protectionist and income taxation cycles matches.

Implementing the Income Tax 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 (R. Collier 1999, p. 111), who was supported by "the dominant political and landed aristocracy" (Haring 1931, p. 2). Governability was seriously compromised as the election left the senate in control of the landowning class, who roundly opposed tax reforms (Haring 1931, p. 5). Particularly, the opposition had "serious differences [...] over [Alessandri's] legislative program, especially in connection with the proposed income tax" (Haring 1931, p. 3). 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*" (Carmenza Gallo, in Brautigam,

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

[25] The SOFOFA pursued a very strong protectionist agenda. Sokoloff and Zolt (2007, p. 122) explain that the expansion of "manufacturing production [...] helped to nurture the development of a powerful constituency for higher tariffs."

Fjeldstad, and Moore 2008, p. 165).[26] 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 (James 1924, p. 552). Humud (1969, p. 154) explains that in "1930 [the tax] would become second only to import duties in size" (Bowman and Wallerstein 1982, pp. 451-452).

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. Third, the rise of the industrial class challenged the landowning classes. Fourth, given their similar degree of economic and military resources, both elites compromised the income tax. As explained before, implementing the income tax early had positive consequences to state consolidation. The next section is an attempt to generalize, and test, one particular link of this chain: the rise of the industrial classes, and the early implementation of the income tax.

IV. Econometric Analyses

Following the economic development typology suggested in Mahoney (2010, p. 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). Sectoral conflict, and particularly, the degree in which the industrial elites challenged incumbent landowners, was proxied via industrial and agricultural sectoral growth rates, as presented in the MOxLAD data.[27] The dataset spans from 1900 to (potentially) 2010.[28] According to Astorga, Berges, and Fitzgerald (2005, p. 790), these data provide extended comparable sectoral value-added series in constant purchasing power parity prices. These data, and similar strategies, have been employed before (see Thies 2005). Importantly, I do not combine the agricultural sectoral growth rates 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—preserving *both* variables *separately* is a better strategy.

Using secondary information, Table 1 states when the income tax was implemented. Figure 2

[26] Emphases are mine. She refers specifically to the mining elites.

[27] "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.

[28] Since countries are "censored" once they implement the income tax law, they leave the sample (potentially) before 2010.

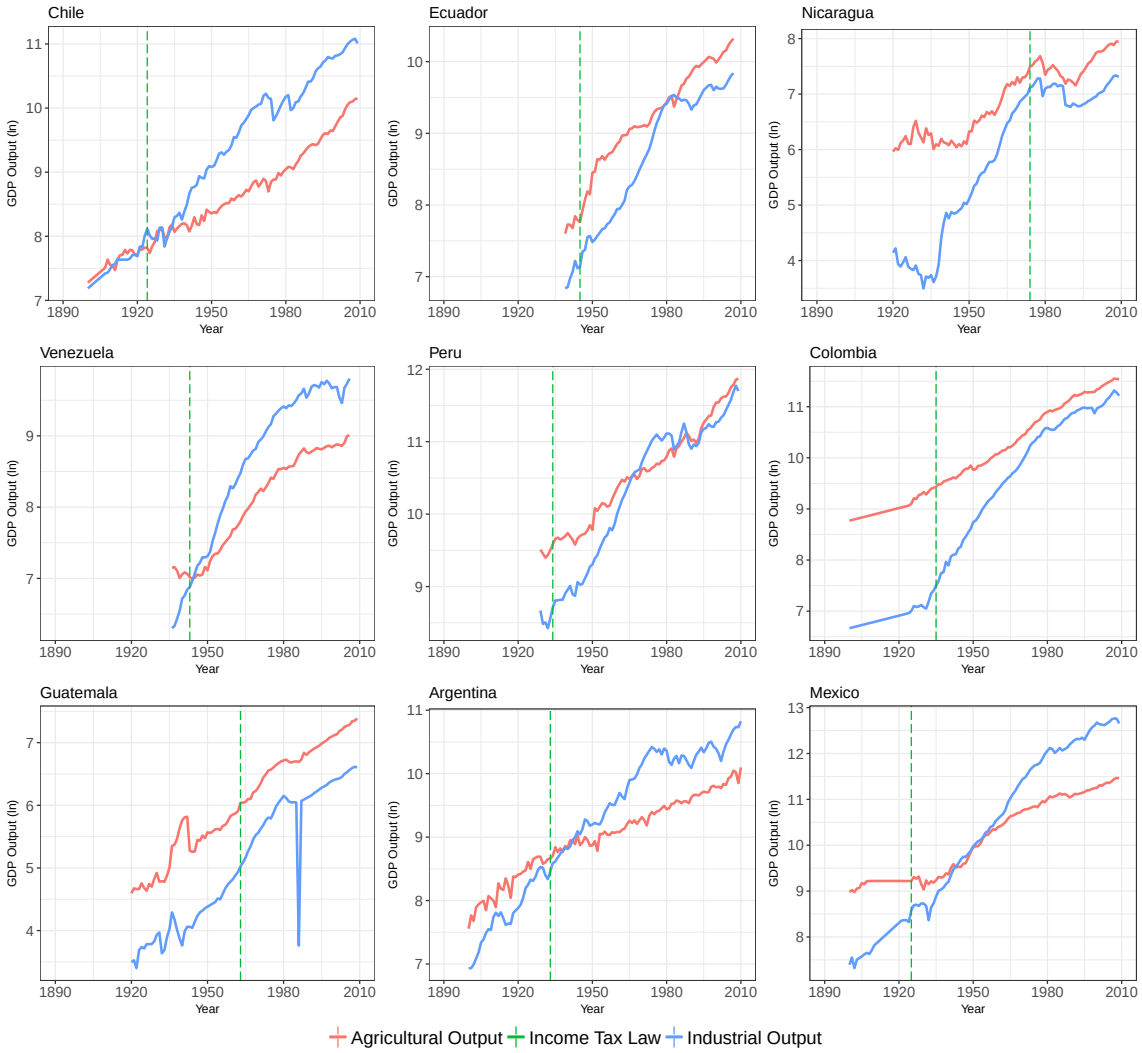

Figure 2: Industrial and Agricultural Outputs, and The Passage of the Income Tax Law.
Note: *Figure shows historical sectoral outputs, and year of the passage of the income tax law. Following convention, the figure shows logged values.*
Source: *MOxLAD, and other sources compiled by the author (see Table 1).*

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 (Engerman and Sokoloff 2005, pp. 892-893), and consequently the tax base, I include total country-year population as a control variable.

Table 2 shows 3 models.[29] 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

[29] All 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, Halekoh, and Yan 2016). The simulations were performed using the `simPH R` package (Gandrud 2015).

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

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

	(1) Cox (1 lag)	(2) Logit GEE	(3) Conditional Logit (FE)
Manufacture Output$_{t-1}$	4.923***		
	(1.851)		
Agricultural Output$_{t-1}$	−4.208**		
	(1.638)		
Total Population	0.000***		
	(0.000)		
Manufacture Output (ln)		1.924***	0.668***
		(0.514)	(0.143)
Agricultural Output (ln)		−1.596***	−0.941***
		(0.603)	(0.281)
Total Population (ln)		1.259	1.030***
		(1.052)	(0.391)
AIC	12.796		4505.538
R^2	0.059		0.341
Max. R^2	0.085		0.997
Num. events	9		610
Num. obs.	241	842	842
Missings	0		0
PH test	0.388		
Num. clust.		9	

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors, models 1 and 2. Country fixed effects in 3. Intercept omitted.

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

a given year, as a function of industrial and agricultural outputs.[30] Countries drop out of the

[30]Following Box-Steffensmeier and Jones (2004, p. 49), the next equation was fitted:

$$h_i(t) = exp(\beta_1 \text{Industrial Growth}_{i,t} + \beta_2 \text{Agricultural Growth}_{i,t} + \beta_3 \text{Total Population}_{i,t}) h_0(t) \quad (1)$$

sample when they adopt the income tax. Lagging the independent variables should account for non-contemporaneous factors that might conflate the contribution of sectoral growths, such as prior state capacities, among others. Model 2 shows the estimated coefficients of a generalized estimating equation (GEE).[31] Generalized estimating equations were introduced by Liang and Zeger (1986) to fit clustered, repeated/correlated, and panel data (Zorn 2006, p. 322). This method is especially well suited to analyze binary data (Hanley et al. 2003), something particularly useful given the nature of the dependent variable (e.g. whether a polity has implemented the income tax or not). GEE methods require analysts to parameterize the working correlation matrix. Though Hedeker and Gibbons (2006, p. 139) explain that "the GEE is robust to misspecification of the correlation structure,"[32] Zorn (2006, p. 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, p. 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.[33] Substantively, GEE models provide an estimated marginal mean, or the *weighted average* of all cluster-specific effects (or conditional means). Model 3 is a conditional logit model ("fixed effects").[34] One important advantage of this strategy is the ability to account for country-specific effects. For example, fiscal expansion could be a function of country-specific prior state-building capacities.[35] A number of scholars rightly argue that post-colonial state-capacities are in part a function of pre-colonial state-capacities (Wimmer 2016, p. 1416, Mahoney 2010, Lange, Mahoney, and Hau 2006, p. 1426). 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 (Angrist and Pischke 2008). Table OA1 in the Online Appendix section shows other models, including one with a different transformation to capture different shapes of the baseline hazard, and another one to

for all countries i and years t.

[31] Following Zorn (2006, p. 331), the next equation was fitted:

$$\pi_{i,t} = \Phi(\beta_1 \log(\text{Industrial Growth}_{i,t}) + \beta_2 \log(\text{Agricultural Growth}_{i,t}) + \beta_3 \log(\text{Total Population}_{i,t})) \quad (2)$$

where π is the logit link function, and Φ is as scale parameter (i.e. the cumulative distribution function), for all i countries, and years t.

[32] Carlin et al. (2001, p. 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 (2017) and Gardiner, Luo, and Roman (2009, p. 227) make the same point.

[33] Hardin and Hilbe (2013, p. 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.

[34] More formally,

$$\pi_{i,t} = \Phi(\beta_0 + \beta_1 \log(\text{Industrial Growth}_{i,t}) + \beta_2 \log(\text{Agricultural Growth}_{i,t}) + \beta_3 \log(\text{Total Population}_{i,t}) + \alpha_i) \quad (3)$$

where α are the country fixed effects for all countries i.

[35] I thank Matthias vom Hau for this suggestion.

account for possible spatial dependency. The results do not vary. All models suggest that the rise of a strong industrial sector largely accelerates the implementation of the income tax law. Moreover, a strong agricultural sector not only has zero impact on fiscal development, but a negative one.

Using the estimations from Model 1, I follow Gandrud (2015) and King, Tomz, and Wittenberg (2000), and in Figure 3, simulate 5,000 times the hazard rate of implementing the income tax law, conditional on industrial and agricultural growth rates.[36] While the outcome of interest does *not* depend *directly* on time (Figure OA1), sectoral outputs do grow in time (Figure 2).[37] Consequently, it will be necessary to account for this tendency by allowing estimations to vary with time as well. Since the hazard rate "is the probability that a case will fail at time t" (Licht 2011, p. 231), I take advantage of this quantity of interest which allows some dependency on both time, *and* the covariates (Box-Steffensmeier and Jones 2004, p. 15). Figure 3 strongly suggests 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 an earlier implementation of the income tax law.

What the quantitative analyses suggest are twofold. First, the stronger the industrial sector, the earlier the tax is implemented. Second, agricultural expansion, in fact, *delays* the implementation of the income tax. In simple, industrial expansion is the one to "blame for" implementing the income tax. Substantively, *when* countries implement their income taxes is an important factor for state development. Particularly, *early* implementers situated the timing of implementing this state-making institution before the post-colonial order was crystallized, impeding the consolidation of the landed political elites. Early implementers in fact were able to consolidate the state *in light* of taxation. These results are robust to a number of alternative hypotheses, specifications, and functional forms. Concretely, I do not find evidence in favor of spatial dependency, neither do I find different results once the variables are lagged-logged—to capture different shapes of the baseline hazard—see Table OA1. Furthermore, every approach used (duration model, pooled model, and fixed effect model) in Table 2 gives exactly the same substantive results. Importantly, the simulation plot shows very clear patterns. As long as the landowning elites are the most influential elites (backed up by the expansion of their material conditions), fiscal development, and the positive spillovers on state consolidation associated with it, are expected to be very unlikely to emerge.

Moreover, by simulating a quantity of interest in Figure 3 that accounts for possible time dependency (e.g., the hazard rate), I am able to incorporate—at least indirectly—different waves of

[36] Box-Steffensmeier and Jones (2004, p. 15) explain that the hazard rate is the most common quantity of interest analysts focus on. Figure 3 shows 95% confidence intervals.

[37] The economics literature refers to these kinds of time series "integrated" or I(1) processes.

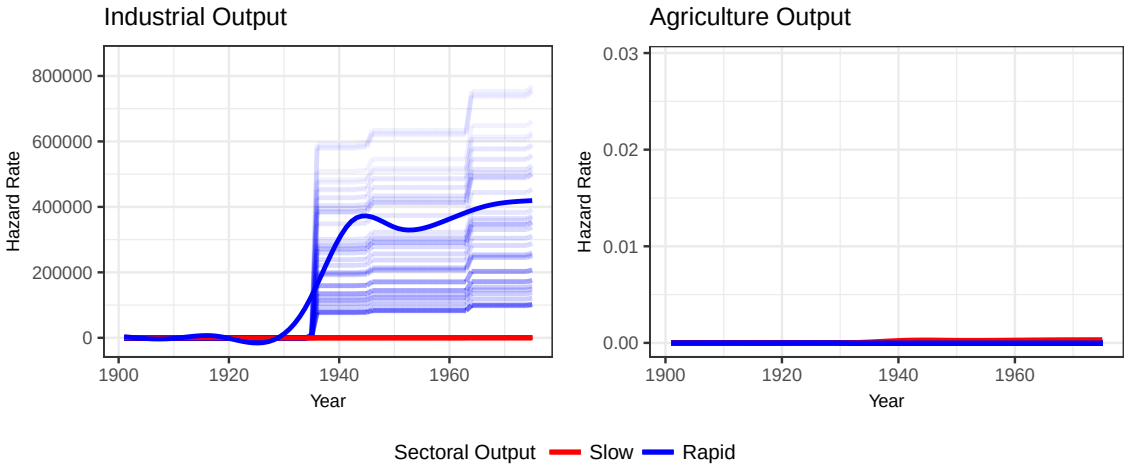

Figure 3: Hazard Rate of Implementing the Income Tax Law.
Note*: Using estimations of Model 1 in Table 2 (Equation 1), figure shows 5,000 simulations with different sectoral growth speeds. 'Slow' is the minimum value, while 'rapid' is the maximum value for each sectoral output. The figure also shows the 95% confidence intervals.*

democratization, and other factors that are expected to happen as time goes by, such as the impact of international markets, like crises or economic booms.

V. Discussion

Historically, agriculturalists had been a hegemonic group, protected by an institutional order inherited during colonial times. In cases where a strong challenger class had failed to emerge, post-colonial norms survived due to institutional inertia, crystallizing a backwards political economy. However, in cases where the emergence of an industrial elite was backed by favorable material conditions (rapid industrial growth), their leverage to challenge incumbent landowners was higher. As the challenger elite expanded its economic power, it was easier for their corresponding political elites to implement favorable fiscal policies for them earlier in history. The paper paid special attention to the case of the implementation of the income tax.

The fiscal sociology framework was also discussed. Given the initial advantage of the landed elites, the emergence of a strong industrial sector meant higher levels of sectoral contestation. The nature of the conflict, as argued, was rooted into different sectoral preferences towards taxation. However, and at the same time, since taxation fosters state consolidation, the sectoral cleavage around fiscal policies was ultimately a conflict about state centralization and state consolidation. The paper argues, and finds, that the emergence of a strong capitalist class accelerated the implementation of the income tax, and this was an important critical juncture, fundamental in explaining state

consolidation in Latin America. The Chilean case strongly suggest that (1) the income tax increased levels of state consolidation via positive spillovers, and that (2) industrialists accepted to be income taxed, in exchange for having fair access to the state. Importantly, these elite compromises took place during the formative years of the Chilean state. The quantitative models presented in this paper are an effort to generalize this argument.

An important issue addressed in the paper, both from a methodological, and substantive perspectives, was the timing of implementing the tax. While the theory broadly connects sectoral contestation, income taxation, and state consolidation, the duration and spatial models presented in the paper only connect the first two components. However, the motivation for studying only these two first elements of the causal chain should be understood as an effort to trace the structural and domestic origins of state consolidation. And hence, the broader argument is that sectoral contestation is a channel that leads to state consolidation. Somewhere else, I provide quantitative over time evidence in relationship with income taxation, and state consolidation itself (Bahamonde n.d.[a]).

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, Dincecco, and Rogers (2016) and this paper are among the few of such accounts.[38]

[38] In 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."

References

Acemoglu, Daron and James Robinson (2009). *Economic Origins of Dictatorship and Democracy*. Cambridge University Press.

Aguilera, Xavier and Efrén Vera (2013). *Análisis del Impacto de las Variaciones del Anticipo del Impuesto a la Renta en Sociedades del Austro Periodo 2007-2012*.

Aidt, Toke and Peter Jensen (2009). "The Taxman Tools Up: An Event History Study of the Introduction of the Personal Income Tax." In: *Journal of Public Economics* 93.1-2, pp. 160–175.

Angrist, Joshua and Jörn-Steffen Pischke (2008). *Mostly Harmless Econometrics: An Empiricist's Companion*. 1st. Princeton University Press.

Ansell, Ben and David Samuels (2014). *Inequality and Democratization: An Elite-Competition Approach*. Cambridge University Press.

Astorga, Pablo, Ame Berges, and Valpy Fitzgerald (2005). "The Standard of Living in Latin America During the Twentieth Century." In: *Economic History Review* 58.4, pp. 765–796.

Bahamonde, Hector (n.d.[a]). "Income Taxation and State Capacities in Chile: Measuring Institutional Development Using Historical Earthquake Data." In: *Unpublished*.

Bahamonde, Hector (n.d.[b]). "Structural Transformations and State Institutions in Latin America, 1900-2010." In: *Unpublished*.

Baland, Jean Marie and James Robinson (2008). "Land and Power: Theory and Evidence from Chile." In: *American Economic Review* 98.5, pp. 1737–1765.

Bates, Robert and Donald Lien (1985). "A Note on Taxation, Development, and Representative Government." In: *Politics & Society* 14.1, pp. 53–70.

Bauer, Arnold (2008). *Chilean Rural Society: From the Spanish Conquest to 1930*. Cambridge University Press.

Beramendi, Pablo, Mark Dincecco, and Melissa Rogers (2016). "Intra-Elite Competition and Long-Run Fiscal Development." In:

Bergman, Marcelo (2003a). "Tax Reforms and Tax Compliance: The Divergent Paths of Chile and Argentina." In: *Journal of Latin American Studies* 35.3, pp. 593–624.

Bergman, Marcelo (2003b). "Tax Reforms and Tax Compliance: The Divergent Paths of Chile and Argentina." In: *Journal of Latin American Studies* 35.3, pp. 593–624.

Bertola, Luis and Jose Antonio Ocampo (2012). *The Economic Development of Latin America since Independence*. Oxford University Press.

Besley, Timothy, Ethan Ilzetzki, and Torsten Persson (2013). "Weak States and Steady States: The Dynamics of Fiscal Capacity." In: *American Economic Journal: Macroeconomics* 5.4, pp. 205–235.

Best, Michael (1976). "Political Power and Tax Revenues in Central America." In: *Journal of Development Economics* 3.1, pp. 49–82.

Bowman, John and Michael Wallerstein (1982). "The Fall of Balmaceda and Public Finance in Chile: New Data for an Old Debate." In: *Journal of Interamerican Studies and World Affairs* 24.4, pp. 421–460.

Box-Steffensmeier, Janet and Bradford Jones (2004). *Event History Modeling A Guide for Social Scientists*. Cambridge: Cambridge University Press.

Brautigam, Deborah, Odd-Helge Fjeldstad, and Mick Moore (2008). *Taxation and State-Building in Developing Countries: Capacity and Consent*. Cambridge University Press, p. 261.

Brewer, John (1990). *The Sinews of Power: War, Money and the English State, 1688-1783*. Harvard University Press, p. 290.

Campbell, John (1993). "The State and Fiscal Sociology." In: *Annual Review of Sociology* 19.1, pp. 163–185.

Carlin, John et al. (2001). "A Case Study on the Choice, Interpretation and Checking of Multilevel Models for Longitudinal Binary Outcomes." In: *Biostatistics* 2.4, pp. 397–416.

Coatsworth, John and Jeffrey Williamson (2002). *The Roots of Latin American Protectionism: Looking Before the Great Depression*. Tech. rep. Cambridge, MA: National Bureau of Economic Research, pp. 37–73.

Collier, Ruth (1999). *Paths toward Democracy: The Working Class and Elites in Western Europe and South America*. Cambridge University Press.

Collier, Ruth and David Collier (2002). *Shaping The Political Arena: Critical Junctures, the Labor Movement, and Regime Dynamics in Latin America*. University of Notre Dame Press.

Di John, Jonathan (2006). "The Political Economy of Taxation and Tax Reform in Developing Countries."

Dincecco, Mark and Ugo Troiano (2015). "Broadening the State: Policy Responses to the Introduction of the Income Tax." In: *NBER Working Paper* 21373, pp. 1–25.

Drake, Paul and Mathew McCubbins, eds. (1998). *The Origins of Liberty: Political and Economic Liberalization in the Modern World*. Princeton University Press.

Engerman, Stanley and Kenneth Sokoloff (2005). "The Evolution of Suffrage Institutions in the New World." In: *The Journal of Economic History* 65.04, p. 891.

Engerman, Stanley and Kenneth Sokoloff (2011). *Economic Development in the Americas since 1500: Endowments and Institutions*. Cambridge University Press.

Fairfield, Tasha (2010). "Business Power and Tax Reform: Taxing Income and Profits in Chile and Argentina." In: *Latin American Politics and Society* 52.02, pp. 37–71.

Fairfield, Tasha (2013). "Going Where the Money Is: Strategies for Taxing Economic Elites in Unequal Democracies." In: *World Development* 47, pp. 42–57.

Figueroa, Alfredo Lewin (2008). "Historia de las Reformas Tributarias en Colombia." In: *Fundamentos de la Tributación*. Bogotá: Universidad de los Andes Editorial Temis, p. 371.

Flores-Macías, Gustavo (2014). "Financing Security Through Elite Taxation: The Case of Colombia's 'Democratic Security Taxes'." In: *Studies in Comparative International Development* 49.4, pp. 477–500.

Flores-Macías, Gustavo, ed. (2017). *The Political Economy of Taxation in Latin America*.

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

Freeman, John and Dennis Quinn (2012). "The Economic Origins of Democracy Reconsidered." In: *American Political Science Review* 106.01, pp. 58–80.

Gandrud, Christopher (2015). "simPH: An R Package for Illustrating Estimates from Cox Proportional Hazard Models Including." In: *Journal of Statistical Software* 65.3, pp. 1–20.

Gardiner, Joseph, Zhehui Luo, and Lee Anne Roman (2009). "Fixed Effects, Random effects and GEE: What Are The Differences?" In: *Statistics in Medicine* 28.2, pp. 221–239.

Geddes, Barbara (1991). "A Game Theoretic Model of Reform in Latin American Democracies." In: *The American Political Science Review* 85.2, p. 371.

Gobierno del Perú (1934). *Ley Nº 7904, Ley de Impuestos a la Renta*.

Haber, Stephen (2005). "Development Strategy or Endogenous Process? The Industrialization of Latin America."

Hanley, James et al. (2003). "Statistical Analysis of Correlated Data Using Generalized Estimating Equations: An Orientation." In: *American Journal of Epidemiology* 157.4, pp. 364–375.

Hardin, James and Joseph Hilbe (2013). *Generalized Estimating Equations*. 2nd. Boca Raton, FL: CRC Press.

Haring, Clarence (1931). "Chilean Politics, 1920-1928." In: *The Hispanic American Historical Review* 11.1, pp. 1–26.

Hechter, Michael and William Brustein (1980). "Regional Modes of Production and Patterns of State Formation in Western Europe." In: *American Journal of Sociology* 85.5, pp. 1061–1094.

Hedeker, Donald and Robert Gibbons (2006). *Longitudinal Data Analysis*. Wiley Series in Probability and Statistics. Hoboken, NJ, USA: John Wiley & Sons, Inc.

Hirschman, Albert (1958). *The Strategy of Economic Development*. Yale University Press.

Hirschman, Albert (1970). *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press.

Hojsgaard, Soren, Ulrich Halekoh, and Jun Yan (2016). *geepack: Generalized Estimating Equation Package*. Version 1.2-0.1.

Hora, Roy (2002). "Landowning Bourgeoisie or Business Bourgeoisie? On the Peculiarities of the Argentine Economic Elite, 1880-1945." In: *Journal of Latin American Studies* 34.03, pp. 587–623.

Instituto Centroamericano de Estudios Fiscales (2007). *Historia de la Tributación en Guatemala*. Tech. rep. Instituto Centroamericano de Estudios Fiscales.

James, Herman (1924). "Latin America in 1923." In: *American Political Science Review* 18.03, pp. 541–552.

Johnston, Bruce and John Mellor (1961). "The Role of Agriculture in Economic Development." In: *The American Economic Review* 51.4, pp. 566–593.

Jorgenson, Dale (1961). "The Development of a Dual Economy." In: *The Economic Journal* 71.282, pp. 309–334.

Jorgenson, Dale (1967). "Surplus Agricultural Labour and the Development of a Dual Economy." In: *Oxford Economic Papers, New Series* 19.3, pp. 288–312.

Keller, Carlos (1931). *La Eterna Crisis Chilena*. Santiago, Chile: Nascimiento, p. 323.

King, Gary, Michael Tomz, and Jason Wittenberg (2000). "Making the Most of Statistical Analyses: Improving Interpretation and Presentation." In: *American Journal of Political Science* 44.2, pp. 341–355.

Kirsch, Henry (1977). *Industrial Development in a Traditional Society: The Conflict of Entrepreneurship and Modernization in Chile*. The University Presses of Florida.

Kiser, Edgar (1994). "Markets and Hierarchies in Early Modern Tax Systems: A Principal-Agent Analysis." In: *Politics & Society* 22.3, pp. 284–315.

Krasner, Stephen (1985). *Structural Conflict: The Third World Against Global Liberalism*. University of California Press.

Kurtz, Marcus (2009). "The Social Foundations of Institutional Order: Reconsidering War and the "Resource Curse" in Third World State Building." In: *Politics & Society* 37.4, pp. 479–520.

Kurtz, Marcus (2013). *Latin American State Building in Comparative Perspective: Social Foundations of Institutional Order*. Cambridge University Press.

Kuznets, Simon (1961). "Economic Growth and the Contribution of Agriculture: Notes on Measurement." In: *1961 Conference, August 19-30, 1961, Cuernavaca, Morelos, Mexico*.

Lange, Matthew, James Mahoney, and Matthias vom Hau (2006). "Colonialism and Development: A Comparative Analysis of Spanish and British Colonies." In: *American Journal of Sociology* 111.5, pp. 1412–1462.

Lederman, Daniel (2005). *The Political Economy of Protection: Theory and the Chilean Experience*. Stanford, CA: Stanford University Press, p. 208.

Leifeld, Philip (2013). "texreg: Conversion of Statistical Model Output in R to LaTeX and HTML Tables." In: *Journal of Statistical Software* 55.8, pp. 1–24.

Leonard, Thomas et al. (2013). *Encyclopedia of U.S. - Latin American Relations*. 1st ed. CQ Press.

Levi, Margaret (1989). *Of Rule and Revenue*. University of California Press.

Liang, Kung-Yee and Scott Zeger (1986). "Longitudinal Data Analysis Using Generalized Linear Models." In: *Biometrika* 73.1, pp. 13–22.

Licht, Amanda (2011). "Change Comes with Time: Substantive Interpretation of Nonproportional Hazards in Event History Analysis." In: *Political Analysis* 19.2, pp. 227–243.

Mahon, James (2004). "Causes of Tax Reform in Latin America, 1977-95." In: *Latin American Research Review* 39.1, pp. 3–30.

Mahon, James, Marcelo Bergman, and Cynthia Arnson (2014). *Progressive Tax Reform and Equality in Latin America*. Ed. by James Mahon, Marcelo Bergman, and Cynthia Arnson.

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

Mamalakis, Markos (1969). "The Theory of Sectoral Clashes." In: *Latin American Research Review* 4.3, pp. 9–46.

Mamalakis, Markos (1971). "The Theory of Sectoral Clashes and Coalitions Revisited." In: *Latin American Research Review* 6.3, pp. 89–126.

Mamalakis, Markos (1976). *Growth and Structure of the Chilean Economy: From Independence to Allende*. Yale University Press.

Mares, Isabela and Didac Queralt (2015). "The Non-Democratic Origins of Income Taxation." In: *Comparative Political Studies* 48.14, pp. 1974–2009.

Marichal, Carlos (1989). *A Century of Debt Crises in Latin America: From Independence to the Great Depression, 1820-1930*. Princeton University Press.

McBride, George McCutchen (1936). *Chile: Land and Society*. Octagon Books.

Monson, Andrew and Walter Scheidel, eds. (2015). *Fiscal Regimes and the Political Economy of Premodern States*. Cambridge University Press, p. 603.

Moore, Mick (2004a). "Revenues, State Formation, and The Quality of Governance in Developing Countries." In: *International Political Science Review* 25.3, pp. 297–319.

Moore, Mick (2004b). "Taxation and the Political Agenda, North and South." In: *Forum for Development Studies* 1, pp. 7–32.

Musgrave, Richard (1992). "Schumpeter's Crisis of The Tax State: An Essay in Fiscal Sociology." In: *Journal of Evolutionary Economics* 2.2, pp. 89–113.

Nerlove, Marc (1994). "The Role of Agriculture in General Economic Development: A Reinterpretation of Jorgenson and Lewis." In: *Agricultural Development, Population Growth and the Environment: Lecture Notes for AREC 445*. Chap. 4.

Nicholls, William (1963). "An "Agricultural Surplus" as a Factor in Economic Development." In: *Journal of Political Economy* 71.1, pp. 1–29.

Pessino, Carola and Ricardo Fenochietto (2010). "Determining Countries' Tax Effort." In: *Hacienda Publica Espanola / Revista de Economía Pública* 195.4, pp. 65–87.

Ranis, Gustav and John Fei (1961). "A Theory of Economic Development." In: *The American Economic Review* 51.4, pp. 533–565.

Ranis, Gustav and John Fei (1964). *Development of the Labor Surplus Economy*. The Economic Growth Center, Yale University. Richard D.Irwin, Inc.

Rippy, James (1971). *Latin America and the Industrial Age*. Greenwood Press.

Robinson, James (2006). "Economic Development and Democracy." In: *Annual Review of Political Science* 9.1, pp. 503–527.

Ross, Michael (2004). "Does Taxation Lead to Representation?" In: *British Journal of Political Science* 34.2, pp. 229–249.

Sánchez, Omar (2011). *Mobilizing Resources in Latin America: The Political Economy of Tax Reform in Chile and Argentina*. New York, NY: Palgrave Macmillan.

Schneider, Aaron (2012). *State-Building and Tax Regimes in Central America*. Cambridge University Press.

Segall, Marcelo (1953). *Desarrollo del Capitalismo en Chile: Cinco Ensayos Dialecticos*. Del Pacifi. Santiago, Chile, p. 353.

Skott, Peter and Mehrene Larudee (1998). "Uneven Development and the Liberalisation of Trade and Capital Flows: The Case of Mexico." In: *Cambridge Journal of Economics* 22.3, pp. 277–295.

Soifer, Hillel (2015). *State Building in Latin America*.

Sokoloff, Kenneth and Eric Zolt (2007). *Inequality and the Evolution of Institutions of Taxation: Evidence from the Economic History of the Americas*. July, pp. 83–136.

Therneau, Terry (2015). *survival: Package for Survival Analysis*. R package version 2.38-3.

Thies, Cameron (2005). "War, Rivalry, and State Building in Latin America." In: *American Journal of Political Science* 49.3, pp. 451–465.

Thies, Cameron, Olga Chyzh, and Mark Nieman (2016). "The Spatial Dimensions of State Fiscal Capacity The Mechanisms of International Influence on Domestic Extractive Efforts." In: *Political Science Research and Methods* 4.01, pp. 5–26.

Unda, Mónica (2017). "A Tale of Two Taxes: The Diverging Fates of the Federal Property and Income Tax Decrees in Post-Revolutionary Mexico." In: *Investigaciones de Historia Económica - Economic History Research* 13.2, pp. 107–116.

Uribe-Uran, Victor (2001). *State and Society in Spanish America during the Age of Revolution*. Rowman & Littlefield Publishers.

Ventura, Juan and María Elena Armas (2013). "Beneficios Tributarios en la Ley del Impuesto Sobre la Renta." In: *Comercium et Tributum* 10, pp. 25–44.

Vollrath, Dietrich (2009). "The Dual Economy in Long-Run Development." In: *Journal of Economic Growth* 14.4, pp. 287–312.

Wawro, Gregory (2002). "Estimating Dynamic Panel Data Models in Political Science." In: *Political Analysis* 10.1, pp. 25–48.

Westgate, Philip and Woodrow Burchett (2017). "A Comparison of Correlation Structure Selection Penalties for Generalized Estimating Equations." In: *The American Statistician* 71.4, pp. 344–353.

Wimmer, Andreas (2016). "Is Diversity Detrimental? Ethnic Fractionalization, Public Goods Provision, and the Historical Legacies of Stateness." In: *Comparative Political Studies* 49.11, pp. 1407–1445.

Wright, Thomas (1975). "Agriculture and Protectionism in Chile, 1880-1930." In: *Journal of Latin American Studies* 7.1, pp. 45–58.

Yun-Casalilla, Bartolomé, Patrick O'Brien, and Francisco Comín Comín, eds. (2015). *The Rise of Fiscal States: A Global History, 1500-1914*. Cambridge University Press.

Zeitlin, Maurice (1984). *The Civil Wars in Chile: (or The Bourgeois Revolutions that Never Were)*. Princeton University Press.

Zorn, Christopher (2006). "Comparing GEE and Robust Standard Errors for Conditionally Dependent Data." In: *Political Research Quarterly* 59.3, pp. 329–341.

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VI. Online Appendix

I. Kaplan-Meier Curves: Ruling out Spurious Time Dependency

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 OA1 shows the failure rate of the sample average country of implementing the income tax, if industrial development had increased/decreased by half ("rapid"/"slow").[39] The figure 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. It is important to note that this figure shows the unparameterized behavior of the failure rate, e.g., the *empirical* distribution of failures that comes directly out of the data, before any model is actually estimated. In other words, this is the dependent variable estimated in the Cox models.

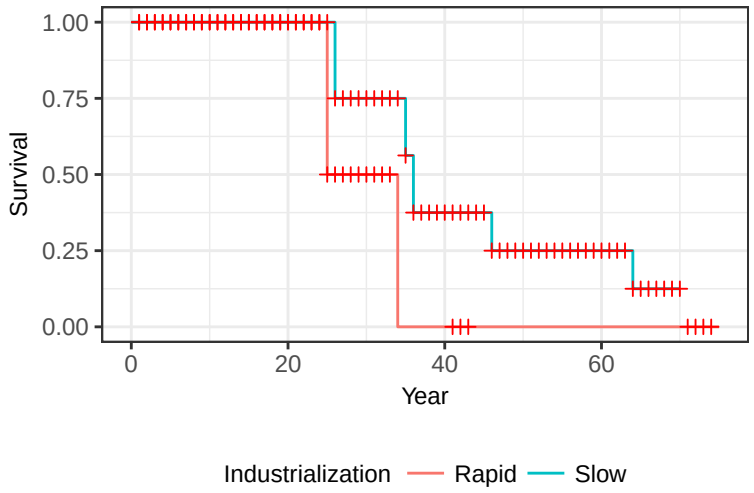

Figure OA1: *Kaplan-Meier Curves: Size of the Industrial Sector and the Accelerated Rate of the Imposition of Income Tax Law*

[39] "Failure" in this case means "implementing" the income tax law.

II. Alternative Models: Lagged-logged Independent Variables and Spatial Dependency

Model 1 is a Cox regression, but with lagged logged variables. By including time-transformed variables, in the form of a lagged independent variable—to account for partial adjustment of behavior (Wawro 2002)—it is possible "the use of the natural log transformation [to capture] different forms (or "shapes") of the baseline hazard" (Box-Steffensmeier and Jones 2004, p. 75). Model 2 accounts for possible spatial-temporal dependence.[40] Given that most countries in the sample are contiguous neighbors, it is reasonable to expect a "domino" effect.[41] Theoretically, being the first country in implementing the income tax might not require the same level of domestic "effort" as being the last one. Early-implementers might not have prior experience, making it 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.[42]

	(1) Cox (1 lag, ln)	(2) Spatial Dependence
Manufacture Output$_{t-1}$ (ln)	7.685**	
	(3.333)	
Agricultural Output$_{t-1}$ (ln)	−6.971**	
	(3.227)	
Total Population (ln)	5.059**	4.676*
	(2.228)	(2.682)
Manufacture Output (ln)		7.148
		(4.815)
Agricultural Output (ln)		−6.465
		(4.636)
AIC	10.894	11.056
R^2	0.068	0.065
Max. R^2	0.088	0.085
Num. events	9	9
Num. obs.	232	241
Missings	0	0
PH test	0.877	0.667

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

Table OA1: *Sectoral Origins of Income Taxation: Alternative Explanations*

[40] I thank both Christopher Zorn and David Darmofal for this suggestion.
[41] For a more detailed spatial take on fiscal expansion, see Thies, Chyzh, and Nieman (2016).
[42] I clustered the standard errors at the counting variable level. Clustering by the counting variable allows me to cluster by early or late implementers.