

Income Taxation and State Capacities in Chile: measuring institutional development using historical earthquake data

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April 21, 2017

Abstract

Building on the fiscal sociology paradigm, this paper argues that the development of the modern fiscal apparatus in Chile was product of a sectoral conflict around in the 1920's between the industrial and agricultural political elites. Particularly, this paper identifies the importance of the income tax, explaining and measuring how the tax contributed to the expansion of state capacities at the subnational level. Exploiting the quasi-randomness of earthquake shocks, I leverage a novel historical earthquake death tolls dataset and a Bayesian multilevel Poisson model to measure state capacities at the local level between 1900 and 2010. The results suggest that the implementation of the income tax has historically decreased the proportion of local deaths, and that the effect has been stronger in industrial localities. These two findings combined point out to the positive effects the emergence of a political challenger had on state-building.

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*I thank Robert Kaufman, Daniel Kelemen, Douglas Blair, Paul Poast for all the useful comments. I also thank the School of Arts and Sciences at Rutgers for granting me funds to collect part of the data used in this project. All errors are my own.

Students of the Latin American states have several *theories* to explain the causes and consequences of state capacities. Scholars also have countless alternatives to *measure* state capacities. However, there exists a huge deficit. Most state formation theories (just to name a few) are situated during precolonial times,¹ or during early² or late³ independent Latin America. Yet, we lack of a measurement that corresponds *temporally* with the theories we have. While our explanations of state-making are *historical* in nature, in practice, most available measurements capture *contemporary* levels of stateness. In this paper I try to bridge this gap by providing an explanation on the origins of state capacities in Latin America and a corresponding indicator able to capture *historical* levels of state capacities. This paper then seeks to contribute to the state formation literature in general, both from a theoretical and methodological perspectives.

Building on the fiscal sociology paradigm,⁴ I argue that the implementation of the income tax contributed to form the Latin American state. And that the income tax was product of an inter-sectoral conflict between agricultural and industrial elites (see Figure 1). Analytically, I consider sectoral conflicts the spring of both fiscal expansion and state development. Economic sectors not only shape the economic landscape. Given that each sector has a corresponding political arm, the *sectoral economic* conflict is also a *political* conflict.⁵ Sectoral conflicts find their origins in the economic structural transformation characterized by “a secular decline of agriculture and substantial expansion of manufacturing.”⁶ These gradual long-term changes imposed tight constraints on the way politics was run by the incumbent landowning class, who had inherited its institutional privileges since colonial times.⁷ Exploiting the quasi-randomness of earthquake shocks, I leverage a novel historical dataset on Chilean earthquake death tolls and a Bayesian multilevel Poisson model to measure state capacities at the local level between 1900 and 2010. The capacity the Chilean state has had of enforcing and monitoring building codes throughout the territory has been a *reflexion* of the Chilean *overall* state capacities. I capture these state efforts (and the *outcomes* of these efforts) throughout time at the subnational level. The results suggest that the implementation of the income tax has historically decreased the count of local deaths. This effect has been stronger in industrial localities, suggesting that the predominance of an institutional order that benefits the economic and political challenger (i.e. the industrial sector), increases overall state capacities. The rest of the paper proceeds as follows

pending.

¹Mahoney [2010].

²See Kurtz [2013] and Soifer [2015].

³Bahamonde [2017b].

⁴For an excellent overview of both classic and new fiscal sociology refer to Martin et al. [2009, Ch. 1].

⁵Bahamonde [2017a].

⁶Johnston and Mellor [1961, 567].

⁷Bahamonde [2017b].

Figure 1: *Causal Mechanism*



I. FISCAL SOCIOLOGY, SECTORAL CONFLICTS AND STATE CONSOLIDATION

The expansion of the fiscal system has a long tradition of being associated with sectoral conflicts. For example, Schumpeter sees “taxation in terms of group conflicts,”⁸ while others see taxation as “an outcome of economic relations.”⁹ Following this tradition, I sketch the theory around the sectoral conflict that existed between the industrial and agricultural elites in Latin America. Class conflicts are more likely to resolve in favor of direct taxation when income inequality *among the elite* is low.¹⁰ Given that similar degrees of sectoral economic development can be converted into armies of similar capabilities,¹¹ elites will have incentives to reach agreements rather than engaging in conflict when their economic/military capacities are similar. This is because when levels of inter-elite inequality are low, war is more likely to exhaust all existent assets without producing positive outcomes for either sector,¹² putting then pressures to reach agreements instead of engaging in armed conflicts. In the Latin American context, considering the initial institutional and economical advantages the agricultural sector enjoyed since colonial times, reducing inter-elite inequality meant a rapid expansion of the industrial sector. Elsewhere, I have argued that the emergence of a strong industrial elite altered not only the structure of the economy but also the inter-sectoral balance of political power, making unsustainable the political monopoly run by the landed elites.¹³

A theory focused on sectoral conflicts offers also a theory of state consolidation. As others have argued, “state formation will be more likely to the degree that powerful individual actors form two groups on the basis of divergent economic and political interests.”¹⁴ State centralization affects landowners and industrialists in different ways. Consequently, every sector will have different preferences towards taxation and state centralization.¹⁵ On the one hand, as land fixity increases the risk premium of the landed elite’s main asset,¹⁶ they systematically resisted taxation. On the other hand, as capital could be reinvested in nontaxable sectors, industrialists’ preferences toward

⁸Monson and Scheidel [2015, 14].

⁹Seligman (1895). In Martin et al. [2009, 7].

¹⁰Tani [1966, 157] explains that the absence of “wealth groups” makes passing an income tax law easier.

¹¹Boix [2015].

¹²Richard Salvucci in Uribe-Uran [2001, 48].

¹³Bahamonde [2017b].

¹⁴Hechter and Brustein [1980, 1085].

¹⁵See Acemoglu and Robinson [2009, 289] and Best [1976, 50].

¹⁶Robinson [2006, 512].

taxation were more elastic.¹⁷ Going beyond the conflictive nature of the implementation of the income tax, its very implementation produced a secular accumulation of know-how, particularly, of technologies able to monitor individual incomes. Observing individual economies and transforming private income into public property is what *causes* state consolidation.¹⁸ In fact, Musgrave [1992, 99] argues that since taxation (specially on incomes) requires such a high degree of state penetration, public finances offer the key for a theory of state-building.¹⁹ And while some situate the relevant state-building critical juncture at the end of the colonial period, before the class compromises I identify in this paper,²⁰ the implementation of the income tax was an important building block in this process.

In all Latin American economies during and right after the colonial period, agriculture was the most important sector.²¹ And by extension, agricultural political elites were the most powerful elite.²² Particularly for the Chilean case, Collier and Collier [2002, 106] have argued that initially the “national government was dominated by the central part of the country, with owners of large agricultural holdings playing a predominant role.”²³ There existed an important asymmetry, however. While both the agricultural and industrial sectors were growing at the same pace (see Figure 2), the latter were kept from participating in politics under fair conditions. This asymmetry led these two ‘antagonistic elites’²⁴ to two bloody civil wars. Zeitlin [1984, 23] argues that the civil wars challenged a “large landed property [elite against a] productive capital [elite].” However, war was not sustainable over time. Given their relative similar degrees of economic development and military capacities, the two elites opted for a political compromise.²⁵ In 1924, industrial elites accepted to be income taxed by agriculturalist incumbents in exchange of having a more open political system. The non-agricultural sector “(reluctantly) accepted taxation, *while demanding state services and expecting to influence how tax revenues were spent.*”²⁶ In this paper I measure the extent these

¹⁷Hirschman [1970] and Ronald Rogowski in Drake and McCubbins [1998, ch. 4]. However, see Bates and Lien [1985, 15].

¹⁸Musgrave [1992, 98] and Moore [2004b, 298].

¹⁹Indirect taxes are, *ceteris paribus*, easier to levy, and hence this kind of revenue is generally considered “unearned income” (Moore [2004b, 304]) or “easy-to-collect source of revenues” (Coatsworth and Williamson [2002, 10]). Given the relatively lower costs states have to incur to collect them, indirect taxes have a very low impact on state-building (Moore [2004a, 14]). Krasner [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.” In fact, when early Latin American states depended heavily on the taxation of international trade, the state apparatus tended to be less developed (Campbell [1993, 177]). 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 (Bertola and Ocampo [2012, 132]).

²⁰Kurtz [2009, 2013], Soifer [2015]

²¹Keller [1931, 13].

²²Wright [1975, 45-46].

²³Similarly, 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.

²⁴Keller [1931, 37-38].

²⁵Geddes [1991] argues that competition between two rival parties of about the same size creates clearer incentives to invest in political institutions.

²⁶Carmenza Gallo, in Brautigam et al. [2008, 165]. Emphases are mine. She refers specifically to nitrate producers.

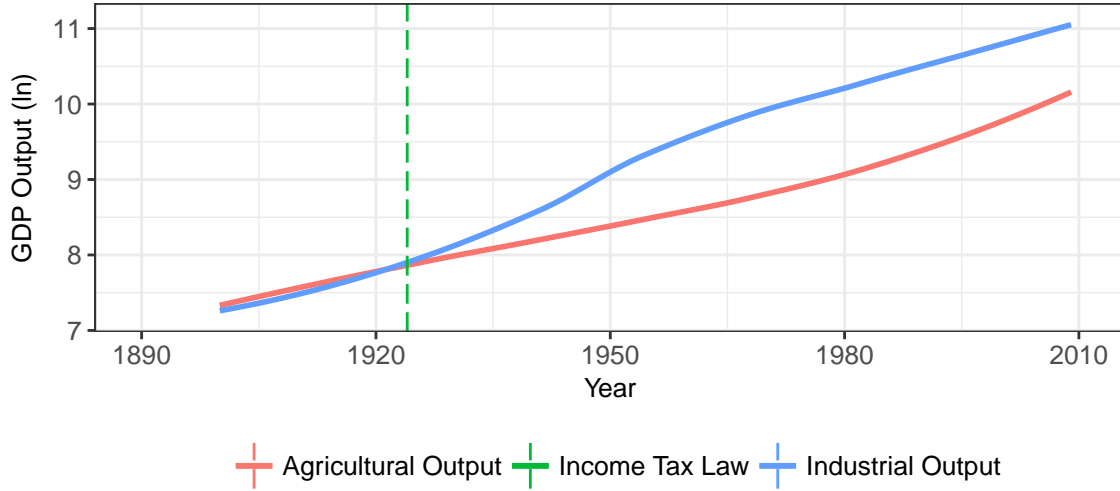


Figure 2: *Industrial and Agricultural Outputs, and The Passage of the Income Tax Law in Chile*

services actually helped the Chilean state to consolidate further, boosting its overall state capacities.

II. FROM EARTHQUAKE DEATH TOLLS TO STATE CAPACITIES

More than being blessed, the literature is in fact cursed with the over abundance of poor indicators of state capacities.²⁷ Soifer [2012, 589] explains that there exists a “veritable industry of indices measuring state weakness, state failure, and state fragility [which] has cropped up in recent years.” Yet, as Fukuyama [2013, 347] explains, its abundance “points to the poor state of empirical measures of the quality of states.” The literature points out to two main concerns. First, ‘most fragility indices barely satisfy scientific standards.’²⁸ And second, most indices are conflated with analytical and conceptual problems. For example, often times analyst measure state capacities looking at the capacity of the state of protecting the rule of law or the independence of the judiciary.²⁹ However, as Kurtz and Schrank [2007, 543] correctly explain, these measures are confounded “with policy preferences over the structure of private property rights.” This is problematic since the sources of these data are elite interviews. To “the extent that public bureaucracies *are* effective in imposing taxes or regulatory demands [...] they are likely to be judged ‘burdensome’ and ‘growth-inhibiting’ by many businesspersons,”³⁰ introducing in this way systematic measurement error.³¹ Expert surveys

²⁷Hanson and Sigman [2013, 10] compiled 24 different types of measurements of state-capacities, while Mata and Ziaja constructed a combined measurement of 12 other indicators.

²⁸Mata and Ziaja, 35.

²⁹See for example Besley and Persson [2009, 1237].

³⁰Kurtz and Schrank [2007, 542]. Emphasis in original.

³¹See also Kurtz and Schrank [2012, 618].

suffer from the same problem.³² Beyond measurement, the problem is conceptual as well. As Soifer [2008, 247] puts it, there is a widely spread “problem of misalignment between dimension and indicator.” For example, the U.S.S.R. did have a strong state, however it did not protect property rights.³³ Furthermore, the World Bank offers a series of widely used indicators. These series are “[c]learly, the most comprehensive source for cross-national measures of governance.”³⁴ One of the dimensions is the absence of violence. However, “there isn’t much byway of street crime or military coup attempts in North Korea,”³⁵ a state that can barely provide basic services to its population. Others have focused on tax rates.³⁶ However, in late imperial China, “the high taxes on peasants [...] were the result of rulers’ lack of power. Chinese rulers consistently attempted to limit official’s excessive extractions from the masses, but were unable to do so.”³⁷

This paper identifies a third limitation. Besides of their conceptual and analytical problems, most measurements provide a rough approximation of *contemporary* state capacities. Just to name a few examples, Soifer [2012, 585] “builds a new measure of state capacity for [...] contemporary Latin America [combining] multiple dimensions (extraction, security, and the administration of basic services).” Kurtz and Schrank [2012, 618-619] propose an experimental design based on list-experiments³⁸ to study (in an unbiased way) bureaucrat’s opinion on whether “the bureaucracy was really based on a competitive, meritocratic process; whether tenure protections are effective; whether extralegal payments or extortion take place,” among others. Finally, Soifer and Luna [2016] employ a survey-based design to measure sub-national state capacities. While these measurements overcome the problems mentioned above, they do not help us to study state capacities in a historical setup. Economic historians and students of political development have offered other measures that seek (or could potentially be used) to capture historical levels of state capacities, such as the opening of postal offices,³⁹ the administration of national censuses,⁴⁰ vaccination,⁴¹ the investment in public goods such as infrastructure, roads,⁴² electrification (measured as light intensity per pixel),⁴³ and railroads.⁴⁴ Others have used economic growth,⁴⁵ which is also problematic.

To solve these limitations, I propose earthquake death tolls as an alternative measurement of

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explain why

³²Fukuyama [2013, 349].

³³Hence, it is advisable to “explicitly avoid an emphasis on outputs that are at the center of political or policy debates, such as property rights” (Kurtz and Schrank [2012, 619]).

³⁴Kurtz and Schrank [2007, 543].

³⁵Fukuyama [2013, 348].

³⁶Besley and Persson [2014].

³⁷Kiser and Tong [1992, 301].

³⁸Refer to Aronow et al. [2014], Blair and Imai [2012], Blair et al. [2014], Corstange [2008, 2010], Glynn [2013], Imai [2011], Imai et al. [2015], Kane et al. [2004], Kiewiet de Jonge [2015].

³⁹See for example Acemoglu et al. [2016].

⁴⁰See for example Soifer [2013] and Centeno [2002].

⁴¹Soifer [2012].

⁴²See for example Mann [1984, 2008], Acemoglu [2005], Saylor [2012], Thies [2009], Besley and Persson [2010]. However see Soifer and vom Hau [2008, 226].

⁴³Huntington and Wibbels [2014].

⁴⁴Saylor [2012, 302] and Coatsworth [1974]. However, this measurement is debatable since “railroads were often constructed by private actors” (Soifer [2012, 593], footnote #11).

⁴⁵Fearon and Laitin [2003].

historical state capacities. Building on Mann [1984, 113], the proposed measurement also captures state's 'infrastructural' power.⁴⁶ "Natural hazards can be seen as a function of a specific natural process and human [...] activity."⁴⁷ Since disasters happen at random, the only part that is left unexplained is the systematic human component, which is what the measurement captures. Earthquakes, in particular, happen at random, and hence they represent a completely exogenous shock to the affected locality.⁴⁸ Earthquakes are orthogonal to levels of state and economic development development too,⁴⁹ and by extension, they happen at any level of state capacity. Consequently, keeping earthquake magnitudes constant, (weighted) death counts should be attributed to the (in)capacity of the states of investing in preparedness and mitigation institutions.⁵⁰

The capacity states have of deploying inspectors throughout the territory to enforce quake-sensitive zoning and building codes is a reflexion of the overall levels of a country's state capacity. Since "[e]arthquake-resistant construction depends on responsible governance,"⁵¹ state capacities act as a scope condition, particularly, undermining or permitting the *implementation* of these norms. For example, Bilham [2013, 169] explains that "although engineering codes may *exist* [...], mechanisms to *implement* these codes are largely unavailable"⁵² in low-capacity states. And such, this type of measurement captures state outcomes.⁵³ The literature on construction agrees on that "[e]arthquake-resistant features are costly to verify after construction is complete [...] Steel reinforcement bars make a well-known contribution to earthquake resistance in concrete buildings[,], not only is the steel itself invisible [...] but the durability of the steel depends on the quality and quantity of concrete around it."⁵⁴ This is the so called 'cover-up' concept: "inappropriate foundations can be hidden beneath walls, shoddily assembled steel work can be hidden beneath concrete [and] poorly mixed concrete can be hidden behind paint."⁵⁵ Only states with higher capacities overcome their logistic limitations and successfully enforce these regulations at the local level. As others argue,

⁴⁶He defines infrastructural power as "the capacity of the state [to] actually [...] penetrate civil society, and to implement logistically political decisions throughout the realm."

⁴⁷Raschky [2008, 627].

⁴⁸Brancati [2007, 728] explains that "earthquakes constitute a natural experiment." Gignoux and Menéndez [2016, 27] also point out "that the occurrence of earthquakes can be viewed as quasi-random [allowing the analyses of] these events as a set of repeated social experiments." Caruso [2017, 32, unpublished] also "[exploits] the exogenous variation in the location and timing of natural disasters, as well as the exposure of different cohorts to the shock."

⁴⁹Kahn [2005, 271] and Brancati [2007].

⁵⁰To make sure, while "earthquakes may not be preventable, it is possible to prevent the disasters they cause" (Escaleras et al. [2007, 209]). Similarly, Anbarci et al. [2005, 1911] explain that "the potentially devastating effects of major earthquakes are, if not preventable, at least subject to significant mitigation." For a similar approach, see Noji [1996, 130].

⁵¹Ambraseys and Bilham [2011, 153].

⁵²Emphases are mine.

⁵³Fukuyama [2013] is very critical of 'outcome-oriented' measurements. However, this outcome is different. Unlike the proportion of tax over GDP which could end up being wasted (p. 353), or "educational outcomes [which depend] much more strongly on factors like friends and family" (p. 355), death tolls associated to earthquakes are *not* 'hard to measure' (p. 356) neither they are subject to 'normative' concerns. I also disagree in that 'econometric techniques' to control for these and other factors add 'another layer of complexity.' Similarly, Kurtz and Schrank [2012, 619] explain that the "problem [...] with output based measures is that they necessarily include information on policy choice." However, it would be hard to say that people's lives are subject to ideological or policy 'preferences.'

⁵⁴Keefer et al. [2011, 1531].

⁵⁵Bilham [2013, 167].

“the effects of natural hazards [do] not solely depend on a region’s topographic or climatic exposure to natural processes [...] but [on] the region’s *institutional* vulnerability.”⁵⁶

Properly enforced and implemented building codes, among other mitigation measures, not only save lives. These kinds of institutions embody the most basic form of social contract that exists between the state and its subjects. The collapse of commerce buildings and private houses trigger higher levels of looting and social unrest. States are interested in preventing looting and social unrest because elected officials, as the visible faces *the* state, care not only about their electoral survival, but also about the legitimacy of whole apparatus. That is, in the event of social unrest, not only the essential social Hobbesian-like contract is broken but also the expectations for social peace and the ability of the state to monopolize physical violence are questioned.⁵⁷ The physical presence of the state literally crumbles when institutions of social coercion and discipline such as state schools, prisons and police stations, collapse. For example, when the 7.0 earthquake hit Haiti in 2010, the *Prison Civile de Port-au-Prince* had a population of 4,500 inmates. During the quake, five inmates died. As a prison guard describes, *everyone escaped. Everyone. Except the dead*. This natural disaster exacerbated the already existent chaos, freeing “gang bosses, kidnappers, gunmen,” among others.⁵⁸ Critically, under these circumstances, the legitimacy of the state, and particularly, the *tax state*, reduces to zero. Thus, officials (elected or unelected), care about the potentially negative outcomes the lack of building code enforcement might cause. For humanitarian or selfish reasons, it is in their best interest to make sure that these institutions are enforced throughout the territory. Should the state fail, its extractive enterprise will be the first one in being scrutinized.

This measurement has a number of advantages and disadvantages. Unlike survey-based or policy-based measures, earthquake death tolls are an *objective* measurement of earthquake preparedness,⁵⁹ an activity that *any* state *must* perform.⁶⁰ Kurtz [2013, 58] for example explains that “the best measures [of state capacities] would be of the sorts of activities that all (or nearly all) states consider to be of primary importance.” Soifer [2008, 235-236] divides the state infrastructural power in three layers, ‘national capabilities,’⁶¹ the ‘weight of the state’⁶² and a ‘subnational’ component which tracks “the ability of the state to exercise control within its territory.” Given that death tolls are a function of how building codes are *enforced* by the state *throughout the territory*, earthquake

⁵⁶Raschky [2008, 628]. Emphasis is mine.

⁵⁷Others have studied how in some context earthquakes damage interpersonal trust. For example, Carlin et al. [2014, 419] argue that “state capacity plays a decisive role in determining natural disasters’ consequences for social capital.”

⁵⁸Reed [2011]. See also Laursen [2010].

⁵⁹That is, “it does not rely on an effort to measure the beliefs of citizens about the nature of the state, the legitimacy of its leaders or the institutional procedures that selected them, or even perceptions of the efficiency of public bureaucracies” (Kurtz and Schrank [2012, 616]).

⁶⁰I agree with Kurtz and Schrank [2012, 619] in that an “output-linked approach [...] should only examine public sector outputs that are not particularly politicized, and generally perceived to be essential state functions across a very broad set of states.” In fact, he mentions building codes as one possibility.

⁶¹This layer ‘sees state infrastructural power as a characteristic of the central state’.

⁶²This relates to ‘how the exercise of state power shapes the society it controls.’

death tolls (as a measurement of state capacities) map well into the first and third components. For example, [Anbarci et al. \[2005, 1910\]](#) explain that “while Iran has building codes which are comparable to those existing in the United States, they tend to be enforced only in the country’s larger cities,” failing to monitor the countryside, which was where most of the deaths occurred in the 6.4 earthquake in Changureh in 2002.⁶³ This measurement has a number of drawbacks, however. Obviously, the country needs to have earthquakes, possibly limiting the number of potential cases. However, most “earthquakes occur at the various borders of the Pacific plate, the Western border of the Latin American plate, and the boundaries between the African, the Arabic and the Indian plates and the Eurasian plate,” allowing potential cross-country comparisons within most of the developing world.⁶⁴ There are countries, like India or the United States, where earthquakes happen in certain regions only, and presumably, state earthquake mitigation policies are targeted to specific areas, possibly undermining the assumption that these kinds of policies should penetrate the ‘entire’ territory.⁶⁵ Another potential concern is that the ability of counting the death might be a function of state capacities itself.⁶⁶ However, civic organizations, the Catholic Church, and particularly, the press (national and local) have been the main entities who willingly or not have carried out the task of enumerating casualties. Another concern has to do with the measurement of the magnitudes. Before the instrumental period, magnitudes were obtained in an estimative way. And while there are methods to approximate historical felt magnitudes to instrumental-like intensities,⁶⁷ this unfortunately adds more than one layer of complexity. All in all, this measurement offers a rough approximation of historical state capacities. And while some econometric techniques might ameliorate some of the problems, it is unlikely that they disappear completely.

I. Multilevel Analyses

III. APPENDIX

In this section I model the number of dead individuals caused by earthquakes.

The data are fitted using a Bayesian Poisson regression. The main independent variables are the

⁶³Similarly, [Bardhan \[2016, 865\]](#) explains that “unlike in the case of some macroeconomic policies, [...] the effectiveness of the state varies enormously across localities and administrative levels within the same country.”

⁶⁴[Keefer et al. \[2011, 1534\]](#). From a population size perspective, this measurement is also convenient. A “quarter of the world’s population inhabits [...] the northern edge of the Arabian and Indian Plates that are colliding with the southern margin of the Eurasian Plate” ([Bilham and Gaur \[2013, 618\]](#)). Finally, other measurements also are contingent on the context. For example, [Soifer \[2012, 593\]](#) proposes a measurement of administrative capacities focusing on how states are able to enforce voter registration ‘where voting is mandatory.’ This strategy evidently shortens the sample to only democratic countries, introducing potential sample selection biases.

⁶⁵[Dunbar et al. \[2003, 164\]](#) explains that the Indian state implements targeted policies (that might not necessarily correspond to the administrative areas) based on isoseismal maps that define different zones of seismic hazard.

⁶⁶If this were true, states with higher capacities would have higher death tolls, while states with lower capacities, due to their incapacity to count, lower death tolls.

⁶⁷[Szeliga et al. \[2010\]](#).

Include summary stats here. Explain what’s national and what’s sub-national.

proportion of national agriculture output relative to industrial output and a dummy for whether in year t the law of income tax had been implemented. I expect the yearly death tolls to be lower when the national proportion of agricultural production decreases, when the law of income taxation has been passed, and where the industry predominates at the local level. The model controls for local population, an indicator for local urban/rural, and earthquake magnitude.

Since the ‘treatment,’ i.e. the proportion of agricultural output relative to industrial output, and the implementation of the income tax, takes place at the national level but the outcome (death tolls associated to earthquakes) is measured at the local level, I implement a multilevel model.⁶⁸

Particularly, I include year fixed-effects to account for unobservable/unmeasured yearly factors such as the evolution of the political system, demographic, climate and cultural changes, economic shocks (both national and international), and others. Particularly, the multilevel component of [Equation 1](#) allows the slopes of the national proportion of agriculture relative to industry (β_{1j}) and the earthquake’s magnitude (β_{2j}) to vary by subnational sectoral predominance indexed by j . I consider whether affected localities were predominantly *agricultural*, *industrial* or *mixed*.

The latitude where the earthquake occurred was included to control for the proximity to the Andean mountains. This variable controls for a built-in tectonic predisposition of a higher propensity of earthquakes. Longitude controls for climate and other unobserved conditions that make agricultural development more difficult. In turn, both measurements serve as good proxies for terrain ruggedness and the difficulties the state had to face to centralize political power. [More](#) formally, I fit the next equation,

See if I included this lit. already.

$$\begin{aligned} \text{Deaths} &\sim \text{Poisson}(\lambda_i) \\ \log(\lambda_i) &= \mu + \beta_{1j} \text{Proportion}_i + \beta_{2j} \text{Magnitude}_i + \beta_3 \text{Tax}_i + \\ &\quad \beta_4 \text{Population}_i + \beta_5 \text{Urban}_i + \\ &\quad \beta_6 \text{Latitude}_i + \beta_7 \text{Longitude}_i + \beta_{8t} \text{Year}_i \end{aligned} \tag{1}$$

where,

$$\begin{aligned} i_{1,\dots,I} &\text{ where } I = 91 \\ j_{1,\dots,J} &\text{ where } J = 3 \\ t_{1,\dots,T} &\text{ where } T = 59. \end{aligned} \tag{2}$$

The i subscript denotes the unit of analysis (i.e. earthquake),⁶⁹ the j index expresses the type of

⁶⁸Gelman and Hill [2006, 237].

⁶⁹Kahn [2005, 278] follows the same strategy.

sub-national economic composition of the affected locality (agricultural, industrial, or mixed), and the t subscript denotes the year when earthquake i happened. Finally, μ is the intercept. Since earthquakes can happen more than once per year, in my dataset $i > t$.⁷⁰ The estimated parameters β_k have uninformative normally distributed priors, while the precisions τ_p of β_{1_j} , β_{2_j} and β_{8_t} have uninformative Gamma priors, of the form,

$$\begin{aligned}\beta_{k,\dots K} &\sim \mathcal{N}(0, 0.01) \text{ where } K = 8 \\ \tau_{p,\dots P} &\sim \mathcal{G}(0.5, 0.001) \text{ where } P = 3.\end{aligned}\tag{3}$$

⁷⁰For the years in which there is just one earthquake, the ‘group’ variable has only one observation. This does not endanger the robustness of the model. [Gelman and Hill \[2006, 276\]](#) explains that it “is even acceptable to have one observation in many of the groups.”

..... **Word count: 6,324**

REFERENCES

- Daron Acemoglu. Politics and Economics in Weak and Strong States. *Journal of Monetary Economics*, 52(7):1199–1226, 2005. ISSN 03043932. doi: 10.1016/j.jmoneco.2005.05.001.
- Daron Acemoglu and James Robinson. *Economic Origins of Dictatorship and Democracy*. Cambridge University Press, 2009.
- Daron Acemoglu, Jacob Moscona, and James Robinson. State Capacity and American Technology: Evidence from the 19th Century. Technical report, National Bureau of Economic Research, Cambridge, MA, jan 2016. URL <http://www.nber.org/papers/w21932.pdf>.
- Nicholas Ambraseys and Roger Bilham. Corruption Kills. *Nature*, 469(7329):153–155, jan 2011. ISSN 0028-0836. doi: 10.1038/469153a. URL [10.1038/469153a{ }5Cnhttps://ezproxy.royalroads.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true{&}db=a9h{&}AN=57324185http://www.nature.com/doifinder/10.1038/469153a](https://ezproxy.royalroads.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=57324185http://www.nature.com/doifinder/10.1038/469153a).
- Nejat Anbarci, Monica Escaleras, and Charles Register. Earthquake Fatalities: The Interaction of Nature and Political Economy. *Journal of Public Economics*, 89(9-10):1907–1933, sep 2005. ISSN 00472727. doi: 10.1016/j.jpubeco.2004.08.002. URL <http://linkinghub.elsevier.com/retrieve/pii/S0047272704001525>.
- Peter Aronow, Alexander Coppock, Forrest Crawford, and Donald Green. Combining List Experiment and Direct Question Estimates of Sensitive Behavior Prevalence. 2014.
- 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. Sectoral origins of income taxation: Industrial development and the case of chile (1900-2010). 2017b. URL https://github.com/hbahamonde/IncomeTaxAdoption/raw/master/Bahamonde_IncomeTaxAdoption.pdf.
- Pranab Bardhan. State and Development: The Need for a Reappraisal of the Current Literature. *Journal of Economic Literature*, 54(3):862–892, sep 2016. ISSN 0022-0515. doi: 10.1257/jel.20151239. URL <http://pubs.aeaweb.org/doi/10.1257/jel.20151239>.
- 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>.

- Luis Bertola and Jose Antonio Ocampo. *The Economic Development of Latin America since Independence*. Oxford University Press, 2012. URL <https://global.oup.com/academic/product/the-economic-development-of-latin-america-since-independence-9780199662142?cc=us&lang=en&>.
- Timothy Besley and Torsten Persson. The Origins of State Capacity: Property Rights, Taxation, and Politics. *American Economic Review*, 99(4):1218–1244, aug 2009. ISSN 0002-8282. doi: 10.1257/aer.99.4.1218. URL <http://pubs.aeaweb.org/doi/abs/10.1257/aer.99.4.1218>.
- Timothy Besley and Torsten Persson. State Capacity, Conflict, and Development. *Econometrica*, 78(1):1–34, 2010. ISSN 0012-9682. doi: 10.3982/ECTA8073. URL <http://www.wiley.com/bw/journal.asp?ref=0012-9682http://doi.wiley.com/10.3982/ECTA8073>.
- Timothy Besley and Torsten Persson. Why Do Developing Countries Tax So Little? *Journal of Economic Perspectives*, 28(4):99–120, 2014.
- Michael Best. Political Power and Tax Revenues in Central America. *Journal of Development Economics*, 3(1):49–82, 1976. ISSN 03043878. doi: 10.1016/0304-3878(76)90040-7.
- Roger Bilham. Societal and Observational Problems in Earthquake Risk Assessments and their Delivery to Those Most at Risk. *Tectonophysics*, 584:166–173, jan 2013. ISSN 00401951. doi: 10.1016/j.tecto.2012.03.023. URL <http://linkinghub.elsevier.com/retrieve/pii/S0040195112001783>.
- Roger Bilham and Vinod Gaur. Buildings as Weapons of Mass Destruction. *Science*, 341(6146):618–619, aug 2013. ISSN 0036-8075. doi: 10.1126/science.1238476. URL <http://www.sciencemag.org/content/341/6146/618.shorthhttp://www.sciencemag.org/cgi/doi/10.1126/science.1238476>.
- Graeme Blair and Kosuke Imai. Statistical Analysis of List Experiments. *Political Analysis*, 20(1): 47–77, jan 2012. ISSN 1047-1987. doi: 10.1093/pan/mpr048. URL <http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpr048>.
- Graeme Blair, Kosuke Imai, and Jason Lyall. Comparing and Combining List and Endorsement Experiments: Evidence from Afghanistan. *American Journal of Political Science*, 58(4):1043–1063, 2014. ISSN 00925853. doi: 10.1111/ajps.12086.
- Carles Boix. *Political Order and Inequality: Their Foundations and their Consequences for Human Welfare*. Cambridge Studies in Comparative Politics, 2015.
- Dawn Brancati. Political Aftershocks: The Impact of Earthquakes on Intrastate Conflict. *Journal of Conflict Resolution*, 51(5):715–743, oct 2007. ISSN 0022-0027. doi: 10.1177/0022002707305234. URL <http://jcr.sagepub.com/cgi/doi/10.1177/0022002707305234>.

- 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 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>.
- Ryan Carlin, Gregory Love, and Elizabeth Zechmeister. Trust Shaken: Earthquake Damage, State Capacity, and Interpersonal Trust in Comparative Perspective. *Comparative Politics*, 46(4):419–453, jul 2014. ISSN 00104159. doi: 10.5129/001041514812522761. URL <http://openurl.ingenta.com/content/xref?genre=article{&}issn=0010-4159{&}volume=46{&}issue=4{&}spage=419>.
- Germán Caruso. The Legacy of Natural Disasters: The Intergenerational Impact of 100 Years of Disasters in Latin America. *Journal of Development Economics*, pages 1–54, mar 2017. ISSN 03043878. doi: 10.1016/j.jdeveco.2017.03.007. URL <http://dx.doi.org/10.1016/j.jdeveco.2017.03.007http://linkinghub.elsevier.com/retrieve/pii/S0304387817300317>.
- Miguel Angel Centeno. *Blood and Debt: War and the Nation-State in Latin America*. Penn State University Press, 2002.
- John Coatsworth. Railroads, Landholding, and Agrarian Protest in the Early Porfiriato. *The Hispanic American Historical Review*, 54(1):48–71, 1974. ISSN 0018-2168. doi: 10.2307/2512839. URL <http://www.jstor.org/stable/2512839>.
- 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 and David Collier. *Shaping The Political Arena: Critical Junctures, the Labor Movement, and Regime Dynamics in Latin America*. University of Notre Dame Press, 2002.
- Daniel Corstange. Sensitive Questions, Truthful Answers? Modeling the List Experiment with LISTIT. *Political Analysis*, 17(1):45–63, feb 2008. ISSN 1047-1987. doi: 10.1093/pan/mpn013. URL <http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpn013>.
- Daniel Corstange. Vote Buying under Competition and Monopsony: Evidence from a List Experiment in Lebanon. In *Annual Meeting of the American Political Science Association*, pages 1–36, Washington D.C., 2010.

- Paul Drake and Mathew McCubbins, editors. *The Origins of Liberty: Political and Economic Liberalization in the Modern World*. Princeton University Press, 1998.
- Paula Dunbar, Roger Bilham, and Melinda Laituri. Earthquake Loss Estimation for India Based on Macroeconomic Indicators. In *Earthquake*, pages 163–180. 2003. doi: 10.1007/978-94-010-0167-0_13. URL http://www.springerlink.com/index/10.1007/978-94-010-0167-0_{_}13.
- Monica Escaleras, Nejat Anbarci, and Charles Register. Public Sector Corruption and Major Earthquakes: A Potentially Deadly Interaction. *Public Choice*, 132(1-2):209–230, jun 2007. ISSN 0048-5829. doi: 10.1007/s11127-007-9148-y. URL <http://link.springer.com/10.1007/s11127-007-9148-y>.
- James Fearon and David Laitin. Ethnicity, Insurgency, and Civil War. *American Political Science Review*, 97(01):75–90, feb 2003. ISSN 0003-0554. doi: 10.1017/S0003055403000534. URL http://www.journals.cambridge.org/abstract/{_}S0003055403000534.
- Francis Fukuyama. What Is Governance? *Governance: An International Journal of Policy, Administration, and Institutions*, 26(3):347–368, jul 2013. ISSN 09521895. doi: 10.1111/gove.12035. URL <http://doi.wiley.com/10.1111/gove.12035>.
- 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>.
- Andrew Gelman and Jennifer Hill. *Data Analysis Using Regression and Multilevel/Hierarchical Models*. Cambridge University Press, 2006.
- J  r  mie Gignoux and Marta Men  ndez. Benefit in the Wake of Disaster: Long-Run Effects of Earthquakes on Welfare in Rural Indonesia. *Journal of Development Economics*, 118(33):26–44, jan 2016. ISSN 03043878. doi: 10.1016/j.jdeveco.2015.08.004. URL <http://dx.doi.org/10.1016/j.jdeveco.2015.08.004><http://linkinghub.elsevier.com/retrieve/pii/S0304387815000954>.
- Adam Glynn. What Can We Learn with Statistical Truth Serum?: Design and Analysis of the List Experiment. *Public Opinion Quarterly*, 77(S1):159–172, feb 2013. ISSN 0033-362X. doi: 10.1093/poq/nfs070. URL <http://poq.oxfordjournals.org/cgi/doi/10.1093/poq/nfs070>.
- Jonathan Hanson and Rachel Sigman. Leviathan’s Latent Dimensions: Measuring State Capacity for Comparative Political Research. *Manuscript, Maxwell School of Citizenship and Public Affairs, Syracuse University*, pages 1–41, 2013. URL http://faculty.maxwell.syr.edu/johanson/papers/hanson_{_}sigman13.pdf.

- 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>.
- Albert Hirschman. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press, 1970.
- Heather Huntington and Erik Wibbels. The Geography of Governance in Africa: New Tools from Satellites, Surveys and Mapping Initiatives. *Regional & Federal Studies*, 24(5):625–645, oct 2014. ISSN 1359-7566. doi: 10.1080/13597566.2014.971774. URL <http://dx.doi.org/10.1080/13597566.2014.971774><http://www.tandfonline.com/doi/abs/10.1080/13597566.2014.971774>.
- Kosuke Imai. Multivariate Regression Analysis for the Item Count Technique. *Journal of the American Statistical Association*, 106(494):407–416, jun 2011. ISSN 0162-1459. doi: 10.1198/jasa.2011.ap10415. URL <http://www.tandfonline.com/doi/abs/10.1198/jasa.2011.ap10415>.
- Kosuke Imai, Bethany Park, and Kenneth Greene. Using the Predicted Responses from List Experiments as Explanatory Variables in Regression Models. *Political Analysis*, 23:180–196, nov 2015. ISSN 1047-1987. doi: 10.1093/pan/mpu017. URL <http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpu017>.
- 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>.
- Matthew Kahn. The Death Toll from Natural Disasters: The Role of Income, Geography, and Institutions. *Review of Economics and Statistics*, 87(2):271–284, may 2005. ISSN 0034-6535. doi: 10.1162/0034653053970339. URL <http://www.mitpressjournals.org/doi/pdfplus/10.1162/0034653053970339><http://www.mitpressjournals.org/doi/abs/10.1162/0034653053970339>.
- James Kane, Stephen Craig, and Kenneth Wald. Religion and Presidential Politics in Florida: A List Experiment. *Social Science Quarterly*, 85(2):281–293, jun 2004. ISSN 0038-4941. doi: 10.1111/j.0038-4941.2004.08502004.x. URL <http://doi.wiley.com/10.1111/j.0038-4941.2004.08502004.x>.
- Philip Keefer, Eric Neumayer, and Thomas Plümper. Earthquake Propensity and the Politics of Mortality Prevention. *World Development*, 39(9):1530–1541, sep 2011. ISSN 0305750X. doi: 10.1016/j.worlddev.2011.02.010. URL <http://linkinghub.elsevier.com/retrieve/pii/S0305750X11000295>.

- Carlos Keller. *La eterna crisis chilena*. Nascimento, Santiago, Chile, 1931.
- Chad Kiewiet de Jonge. Who Lies About Electoral Gifts? *Public Opinion Quarterly*, 79(3):710–739, 2015. ISSN 0033-362X. doi: 10.1093/poq/nfv024. URL <http://poq.oxfordjournals.org/cgi/doi/10.1093/poq/nfv024><http://poq.oxfordjournals.org/lookup/doi/10.1093/poq/nfv024>.
- Edgar Kiser and Xiaoxi Tong. Determinants of the Amount and Type of Corruption in State Fiscal Bureaucracies: An Analysis of Late Imperial China. *Comparative Political Studies*, 25(3):300–331, oct 1992. ISSN 0010-4140. doi: 10.1177/0010414092025003002. URL <http://cps.sagepub.com/cgi/doi/10.1177/0010414092025003002>.
- 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.
- Marcus Kurtz and Andrew Schrank. Growth and Governance: Models, Measures, and Mechanisms. *Journal of Politics*, 69(2):538–554, 2007. ISSN 00223816. doi: 10.1111/j.1468-2508.2007.00549.x.
- Marcus Kurtz and Andrew Schrank. Capturing State Strenght: Experimental and Econometric Approaches. *Revista De Ciencia Política*, 32(3):613–622, 2012. ISSN 0718-090X. doi: 10.4067/S0718-090X2012000300006.
- Lucas Laursen. Haiti Earthquake may have Primed Nearby Faults for Failure. *Nature*, 463(February): 878–879, feb 2010. ISSN 1476-4687. doi: 10.1038/news.2010.51. URL <http://www.nature.com/doifinder/10.1038/news.2010.51>.
- James Mahoney. *Colonialism and Postcolonial Development: Spanish America in Comparative Perspective*. Cambridge University Press, 2010.
- Michael Mann. The Autonomous Power of the State: Its Origins, Mechanisms and Results. *European Journal of Sociology*, 25(02):185, 1984. ISSN 0003-9756. doi: 10.1017/S0003975600004239.
- Michael Mann. Infrastructural Power Revisited. *Studies in Comparative International Development*, 43(3-4):355–365, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9027-7. URL <http://link.springer.com/10.1007/s12116-008-9027-7>.

- Isaac Martin, Ajay Mehrotra, and Monica Prasad, editors. *The New Fiscal Sociology Taxation in Comparative and Historical Perspective*. Cambridge University Press, 2009. ISBN 9780521738392. URL http://www.cambridge.org/gb/knowledge/isbn/item2427351/?site{_}locale=en{_}GB.
- Javier Mata and Sebastian Ziaja. Users' guide on measuring fragility.
- George McCutchen McBride. *Chile: Land and Society*. Octagon Books, 1936.
- 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>.
- Eric Noji, editor. *The Public Health Consequences of Disasters*. Oxford University Press, 1996.
- Paul Raschky. Institutions and the Losses from Natural Disasters. *Natural Hazards and Earth System Sciences*, 8:627–634, 2008.
- Dan Reed. The ballad of haiti jail: On the trail of the fugitive convicts after the earthquake set them free, 2011. URL <http://www.dailymail.co.uk/home/moslive/article-1344379/Haiti-jail-On-trail-fugitive-convicts-earthquake-set-free.html>.
- 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>.
- Ryan Saylor. Sources of State Capacity in Latin America: Commodity Booms and State Building Motives in Chile. *Theory and Society*, 41(3):301–324, 2012. doi: 10.1007/s11186-012-9168-6.
- Hillel Soifer. State Infrastructural Power: Approaches to Conceptualization and Measurement. *Studies in Comparative International Development*, 43(3-4):231–251, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9028-6. URL <http://link.springer.com/10.1007/s12116-008-9028-6>.

- Hillel Soifer. Measuring State Capacity in Contemporary Latin America. *Revista de Ciencia Política*, 32(3):585–598, 2012.
- Hillel Soifer. State Power and the Economic Origins of Democracy. *Studies in Comparative International Development*, 48(1):1–22, mar 2013. ISSN 0039-3606. doi: 10.1007/s12116-012-9122-7. URL <http://link.springer.com/10.1007/s12116-012-9122-7>.
- Hillel Soifer. *State Building in Latin America*. 2015. ISBN 9781316257289.
- Hillel Soifer and Juan Pablo Luna. Surveying State Capacity: New Methods and Data from Chile. In *American Political Science Association Meeting*, page 23, Philadelphia, PA, 2016.
- Hillel Soifer and Matthias vom Hau. Unpacking the Strength of the State: The Utility of State Infrastructural Power. *Studies in Comparative International Development*, 43(3-4):219–230, dec 2008. ISSN 0039-3606. doi: 10.1007/s12116-008-9030-z. URL <http://link.springer.com/10.1007/s12116-008-9030-z>.
- Walter Szeliga, Susan Hough, Stacey Martin, and Roger Bilham. Intensity, Magnitude, Location, and Attenuation in India for Felt Aarthquakes Since 1762. *Bulletin of the Seismological Society of America*, 100(2):570–584, 2010. ISSN 00371106. doi: 10.1785/0120080329.
- Vito Tani. Personal Income Taxation in Latin America: Obstacles and Possibilities. *National Tax Journal*, 19(2):156–162, 1966.
- Cameron Thies. National Design and State Building in Sub-Saharan Africa. *World Politics*, 61(4): 623–669, 2009. doi: 10.1353/wp.0.0032.
- Victor Uribe-Uran. *State and Society in Spanish America during the Age of Revolution*. Rowman & Littlefield Publishers, 2001.
- 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.
- Maurice Zeitlin. *The Civil Wars in Chile: (or The Bourgeois Revolutions that Never Were)*. Maurice Zeitlin, 1984.