M A U R I C I O   C Á R D E N A S

# State Capacity in Latin America

T he debate on the role of the state in the economic development of Latin America swings from the defense of state activism to the minimalist view emphasizing the advantages of market liberalization and privatization. Too often, this ideologically driven controversy between market mechanisms and state intervention assumes that the government is capable of delivering whatever society wants from it. Rather than asking whether the state should be in or out of the development strategy, this paper deals with the more basic question of what drives state capacity, defined as the ability of the state to provide public goods and support the economy with a sound legal framework. Despite the intense controversy on its role, the Latin American state has been extremely weak in terms of the most basic capacity measures. This is what is salient about the region, compared with other more successful development experiences.

The term *state capacity* has been used in the social sciences with multiple interpretations and meanings. In the more recent economics literature, a distinction has been made between "legal" and "fiscal" state capacity. Legal capacity encompasses what is now known as "contracting institutions" (that is, institutions supporting private contracts) and "property rights institutions" (that is, institutions constraining government expropriation), to use Acemoglu and Johnson's terminology.[1] In this paper, building on the recent work by Besley and Persson, the emphasis is placed on the "fiscal" dimension, which is the state's capacity to raise revenues from the population (including

1. Acemoglu and Johnson (2005). Greif (2005) uses the terms *contract-enforcement* and *coercion-constraining institutions* and makes the important point that only those that rely on sanctions imposed by the state ("public order") can really be considered to reflect state capacity.

the ability to tax incomes).[2] Fiscal state capacity is essential for the state to be able to deliver public goods or to engage in redistribution between different groups in society.

The paper's main claim is that fiscal state capacity is stunted in Latin America as a result of the high concentration of economic and political power. Although this argument is not new, the paper tries to innovate by formalizing the specific channels linking inequality and state capacity, while providing some empirical evidence that supports the model's predictions. To put the argument in its simplest form, investing in state capacity involves costs (sacrificing present consumption) and benefits (future provision of public goods or redistribution). The key insight is that when the group making the decision has much more income and political power than the rest of the population, there are fewer incentives to invest in state capacity. The fear of losing power in the future, and therefore the possibility that state capacity ends up in the hands of the opposition, is another deterrent. All these forces lead to underinvestment in state capacity.

The paper also explores other potential determinants of state capacity. For years, the bellicist approach to state development has emphasized the role of interstate threat and war, arguing that societies that engage in external conflict are more likely to build their state apparatus. With a few exceptions, major external confrontations have been rare in Latin America (in part as a result of the Monroe Doctrine, which has kept other global powers outside the region). In contrast, internal conflict and civil war—which have been more common in the region than external wars—destroy, by definition, state capacity. This explanation is particularly relevant in explaining weak state capacity in Latin America, as Centeno argues.[3]

The paper is structured in the following way. The next section introduces the appropriate definitions and measures of state capacity and provides the key stylized facts on the underdevelopment of state capacity in Latin America. The second section discusses the literature on the specific mechanisms through which political and economic inequality reproduce weak state capacity. The third section develops a model where the two forms of inequality (political and economic) and the two types of conflict (external and internal) determine the equilibrium investment in state capacity. The fourth section presents the econometric evidence supporting the predictions of the model. The main result is that political inequality is a major obstacle to the develop-

2. Besley and Persson (2008, 2009).
3. Centeno (2002).

ment of state capacity. The incidence of external wars, while greatly important when long-run data are used (1900–75), loses relevance when the analysis focuses on the last half century. In contrast, the negative effect of internal wars on state capacity is particularly strong and significant in the more recent period. The paper concludes with suggestions for future research.

## Stylized Facts

Defining and measuring state capacity is not simple, as there are many dimensions to consider. Although the concept has been widely used in political science and sociology literature—and more recently in economics—there is no unique interpretation of what it means. The use of the term can be grouped into four categories. The first is military capacity, which represents the state's ability to overcome the rebellious actions against its authority with force. The proxies commonly used in this category are military personnel per capita and military spending per capita. The second is bureaucratic and administrative capacity, which focuses on the professionalization of the state bureaucracy and its ability to provide legal protection, measured by the risk of confiscation or forced nationalization. The third is fiscal state capacity, such as the ability to raise revenue from the society, which is typically measured by the GDP share of total taxes. Finally, the fourth category is the quality and coherence of political institutions, which considers the degree of interference between the democratic and nondemocratic features of the political system. Studies in the civil war literature use the Polity index of democracy to measure this concept of state capacity.[4]

This paper focuses on the fiscal and legal dimensions for three reasons. First, military capacity is largely a reflection of the state's ability to collect taxes and deliver public goods. Second, state capacity is the result of decisions taken by governments, which have different incentives and constraints depending on the relevant political institutions. For example, bureaucratic and administrative state capacities can differ greatly depending on whether a country has a democratic or an autocratic form of government. This means that the quality and coherence of political institutions is a determinant, and not a consequence, of state capacity. Third, all measures of state capacity are highly collinear and endogenous, so it is appropriate to select a few that are

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4. For example, Hegre and others (2001); Fearon and Laitin (2003); DeRouen and Sobek (2004).

highly correlated with the others. Using factor analysis, Hendrix shows that bureaucratic quality and the GDP share of total taxes stand out as the most representative definitions and measures.[5]

To provide a broad perspective on fiscal and legal state capacity, this section presents seven different measures that are related to the revenue-generation ability and bureaucratic quality of the state. The first two are related to the state's ability to raise revenue from the public: (i) GDP share of total tax revenues and (ii) GDP share of income tax revenues. These variables are available from Baunsgaard and Keen, who use annual data for the period 1975–2006 from the Government Finance Statistics (GFS) and International Monetary Fund (IMF) country documents.[6] Their sample contains 125 countries, but excludes Mexico and Brazil. Similar tax measures for these two countries are added to the database using information available from Lora.[7]

The remaining five measures represent the state's bureaucratic quality. The International Country Risk Guide's measure of the risk of "outright confiscation and forced nationalization" of property is widely used in the institutions and growth literature.[8] This variable ranges from zero to ten, where higher values represent a lower probability of expropriation. This variable is calculated as the average from 1982 through 1997 (when it was discontinued), and it is taken from Glaeser and others.[9] The "ease of doing business" ranking is taken from the Doing Business Project of the World Bank.[10] The 2009 version of the data set ranks 181 countries. To facilitate the interpretation, it is simpler to transform the ranking, so that each country takes a value between zero and one, where the country with the best performance has a value of one.

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5. Hendrix (2010). In total, Hendrix uses fifteen different and highly correlated measures of state capacity, including military personnel and expenditures (per capita), ICRG's measures of bureaucratic quality and investment profile, GDP share of total taxes, GDP share of total revenue, and the polity2 index. Using principal factor analysis to create a smaller set of measures that can account for most of the variance in the fifteen measures, he concludes that bureaucratic quality and the GDP share of total tax revenues can cumulatively explain 90.6 percent of the variance in all the measures considered, with the first factor alone capturing 53.2 percent.

6. Baunsgaard and Keen (2010). Data for the share of income taxes in GDP are available for 1975–2000 only.

7. Lora (2007).

8. See www.prsgroup.com/countrydata.aspx. Hall and Jones (1999) were among the first to use this variable.

9. Glaeser and others (2004).

10. The data can be found at www.doingbusiness.org. For each economy, the index is calculated as the ranking of the simple average of its percentile rankings on each of the following ten topics: starting a business, dealing with construction permits, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, and closing a business.

The next measure is the "government effectiveness index," which represents one of the six dimensions of the worldwide governance indicators (WGI) developed by the World Bank. This particular index measures the quality of public services, the capacity of the civil service and its independence from political pressures, and the quality of policy formulation. The index takes values between −2.5 and 2.5, where a higher value indicates a more effective government. The index values are computed for every year since 1996.[11]

Another useful measure of state capacity comes from the Columbia University State Capacity Survey (also known as the Political Instability Task Force State Capacity Survey). In particular, question 21 asks respondents to rate the "state's ability to formulate and implement national policy initiatives." The index ranges from zero to ten, where ten is the highest possible ability. The survey data include information for the years 1990, 1999, 2000, and 2002.

Finally, Berkman and others construct a measure of state capacity by combining expert evaluations and survey responses from the Bertelsmann Transformation Index, the World Economic Forum's Global Competitiveness Report, and the Columbia University State Capacity Survey.[12] This particular index is a subjective quality measure of a country's "ability to implement and enforce regulations and policies, as well as its effectiveness to collect tax revenues." It ranges from zero to four, with four representing a higher ability to implement and enforce policies.

Table 1 shows the descriptive statistics of the eight measures of state capacity. For the measures involving taxation, there is significant dispersion among the 127 countries with available data. On average, between 1980 and 2006, the mean ratio of tax revenue to GDP was 20.6 percent, with a maximum value of

11. The definitions and the data are available online at info.worldbank.org/governance/wgi/.

12. Berkman and others (2009) average the following variables: (i) expert evaluation of whether the minimum wage set by law in the country is enforced (source: World Economic Forum's Global Competitiveness Report, 2002); (ii) expert evaluation of whether tax evasion in the country is rampant or minimal (source: World Economic Forum's Global Competitiveness Report, 2002); (iii) expert evaluation of whether environmental regulation in the country is enforced (source: World Economic Forum's Global Competitiveness Reports, 2002–06); (iv) estimate of whether the government implements its reform policy effectively (source: Bertelsmann Transformation Index, 2006); (v) rating of states' ability to formulate and implement national policy initiatives (source: Columbia University State Capacity Survey, question 21, 1990, 1999, 2000, and 2002); and (vi) rating of states' effectiveness in collecting taxes or other forms of government revenues (source: Columbia University State Capacity Survey, question 22, 1990, 1999, 2000, and 2002). This measure is close to the concept of bureaucratic competence, underscored by Geddes (1996) in her work on state capacity and reform in Latin America.

**T A B L E  1 .  Descriptive Statistics: Measures of State Capacity**

| Variable | Period covered | No. observations | Mean | Std. deviation | Minimum | Maximum | 25th percentile | 75th percentile |
|---|---|---|---|---|---|---|---|---|
| Total taxes (% of GDP) | 1980–2006 | 127 | 20.63 | 10.52 | 1.86 | 51.43 | 13.12 | 27.02 |
| Income taxes (% of GDP) | 1980–2000 | 127 | 8.64 | 8.53 | 0.00 | 37.30 | 2.61 | 11.44 |
| Domestic taxes (% of total taxes) | 1980–2006 | 127 | 77.04 | 17.56 | 32.16 | 99.71 | 65.19 | 93.57 |
| Protection against expropriation risk index | 1982–97 | 129 | 7.19 | 1.75 | 2.40 | 10.00 | 5.99 | 8.49 |
| Ease of doing business ranking | 2009 | 181 | 0.50 | 0.29 | 0.00 | 1.00 | 0.25 | 0.75 |
| Government effectiveness index | 1996–2008 | 210 | 0.01 | 0.98 | –2.10 | 2.29 | –0.70 | 0.71 |
| Policy implementation and enforcement index | See text | 151 | 2.01 | 0.72 | 0.26 | 3.73 | 1.52 | 2.44 |
| State's ability index | See text | 131 | 5.45 | 2.16 | 0.00 | 10.00 | 3.89 | 6.66 |

Source: Author's calculations.

51.4 percent. These values do not change much when the sample is restricted to the more recent period (2000–06), suggesting high persistence. Regarding the GDP share of income taxes, there is even greater dispersion, with countries ranging from no taxation on income to a high value of 37.3 percent of GDP. Collecting taxes from individuals and firms is more difficult than taxing transactions and thus requires greater administrative and bureaucratic capacities.

To assess state capacity in Latin America, table 2 shows the results of simple OLS regressions of each of the measures described above on regional dummies. The Latin American dummy includes all former Iberian colonies (plus Haiti), but excludes the smaller island-states of the Caribbean (although the results do not change much when these countries are added to the definition).[13] The regressions also include a dummy for the East Asian countries, mainly because many observers consider that state capacity plays a dominant role in explaining why this region has outperformed Latin America in the recent decades (output per worker in Latin America relative to East Asia fell steadily from 1.7 in 1960 to 0.45 in 2005).[14]

To be able to compare these two regions and each of them with the rest of the world, the regressions include two dummies: one for East Asia and one for East Asia and Latin America, combined. The estimate of the coefficient of the combined dummy is negative and significant for the first two tax measures, indicating that the GDP share of total tax and income tax revenues have been lower in Latin America and East Asia relative to the rest of the world. However, relative to the rest of the world total taxes and income taxes (over GDP) have been significantly lower in Latin America (8.8 and 6.5 percentage points, respectively) than in East Asia (6.2 and 3.4 percentage points, respectively). When only former colonies are used in the comparisons, the results show that total taxes and income taxes (as a share of GDP) are lower in Latin America relative to other countries.

As for the proxies of legal state capacity, Latin American countries have lower levels of protection against expropriation risk and less effective governments; and they have been, on average, less successful in the implementation and enforcement of policy compared to East Asian countries and the rest of

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13. The included countries are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Haiti, Mexico, Nicaragua, Panama, Peru, Paraguay, Uruguay, and Venezuela. This grouping is often used in the literature. For example, see Cerra and Saxena (2008).

14. In this paper, East Asia includes: Cambodia*, China, Hong Kong, Indonesia*, Korea, Laos*, Malaysia*, Philippines*, Singapore*, Taiwan, Thailand, and Vietnam* (an asterisk denotes former colonies as defined in Acemoglu and others, 2008).

**T A B L E   2 .  Measures of State Capacity: Regional Comparison**[a]

| Measure and region | All countries | Former colonies |
|---|---|---|
| **Total taxes (% of GDP), 1980–2006** | | |
| East Asia | 2.565** | 3.071** |
| | (1.234) | (1.514) |
| Latin America and East Asia | −8.789*** | −5.572*** |
| | (1.502) | (1.409) |
| Constant | 22.210*** | 19.000*** |
| | (1.098) | (0.961) |
| No. observations | 127 | 90 |
| Adjusted R squared | 0.082 | 0.070 |
| **Income taxes (% of GDP), 1980–2000** | | |
| East Asia | 3.062** | 4.783*** |
| | (1.188) | (1.367) |
| Latin America and East Asia | −6.502*** | −3.452*** |
| | (1.066) | (0.918) |
| Constant | 9.754*** | 6.704*** |
| | (0.906) | (0.724) |
| No. observations | 127 | 90 |
| Adjusted R squared | 0.060 | 0.049 |

| Measure and region | All countries | Former colonies |
|---|---|---|
| **Ease of doing business ranking, 2009** | | |
| East Asia | 0.186* | 0.045 |
| | (0.104) | (0.134) |
| Latin America and East Asia | −0.083 | 0.047 |
| | (0.052) | (0.057) |
| Constant | 0.502*** | 0.372*** |
| | (0.024) | (0.034) |
| No. observations | 181 | 98 |
| Adjusted R squared | 0.006 | −0.010 |
| **Government effectiveness index, 1996–2008** | | |
| East Asia | 0.656** | 0.377 |
| | (0.300) | (0.423) |
| Latin America and East Asia | −0.309** | 0.047 |
| | (0.145) | (0.160) |
| Constant | 0.019 | −0.337*** |
| | (0.076) | (0.100) |
| No. observations | 210 | 104 |
| Adjusted R squared | 0.007 | −0.004 |

**Protection against expropriation risk index, 1982–97**

| | | |
|---|---|---|
| East Asia | 1.565*** | 1.135* |
| | (0.396) | (0.593) |
| Latin America and East Asia | –0.845*** | –0.121 |
| | (0.293) | (0.318) |
| Constant | 7.261*** | 6.537*** |
| | (0.190) | (0.224) |
| No. observations | 129 | 75 |
| Adjusted R squared | 0.032 | 0.008 |

**State's ability index**

| | | |
|---|---|---|
| East Asia | 1.267* | 0.803 |
| | (0.739) | (0.926) |
| Latin America and East Asia | –0.461 | 0.216 |
| | (0.567) | (0.620) |
| Constant | 5.447*** | 4.771*** |
| | (0.217) | (0.323) |
| No. observations | 131 | 73 |
| Adjusted R squared | 0.003 | –0.010 |

**Policy implementation and enforcement index**

| | | |
|---|---|---|
| East Asia | 0.471* | 0.164 |
| | (0.246) | (0.290) |
| Latin America and East Asia | –0.289* | –0.126 |
| | (0.154) | (0.175) |
| Constant | 2.034*** | 1.871*** |
| | (0.067) | (0.105) |
| No. observations | 151 | 80 |
| Adjusted R squared | 0.012 | –0.019 |

Source: Author's calculations.

*Statistically significant at the 10 percent level. **Statistically significant at the 5 percent level. ***Statistically significant at the 1 percent level.

a. Standard errors are in parentheses.

the world. However, Latin America does not seem to underperform in the ease of doing business ranking and the state's ability index. The same is true for all the measures of legal state capacity when the sample is restricted to the group of former colonies.

To sum, what is exceptional about Latin America is the underdeveloped fiscal state capacity. In fact, this feature has not changed much in recent years. When the average GDP share of tax revenues for the more recent period (2000–06) is used, the same results remain: the Latin American dummy continues to have a negative and significant coefficient, even when the sample is restricted to former colonies. This is the main puzzle regarding the development of state capacity in Latin America.

## Determinants of State Capacity

Understanding the differences in state capacity has been a central question in the social sciences for decades, if not centuries. The recent literature on the determinants of contracting and legal institutions has firmly established the importance of pre-colonial conditions in explaining today's state capacity. In particular, Engerman and Sokoloff argue that in places where productive crops exhibited large economies of scale, like sugar and cotton, extractive institutions were developed. In contrast, in places where the productive crops showed weaker scale economies—such that production was atomized in many small units—the institutional development favored the protection of property rights and the development of fiscal state capacity.[15] In turn, Acemoglu, Johnson, and Robinson take a broader view to show that places with higher initial precolonial levels of wealth, greater population density, and more disease incidence were also likely to be colonized with the use of extractive institutions controlled by small elites.[16] These elites had no interest in developing fiscal capacity, beyond the extraction and control of rents derived from natural resources. This was ultimately harmful not just for state building but more broadly for economic development.[17]

15. Engerman and Sokoloff (1997). Further evidence is presented in Engerman and Sokoloff (2000 and 2002).
16. Acemoglu, Johnson, and Robinson (2001).
17. The lack of a well-developed system of property rights did not allow countries with extractive institutions to take advantage of industrialization opportunities in the late 1700s and early 1800s, which explains why places that were relatively rich in 1500 or 1700 are relatively poor today. See Acemoglu, Johnson, and Robinson (2002).

But explanations that focus on the original or pre-colonial determinants of institutions are unable to provide a complete understanding to the under-development of fiscal state capacity in Latin America for at least three reasons why. First, relative to the East Asian former colonies, Latin American countries had lower population densities and a higher proportion of the population living in temperate climates (levels of settler mortality were very similar in both regions).[18] These factors alone would suggest higher state capacity in today's Latin America relative to East Asia, contrary to the evidence reported in the previous section.

Second, while understanding why certain types of institutions were adopted in 1500 is a crucial step, understanding the mechanisms that explain the persistence of weak state capacity is equally important. Income inequality—and its corollary of elite control—is likely to be the variable that connects the past with the present, which is the approach taken in this paper.[19] Emphasizing the relationship between economic and political inequality and fiscal state capacity is not new. Sokoloff and Zolt, for example, argue that Latin America is in a high inequality and low taxation trap.[20] In their view, tax policy is a mechanism for the reproduction of inequality, mainly because the elites prefer a combination of low taxes and low investment in public goods. This interpretation is in line with dependency and structuralist views.[21]

These theories work well in societies where the degree of political representation and participation is low, making it possible for the elites to impose their preferences. Sokoloff and Zolt show that the extension of the franchise was very slow in Latin America relative to the United States and Canada during the nineteenth century and argue that the types of taxes

18. These are *t* tests for equality of means (one-sided), which allow for unequal variances across groups. The variables of interest are population density around 1500, proportion of the population living in temperate climate, and settler mortality, as defined in Acemoglu, Johnson, and Robinson (2001).

19. The actual degree of inequality prior to the twentieth century is a matter of much controversy. For example, Williamson (2009) argues that what is unique about Latin America is the high increase in inequality between 1870 and 1929 (reflecting an increase in the value of land associated with an export-led development strategy). According to his estimations, Brazil, Chile, Mexico, and Peru had levels of inequality in 1870 comparable to those of Northern Europe.

20. Sokoloff and Zolt (2006).

21. These theories see the development problem as a result of a combination of forces, including commodity dependence in the periphery and the alliance between the center and the local elites, who benefit from the status quo and do not engage in economic and social transformations that require state capacity.
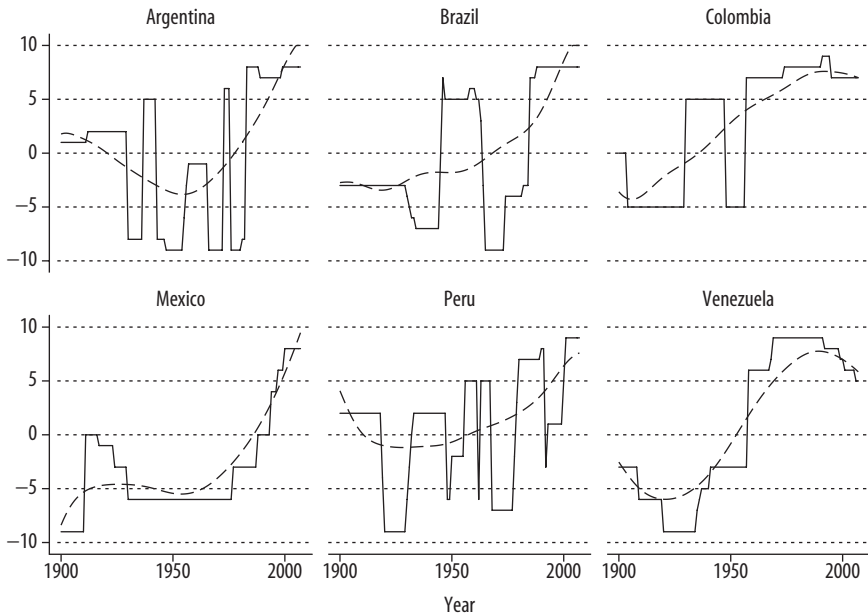
Source: Polity IV database.

introduced in both regions differed greatly.[22] While property taxes were intro-
duced early in North America, they did not develop in Latin America in the
nineteenth century. Along the same lines, in a World Bank report, de Ferranti
and others argue that political institutions bordering on authoritarianism pre-
cluded the investment in education and the redistribution of land, perpetuating
economic inequality.[23] This is interesting because it underscores the endoge-
nous nature of the relationship between inequality and state capacity, which
imposes considerable challenges in the empirical estimations.

These explanations miss the important point, however, that political
inequality can change through time, as countries become more or less demo-
cratic, affecting the incentives to invest in state capacity. To illustrate the
changes in political inequality, figure 1 shows the polity2 score for six Latin

22. Sokoloff and Zolt (2006).
23. De Ferranti and others (2004, chap. 5).

American countries since 1900 from the Polity IV database.[24] This score captures the nature of the political regime on a scale ranging from −10 (hereditary monarchy) to +10 (consolidated democracy) and is constructed by calculating the difference between the regime's democracy and autocracy measures for a given year.[25] What the figure shows is that despite significant fluctuations, there has been an unambiguous trend toward greater democracy in Latin America.[26] A theory on the persistence of low state capacity in Latin America has to acknowledge this fact.

One possible explanation, as Acemoglu and Robinson suggest, is the persistence of de facto power.[27] Even if de jure institutions (like voting rights, elections, and controls on the executive) are introduced, the political equilibrium may not change. De facto political power may reflect economic power, exercised through mechanisms such as campaign contributions and control of the media. This does not mean that democratization is not desirable, but that it fails to deliver the expected results. Disentangling why Latin America's "democracies" are also some of the most unequal countries in the world is not easy. The approach taken here is to jointly model the effects of political and economic inequality (or the distribution of de jure and de facto power) on state capacity. As Robinson points out, figuring out the specific circumstances under which changes in economic and political inequality can trigger a new equilibrium in state capacity is of great relevance.[28]

The third reason why looking at pre-colonial conditions may not be sufficient is that other forces can alter the development path of state capacity in a way that is not entirely predictable. In particular, theories on state formation and state building have long emphasized the role of wars or threats to the ruler's ability to extract resources from a given territory and population.[29]

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24. The data can be accessed online at www.systemicpeace.org/polity/polity4.htm.
25. The Democracy score uses a 0–10 scale and combines measures of (maximum scores in parentheses) competitiveness (2) and openness (2) of executive recruitment, constraints on the executive (4), and competitiveness of political participation (3). The Autocracy score also uses a 0–10 scale to measure the degree of restriction or suppression of competitive political participation. Its components are competitiveness (2 if the executive is selected) and openness of the executive recruitment (2 if the recruitment is closed), constraints on the executive (3 if the chief executive has unlimited authority), regulation of participation (2 if participation is restricted) and competitiveness of political participation (2 if it is repressed).
26. Przeworski (2008) argues that even if in the initial years after independence very few people had voting rights in Latin America, this was not the main difference vis-à-vis the developed world in the beginning of the twentieth century.
27. Acemoglu and Robinson (2008).
28. Robinson (2008).
29. Tilly (1975, 1985, 1992).

Historically, wars have been an important determinant of increases in the level of taxation and debt (the so-called ratchet effect), in part because external confrontations demanded greater military and bureaucratic capacity and also because taxpayers preferred greater contributions to external domination. In other words, wars required organization and efficiency, supporting the institutional development of the state. However, inasmuch as wars make states, it is states that make wars, so here also care should be exercised in the interpretation of a causal relationship.

Even if war is not the only catalyst for state development, many studies consider that the bellicist approach to state building has some relevance in developing countries. For example, Stubbs claims that the threat of war has been an important factor in molding state institutions, the economy, and society in the most successful economies of East Asia (namely, Japan, South Korea, Hong Kong, Malaysia, Singapore, Taiwan, and Thailand), while Desch looks into the cases of China, Cuba, Israel, and South Korea to conclude that their threatening external environments have resulted in stronger states.[30]

In Latin America, both Centeno and López-Alves have explored the role of wars in state formation, complementing the traditional views that emphasize wealth distribution and class tensions.[31] An important insight in their contributions is that external and internal wars are two distinct types of conflict that have opposing effects in the development of state capacity. In particular, internal wars have been mainly destructive, which contrasts with the central prediction of the bellicist approach. Besley and Persson substantiate this claim with empirical evidence showing that the incidence of external wars is associated with stronger states, while the incidence of internal wars goes in the opposite direction.[32]

The evidence on the frequency and magnitude of interstate (or external) and intrastate (internal) wars, available from the Correlates of War database, shows that the former have been rare in Latin America, while the latter have been relatively frequent. According to figure 2, cumulative battle deaths have been larger in internal than in external conflicts in Latin America, contrary to the experience of Asia, Europe, and the United States. Only since the mid 1970s have deaths in internal conflicts in Africa surpassed those resulting

30. Stubbs (1999); Desch (1996).
31. Centeno (1997, 2002); López-Alves (2000). Thies (2004) argues that interstate and intrastate rivalry are more important than actual war from the perspective of state building. Thies (2005) highlights this distinction for Latin America, claiming that interstate rivalry (but not war) has played a role in determining tax ratios.
32. Besley and Persson (2008).

**F I G U R E  2 .   Cumulative Battle Deaths**



*A. United States and Europe*

*B. Asia*

*C. Latin America*

*D. Africa*
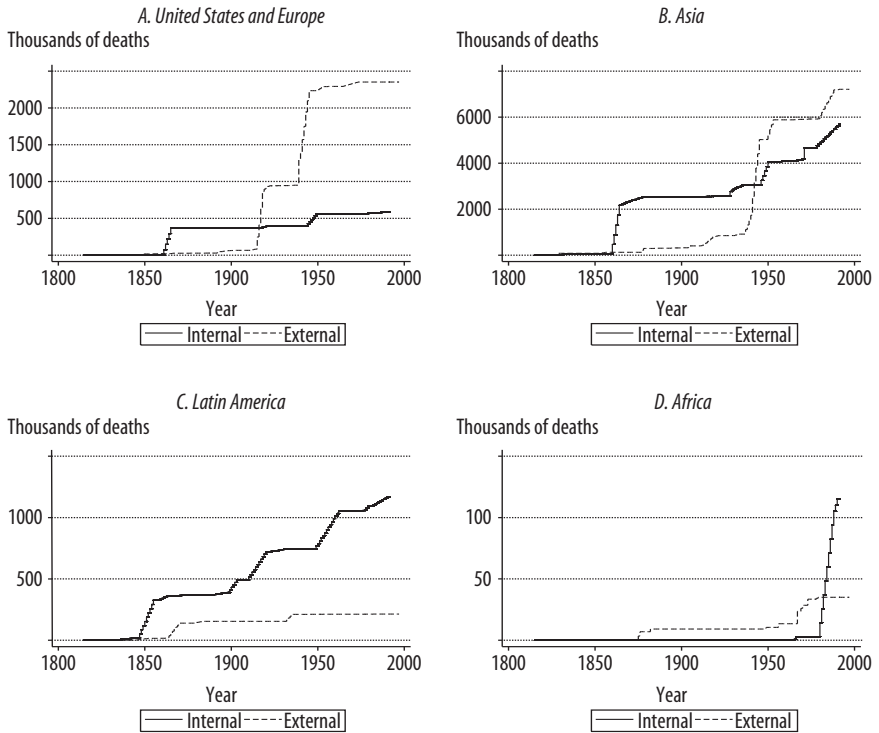
Source:   Author's calculations, based on Correlates of War database (available at correlatesofwar.org).

from external wars.[33] Figure 3 shows the frequency of external and internal wars in each Latin American country, illustrating again that the latter have been much more common than the former. As Centeno puts it, Latin America has had many limited wars, but very few total wars.[34] The striking fact is that no state has disappeared in Latin America since independence two centuries ago, and borders have changed little, while internal wars have been frequent.

In sum, the previous discussion suggests that political and income inequality together with frequent internal wars (and one could add the low occurrence of external wars) are potentially relevant factors in explaining the persistence

33. The high incidence of civil war is a striking feature of the developing world and not just Latin America. See Blattman and Miguel (2010) for a survey.
34. Centeno (2002).

**F I G U R E  3 .**   **Wars in Latin America**



*A. External wars*

*B. Internal wars*
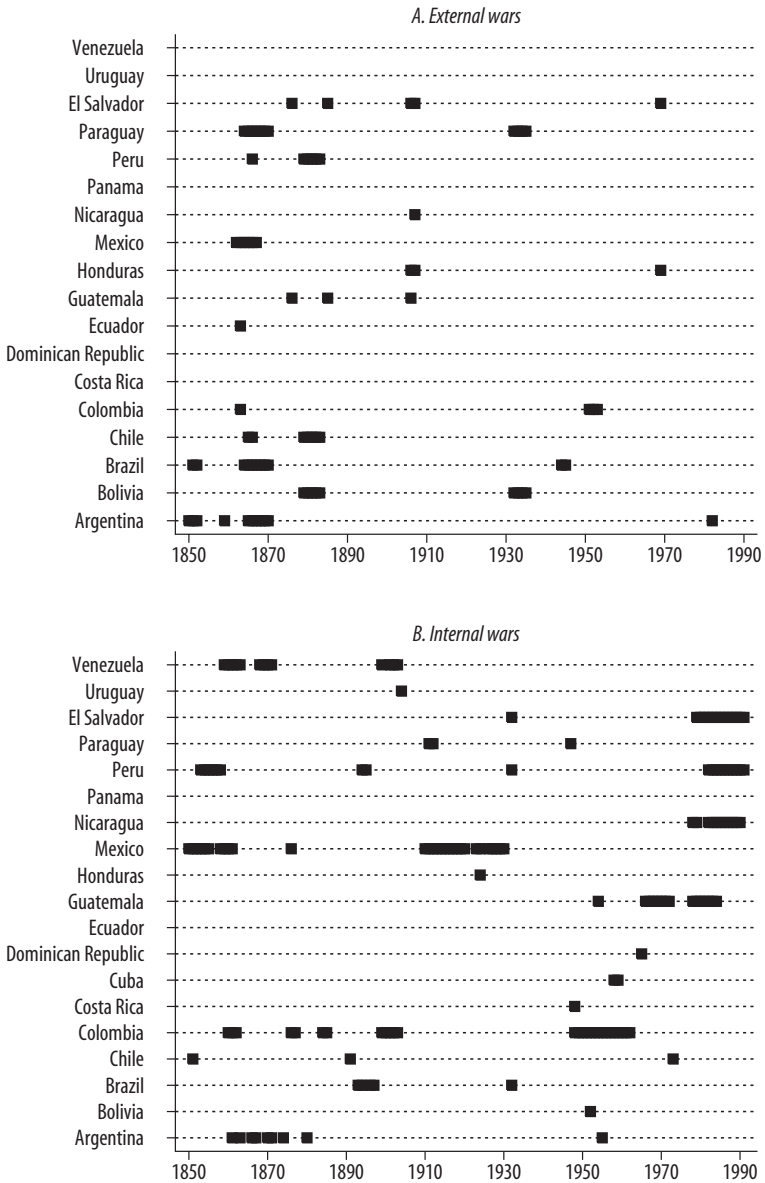
Source:  Author's calculations, based on Correlates of War database.

of weak state capacity in Latin America. The next section presents a model that helps to understand the interaction between these variables and state capacity in an integrated framework. The model also produces some hypotheses that are tested later in this paper.

## State Capacity, Wars, and Inequality: Conceptual Framework

This section presents a model that explores the interaction between state capacity, wars, and inequality.[35] The model extends the framework developed by Besley and Persson by looking in more detail at the mechanisms through which income inequality affects state capacity.[36] It also compares how results differ when the elites' rule is replaced by citizens' rule to capture the idea of the social revolution.

The basic setting is as follows. Time is discrete and consists of two periods, $s = 1, 2$. There are two groups of agents in the economy, $J = A, B,$ which can be thought as corresponding to citizens and elites. Groups differ in their population shares $\beta^A$ and $\beta^B$ (by definition, the population share of elites is smaller relative to citizens). In each period, one group, say group A, holds the political power (becomes the government) and makes the taxation and government spending decisions. Group A can be either citizens or elites, depending on who is holding power. Groups may also differ in their per capita income levels, $Y^A$ and $Y^B$, with the elites having a higher per capita income level. The group-specific tax rates, $t_s^A$ and $t_s^B$, in each period $s$ can take negative values in order to make redistribution possible. The total population is normalized to unity. Each agent in a group $J$ has the same preferences and income levels as the other members of the group. Agents derive utility from consuming private goods, which they purchase with their after-tax income, and public goods provided by the government.

State capacity is defined as the state's ability to generate tax revenue from the public. In this setting, state capacity provides the maximum tax rate that the government can effectively apply. In other words, if the government sets an excessively high tax rate, agents operate informally and the government is unable to collect taxes. Limits to the taxes the government can impose are given by the bureaucratic and administrative capabilities of the state.

35. This section is based on Cárdenas and Tuzemen (2010).
36. Besley and Persson (2009).

As in Besley and Persson, the capacity to tax depends on previous investments in building bureaucratic capabilities, such as an effective tax administration that manages and monitors taxation.[37] More specifically, the government can extract resources from the private sector to invest in state capacity. The accumulated stock of state capacity which does not depreciate, determines the maximum tax rate that is feasible for the government.

The government takes the stock of state capacity in the first period, $\tau_1$, as given and decides the level of state capacity for the next period, $\tau_2$. To have a higher level of state capacity in the second period, the government needs to make a nonnegative investment in the first period. The costs associated with this investment are given by $F(\tau_2 - \tau_1)$, which is assumed to be increasing and strictly convex in the level of investment. Assuming increasing marginal costs of investment in state capacity has crucial implications for the results of the model, and it is justified on the grounds that it is extremely hard for governments to completely eliminate informality (in fact, all countries show some degree of informality). In addition, the solution to the model requires that the properties $F(0) = F_\tau(0) = 0$ are satisfied. Investment in state capacity takes place only in the first period, since the world ends at the end of the second period.

In addition to funding investment in state capacity, the government can use the resources it extracts from the private sector to provide public goods, $G_s$, in each period $s$. By assumption, both groups benefit equally from public goods. The value given to public goods in the utility function in each period is denoted by $\alpha_s$, which is a continuous random variable with a cumulative distribution function $H$ and a probability density function $h$ on the interval $[0, 1]$. This means that there is uncertainty regarding how much society will value the public good in period 2.

There are many shocks that can change the way societies value public goods. For example, expenditures on security and defense can be valued differently if the country is at war or not. In the absence of an expected conflict, defense is valued less and the government invests fewer resources in state capacity, while societies that are more likely to be involved in wars invest more in state capacity (this is the fundamental claim of the bellicist approach to state building). However, societies can also have a high valuation of public goods for reasons other than war (for example, public expenditures on health can have a higher value if there are serious public health risks). The important feature of the model is that if the government expects

37. Besley and Persson (2009).

a higher valuation of public goods in the future, it will invest more in state capacity today.

The timing of events is as follows: First, nature determines the value of public goods and which group holds the political control in the beginning of each period. Next, the government picks the policy vector of taxes, spending in public goods, and investment in state capacity. Finally, agents consume and derive utility from consuming private and public goods.

Assuming that the preferences of the agents in the economy are linear in private consumption and public goods provision, the indirect utility for each individual in group $J$ is represented as follows:

(1) $$v_s^J\left(t_s^J, G_s\right) = \alpha_s G_s + \left(1 - t_s^J\right)Y^J.$$

The government makes the policy decisions that maximize the sum of the weighted utilities of the two groups. In the case of a utilitarian government, the weights should be equal to the population shares of the two groups, which roughly speaking, corresponds to a democratic political system.

Many countries do not have fully democratic systems, but rather function on partial democracies that imply some form of political inequality. In this case, the weights are not equal to the population shares; instead they are the population shares multiplied with two new parameters, $\rho^A$ and $\rho^B$, which represent the political weight the government gives to each group. Therefore, the total weight the group in power attaches to its own group becomes $\rho^A\beta^A$ and that for the opponent group becomes $\rho^B\beta^B$. The political system can be labeled as unequal if one group's utility gets a weight greater than its population share—or, in short, if the group in power favors its own group members, which corresponds to $\rho^A > 1$ and $\rho^B < 1$. (Think of the completely selfish autocrat that suppresses political participation as the case in which $\rho^B = 0$.) From now on, assume that $\rho^A \geq 1$ and $\rho^B \leq 1$, and define political inequality as the difference between $\rho^A$ and $\rho^B$. By assumption, the sum of the weights attached to the groups' utilities should add up to one, that is, $\rho^A\beta^A + \rho^B\beta^B = 1$. Again, under a fully democratic political system, each group's weight in the utility of the ruler should be equal to its share in the population, that is, $\rho^A = \rho^B = 1$.

Under these conditions, the government's problem in the first period is to choose the policy vector $\{G_1, t_1^A, t_1^B, \tau_2\}$ in order to:

(2) $$\max \alpha_1 G_1 + \rho^A\beta^A\left(1 - t_1^A\right)Y^A + \rho^B\beta^B\left(1 - t_1^B\right)Y^B + \text{ENP},$$

(3)                          subject to $\sum t_1^J \beta^J Y^J = G_1 + F(\tau_2 - \tau_1)$

(4)                          and $\tau_1 \geq t_1^J, G_1 \geq 0$.

where equation 3 is the government's period 1 budget constraint (that is, tax revenues have to be equal to the provision of public goods plus the costs associated with investing in state capacity) and equation 4 states that the tax rates cannot be higher than the stock of state capacity (that is, feasible tax rates are constrained by state capacity) and that expenditure in public goods cannot be negative. Equation 2 is the weighted average of the two groups' indirect utilities (where the weights are given by the population shares and the political preferences of the ruler) plus the second period's expected net payoff (ENP) for the group that is in power in the first period. This is an expected payoff because the outcome depends on which group is in power in the second period and the realization of $\alpha_2$, both of which are uncertain.

Similarly, the government's problem in the second period is to choose the policy vector $\{G_2, t_2^A, t_2^B\}$ in order to

(5)               $\max \alpha_2 G_2 + \rho^A \beta^A (1 - t_2^A) Y^A + \rho^B \beta^B (1 - t_2^B) Y^B,$

(6)                          subject to $\sum t_2^J \beta^J Y^J = G_2$

(7)                          and $\tau_2 \geq t_2^J, G_2 \geq 0$.

where equation 6 is the government's period 2 budget constraint (in which tax revenues are equal to the expenditures in public goods, as there is no investment in state capacity in period 2). Again, equation 7 states that the tax rates can be at most equal to the stock of state capacity and that government expenditures cannot be negative.

Substituting equation 6 into equation 5 provides some additional insights on the ruler's maximization problem:

(8)     $(\rho^A \beta^A Y^A + \rho^B \beta^B Y^B) + \beta^A t_2^A Y^A (\alpha_2 - \rho^A) + \beta^B t_2^B Y^B (\alpha_2 - \rho^B).$

To maximize equation 8 with the choice of a positive provision of public goods in period 2, the condition $\alpha_2 \geq \rho^A$ has to be satisfied (which simply

means that the value of the public good has to be greater than the value that the group in power assigns to its own private consumption). Given the cumulative distribution of the stochastic variable $\alpha$, this event occurs with probability $[1 - H(\rho^A)]$. Conversely, when $\alpha_2 < \rho^A$, the group in power values public goods less than its own private consumption and, hence, finds it optimal to set $G = 0$. This occurs with probability $H(\rho^A)$. Therefore, the value attached to public goods relative to the private good determines whether the government provides public goods or not. If public goods are provided, the corresponding state of the world can be named the common interest state (because both groups equally benefit from the public good). If no public goods are provided, then the state is called the redistribution state (because the only purpose of taxation is to redistribute resources in favor of the ruling group). It is convenient to think of this last possibility as a state of affairs in which the group in power taxes the other group in order to increase its own private consumption (which is valued more than the public good). The same logic applies to the first period: public goods are provided if $\alpha_1 \geq \rho^A$.

The government's maximization problem is linear in the policy variables, which means that optimal taxation and public goods provision decisions can be analyzed separately from the optimal investment in state capacity decision. First, consider the optimal taxation results in each state of the world. In the common interest state, public goods are valued highly and the provision of public goods is the government's priority. Therefore, regardless of which group is in power, both groups are equally and maximally taxed. In contrast, under the redistribution state, there is no public goods provision, but the group not in power is still taxed maximally in both periods. The difference is that in this case, the revenues from taxation are redistributed to the group in power.

To solve for the optimal investment in state capacity, which is the variable of interest, it is necessary to calculate the expected net payoff (ENP) that appears in equation 2. This is the crucial step in the derivations, as the decisions made in period 1 will depend on what the ruler expects will happen in period 2. One key source of uncertainty is who will hold power in period 2. In what follows, assume that the group in power keeps the political authority with an exogenous probability of $\gamma$. This is a strong assumption about political transitions, but useful for focusing on the problem of investment in state capacity.

There is another source of uncertainty regarding period 2. Apart from the one is related to who will rule, the state of nature (the realization of $\alpha_2$) is also

unknown in period 1. As discussed above, under the common interest state—which occurs with probability $[1 - H(\rho^A)]$—it is irrelevant who holds power, so the first uncertainty can be ignored. In this case, both groups are taxed at the maximum amount and public goods are provided. The payoff in period 2 under the common interest state ($V_C$) is given by

$$
(9) \qquad V_C = \tau_2 \left( \beta^A Y^A + \beta^B Y^B \right) E \left\{ \alpha_2 \middle| \alpha_2 \geq \rho^A \right\}
$$
$$
+ \left[ \rho^A \beta^A \left( 1 - \tau_2 \right) Y^A + \rho^B \beta^B \left( 1 - \tau_2 \right) Y^B \right]
$$

The first component in equation 9 is the payoff from the provision of public goods. The value of public goods in period 2 is in expectation, since it is unknown as of period 1. The second component is the sum of the payoffs for the two groups from the consumption of the private goods with their after-tax income.

However, with probability $H(\rho^A)$, the world can be in the redistribution state in period 2. In this case, the payoff depends on which group holds power. If the ruling group in period 1 continues to hold the political power in period 2, it will tax the other group at the maximum possible rate and use the proceeds for redistribution. The total payoff in period 2 under the redistribution state when the incumbent remains in power ($V_{RA}$) is given by equation 10:

$$
(10) \qquad V_{RA} = \left\{ \rho^A \beta^A \left[ 1 + \left( \frac{\tau_2 \beta^B Y^B}{\beta^A Y^A} \right) \right] Y^A + \rho^B \beta^B \left( 1 - \tau_2 \right) Y^B \right\},
$$

where it is shown that the members of the opposition group (B) lose a share of their income as a result of taxation, while the ruling group (A) receives the collected taxes and consumes more than its period income. If, on the contrary, the ruling group loses power to the opposition, the total payoff under the redistribution state when the opposition rules in period 2 ($V_{RB}$) is given by equation 11:

$$
(11) \qquad V_{RB} = \left\{ \rho^A \beta^A \left( 1 - \tau_2 \right) Y^A + \rho^B \beta^B \left[ 1 + \left( \frac{\tau_2 \beta^A Y^A}{\beta^B Y^B} \right) \right] Y^B \right\},
$$

which says that group A is taxed and the resources are redistributed to group B. As of period 1, accounting for all these possible period 2 outcomes, the ruling group calculates the ENP as a weighted average:

(12) $$\text{ENP} = \left[1 - H(\rho^A)\right]V_C + H(\rho^A)\left[\gamma W_{RA} + (1 - \gamma)V_{RB}\right]$$
$$-\lambda(\alpha_1)F(\tau_2 - \tau_1).$$

The first term is the probability that the common interest state occurs, multiplied by the payoff associated with that state. The next term is the probability that the redistribution state occurs in period 2 multiplied by the payoff associated with that state (from the point of view of group A, which is the ruler in period 1). This payoff is the average of the indirect utilities for group A when it remains in power and when it loses power (weighted by their respective probabilities $\gamma$ and $1 - \gamma$). This is the expected gain from investing in state capacity in period 1.

There are costs associated with this decision, as well. These costs are captured by the third term on the right-hand side of equation 12. This term shows that investing in state capacity takes $F(\tau_2 - \tau_1)$ resources away from consumption in period 1. Under the common interest state, these public funds are extracted from the provision of public goods, which have a value of $\alpha_1$ in the indirect utility function. Under the redistribution state, the funds are taken away from private consumption, which is valued at $\rho^A$. This is why $\lambda(\alpha_1) = \max\{\alpha_1, \rho^A\}$.

To determine the optimal level of investment, it is necessary to plug the complete expression for ENP into the first period maximization problem. After some straightforward derivations, the first-order condition with respect to $\tau_2$ is given by the following equation:

(13) $$\lambda(\alpha_1)F_\tau(\tau_2 - \tau_1) = \left[1 - H(\rho^A)\right](\beta^A Y^A + \beta^B Y^B)E\{\alpha_2|\alpha_2 \geq \rho^A\}$$
$$-\left[1 - H(\rho^A)\right](\rho^A\beta^A Y^A + \rho^B\beta^B Y^B)$$
$$+ H(\rho^A)(\rho^A - \rho^B)\left[\gamma\beta^B Y^B - (1 - \gamma)\beta^A Y^A\right].$$

This equation says that the optimal level of investment depends on the key variables of the model, namely, $\alpha_1$, $\alpha_2$, and $(\rho^A - \rho^B)$. Since this optimality condition has to hold, it can be used to analytically determine the effects of

the key variables on the equilibrium level of state capacity investment. For example, when the value of $\alpha_1$ increases, it leads to a higher $\lambda(\alpha_1)$. Since the optimality condition has to be satisfied, a decrease in $F_\tau(\tau_2 - \tau_1)$ is necessary, which would be possible only when the level of investment in state capacity decreases (given the convexity of the cost function). Similarly, in the case of an increase in $\alpha_2$, the right-hand side of equation 13 goes up and needs to be offset with an increase in $F_\tau(\tau_2 - \tau_1)$, which corresponds to an increase in the level of state capacity investment.

The value of public goods ($\alpha$) plays a crucial role in this model and can be interpreted in many ways. One possibility, which connects well with the motivation of this paper, is to think what happens during wars. Fighting an external war corresponds to the common interest state in period 1, where the valuation of public goods is higher than the valuation of private consumption by the ruler. In this case, the optimal solution is to provide public goods at the expense of investment in state capacity. This is what happens during a war, where military expenditures—and not investing in bureaucratic capacity— are the government's priority. However, this is different from the expectation of being involved in an external war in the second period, which corresponds to a high $\alpha_2$. In this case, the government chooses to increase the level of investment in state capacity in the first period to be able to fight the war in period 2. Therefore, a high valuation of public goods in the first period leads to low investment in state capacity, while high future value of public goods leads to the opposite result.

The effect of political inequality ($\rho^A - \rho^B$) on the government's state capacity investment decision is also of interest. The model gives different results depending on the value of $\gamma$, which is the probability that the group in power in the first period keeps authority in the second period. Consider first a situation in which this probability is lower than the ruling group's popula- tion share. In this case, a higher degree of political inequality results in a lower level of investment in state capacity (see the appendix). Intuitively, if the group in power is likely to lose authority to the opponent group in the sec- ond period, then it will prefer less investment in state capacity in order to avoid the possibility of redistributive taxation in the second period. There- fore, a higher level of political inequality results in a lower level of invest- ment in state capacity. These results remain the same whether the citizens or the elites hold political power.

Adding income inequality to the model provides some very interesting additional insights. This is done by allowing for differences in the per capita income levels of the two groups. In particular, the per capita income level of

the elite (minority group) is assumed to be $Y + \epsilon$, which is higher than that of the citizens (majority group) $Y - \epsilon$. In this setup, $\epsilon$ is defined as the income inequality parameter. Using these new income definitions, the optimality condition in equation 13 becomes

$$(14) \qquad \lambda(\alpha_1) F_\tau (\tau_2 - \tau_1) = \left[ 1 - H(\rho^A) \right] \left[ \beta^A (Y + \epsilon) + \beta^B (Y - \epsilon) \right]$$
$$\cdot E\left\{ \alpha_2 \middle| \alpha_2 \geq \rho^A \right\} - \left[ 1 - H(\rho^A) \right] \left[ \rho^A \beta^A (Y + \epsilon) + \rho^B \beta^B (Y - \epsilon) \right]$$
$$+ H(\rho^A)(\rho^A - \rho^B) \left[ \gamma \beta^B (Y - \epsilon) - (1 - \gamma) \beta^A (Y + \epsilon) \right].$$

With this slight modification, the model makes some clear-cut predictions when elites rule in period 1. In particular, the model shows that a higher level of income inequality leads to a lower level of investment in state capacity (see the appendix). This result is obtained by taking the derivative of the right-hand side of the optimality condition in equation 14 with respect to $\epsilon$, which has a negative sign. Recall that this optimality condition has to hold in the equilibrium; therefore, as the right-hand side of the equality decreases with an increasing level of income inequality, the left-hand side of the equality should also decrease. This would only be possible if the level of investment in state capacity falls. Intuitively, the elites invest less in state capacity because the amount of resources that they can extract from the citizens is small, since their income is low as a result of income inequality. To put it bluntly, for high levels of inequality, it simply does not pay to invest in state capacity when the elites are making the decision.

However, the results for the effects of income and political inequality on investment in state capacity become ambiguous when citizens hold political power in the first period. Using simulations, Cárdenas and Tuzemen show that when income inequality is low, an increase in political inequality has a negative effect on investment in state capacity.[38] This means that citizens behave just like elites do: they know that they can lose power and do not want to leave greater state capacity in the hands of the opponents. For higher levels of income inequality, however, taxing the elites has a greater payoff because of their higher income. In this case, as the level of political inequality increases, citizens invest more in state capacity to be able to tax the elites

38. Cárdenas and Tuzemen (2010).

at a higher rate in period 2. This last case is reminiscent of a social revolution that first builds state capacity and then engages in redistribution.

History is rich in examples, especially in Latin America, of social revolutions that promise to reduce inequality and deliver public goods, but fail to do so. Social experiments that empower the citizens without increasing state capacity can be rationalized with this model. One possibility is that the probability of losing power in the next period is high. In this case, the expected return from investment in state capacity is low, and the citizens naturally prefer to redistribute the available resources while they are in power. A second possibility has to do with the fact that social revolutions are not smooth political transitions, but are often associated with civil wars, which introduces a new dimension that can lower the incentives to invest in state capacity.

Thus, as a final theoretical exercise, the model can be extended to allow for the presence of civil wars, which are conflicts that arise when the citizens rebel against the authority of the elites. Civil wars can only occur in the redistribution state, as there is no conflict between groups when the common interest prevails. While external wars make the common interest state more likely (because of the high valuation of public goods), civil wars are assumed to take place when one group is taxing the other for its own benefit.

From an analytical point of view, there are now three states of nature: the common interest state, the redistribution state with a civil war, and the redistribution state without a civil war. Civil wars can be modeled as a result of political or economic inequality (or both), but to keep matters simple, assume that at the beginning of each period nature determines an exogenous probability of the occurrence of a civil war. If it is also assumed that civil wars take away part of the income of both groups and destroy state capacity, the results are straightforward. The model predicts a negative relationship between the incidence of a civil war and the investment in state capacity. The reason is simple: as the probability of fighting a civil war in the second period increases, investment in state capacity has a lower return. Moreover, compared with the previous results, the possibility of the occurrence of a civil war amplifies the negative effects of both political and income inequalities on investment in state capacity.

## Empirical Evidence

The model has given four determinants of state building: political inequality, economic inequality, external wars (which enter as a proxy for the valuation

of public goods), and internal (or civil) wars (which destroy state capacity). To provide empirical support for the predictions of the model, the incidence of external wars is measured with the help of a dummy variable that takes a value of one if the country has been involved in an interstate or extrastate war in a given year and zero otherwise, based on the Correlates of War database. To be classified as an interstate war, at least two participants in sustained combat should qualify as members of the interstate system, and there should be at least 1,000 battle-related fatalities among all of the system members involved. A state involved is regarded as a participant if it incurs a minimum of 100 fatalities or has 1,000 armed personnel engaged in fighting. Extrastate wars are wars between a state and a nonstate entity. To be classified as an extrastate war, at least one major participant in the conflict (however irregular and disorganized) should not be a member of the state system, and there should be at least 1,000 battle-related fatalities in every year for each of the state participants. The external war dummy is then used to calculate the fraction of years that a particular country was involved in an interstate or extrastate war during two periods: 1900 (or year of independence if after 1900) to 1975 and 1960 to 1997. The variable is in the range of zero to one, where a country that has been engaged in an external war in all years in the sample has a value of one.

The incidence of internal wars is measured similarly, using the definition available in the Correlates of War database. Intrastate wars are fought within state borders between a government and nongovernment forces (civil war) or between at least two nongovernment forces (intercommunal war). In order to be classified as a civil war, the central government should be actively involved in military action, and there should be at least 1,000 battle-related deaths. Both sides must have been initially organized for violent conflict, or the weaker side must be able to inflict on the stronger opponents at least 5 percent of the number of fatalities it sustains. As with external wars, the variable of interest is the fraction of years that a particular country was involved in an intrastate war during two periods: 1900 (or year of independence if afterward) to 1975 and 1960 to 1997.

The measure of political inequality is based on the polity2 score available in the Polity IV database (described above). In particular, scores lower than three are associated with political inequality. Although this is an arbitrary criterion, it captures the idea that countries above that threshold are likely to be more democratic, implying adequate representation of all groups of the population (results do not change if the threshold is set at polity2 equal to zero). As in the case of the conflict variables, the variable used in the regressions is

the fraction of years that a country has had inequality polity2 score greater than three in the periods 1900–75 (or since independence if it occurred after 1900) and 1960–99.[39]

The measure of income inequality is the Gini coefficient available from the 2008 World Income Inequality database of the World Institute for Development Economics Research at the United Nations University (UNU-WIDER). The data cover the time period 1867–2006, and include 186 countries in the more recent years. The reported Gini coefficients come from surveys that can differ greatly along ten dimensions, such as coverage area (for example, national, rural, urban, metropolitan, city, and so on), surveyed population (for example, all, workers, taxpayers, or certain age groups), unit of analysis (for example, individual, household, and so forth), and variable of interest (for example, income or expenditures). Given the heterogeneity in the original data, it is important to select those measures of the Gini coefficient that are comparable across countries and time. The criteria adopted in this paper follow simple guidelines: only Gini coefficients calculated from national surveys covering all population groups are used. If more than one observation per country/year meet these criteria, the higher quality observation is chosen (based on a quality index included in the database). Finally, when there are several reported Gini coefficients that meet the same criteria and are of equal quality, then the one from the survey with more data points is used. From this data set, the average Gini coefficient per country for the periods 1900–75 and 1960–99 is calculated.[40]

Table 3 presents the descriptive statistics for the explanatory variables, while table 4 uses simple OLS estimations with regional dummies to compare Latin America with the rest of the world. The analysis is divided in two periods: 1900–1975 and 1960–1999. In the earlier period, Latin American and East Asian countries were less democratic than the rest of the countries.

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39. Some assumptions need to be made to match the country classifications in the Polity IV and Correlates of War databases. The starting point is the countries that exist today. When the current country is the result of the unification of several countries, the data that are used prior to the unification correspond to the absorbing country (for example, West Germany in the case of today's Germany or North Vietnam in the case of today's Vietnam). If the current country is the result of a division, then the historical data from the original country are used (prior to the date of creation of a new country). For example, the Czech Republic and Slovakia are both assigned the value of Czechoslovakia prior to 1991.

40. Some countries have very few observations between 1900 and 1975 (for example, thirty-one countries have only one data point). The median country has two observations in that period.

In terms of external wars, the coefficient associated with the Latin American dummy is negative and significant, restating the point that Latin American countries spent a smaller fraction of years between 1900 and 1975 fighting external wars (and East Asian countries spent a higher fraction of years) than the rest of the world. In the case of internal wars, Latin America does not seem to be different from the rest of the world, while East Asian countries seem to have spent more time waging interstate conflicts. Finally, the estimate of the Gini coefficient is significantly higher in Latin America than in the rest of the world (and higher than in East Asia). When the same calculations are reproduced for the sample of former colonies, an interesting outcome follows. Between 1900 and 1975, Latin America was less democratic, more peaceful, and less egalitarian than the rest of the world, while East Asia was more likely to experience wars, both external and internal.

The results for the 1960–99 period show both differences and similarities. First, Latin America now appears distinctively more democratic than the rest of the world, especially East Asia. Second, Latin America appears to have an exceptionally low incidence of external wars. Third, income inequality has remained persistently high compared with East Asia and the rest of the world. The same is true when the comparison is made with the former colonies.

Before moving to the econometric analysis, it is useful to examine figure 4, which shows the cross-correlations between fiscal state capacity and the chosen explanatory variables. The democracy scores and the incidence of external wars are positively correlated with the GDP share of total taxes (2000–06), while the opposite happens with the incidence of internal wars and the Gini indexes.[41]

Turning to the econometric analysis, the model's main propositions can be estimated with cross-country regressions of the following form:

(15) $$SC_{it} = \beta_0 + \mathbf{X}'_{it-1}\beta_K + \mathbf{Z}'_{it-1}\beta_K + u_{it},$$

where $SC_{it}$ is the average measure of state capacity of interest for country $i$ in period $t$; $\mathbf{X}_{it}$ is the vector of potential determinants of state capacity, which

41. Similar plots can be obtained from the author for the other measures of state capacity.

**T A B L E 3 . Descriptive Statistics: Determinants of State Capacity**

| Variable | Period covered | No. observations | Mean | Std. deviation | Minimum | Maximum | 25th percentile | 75th percentile |
|---|---|---|---|---|---|---|---|---|
| Democracy (% of years) | 1900–75 | 156 | 0.27 | 0.38 | 0.00 | 1.00 | 0.00 | 0.41 |
| Democracy (% of years) | 1960–99 | 161 | 0.35 | 0.38 | 0.00 | 1.00 | 0.00 | 0.60 |
| External wars (% of years) | 1900–75 | 156 | 0.07 | 0.11 | 0.00 | 0.57 | 0.00 | 0.12 |
| External wars (% of years) | 1960–97 | 161 | 0.03 | 0.08 | 0.00 | 0.39 | 0.00 | 0.03 |
| Internal wars (% of years) | 1900–75 | 156 | 0.05 | 0.13 | 0.00 | 1.00 | 0.00 | 0.06 |
| Internal wars (% of years) | 1960–97 | 161 | 0.08 | 0.16 | 0.00 | 0.87 | 0.00 | 0.04 |
| Gini (averages) | 1900–75 | 88 | 42.12 | 9.91 | 18.42 | 63.70 | 33.78 | 49.50 |
| Gini (averages) | 1960–99 | 142 | 41.34 | 10.82 | 21.42 | 74.33 | 32.34 | 49.07 |

Source: Author's calculations.

**T A B L E   4 .   Determinants of State Capacity: Regional Comparison**[a]

| | 1900–75 | | 1960–99[b] | |
|---|---|---|---|---|
| Determinant and region | All countries | Former colonies | All countries | Former colonies |
| **Incidence of democracy (% of years)** | | | | |
| East Asia | 0.015 | 0.116 | −0.275*** | −0.264* |
| | (0.105) | (0.138) | (0.101) | (0.136) |
| Latin America and East Asia | −0.123* | −0.156** | 0.137* | 0.176** |
| | (0.064) | (0.077) | (0.073) | (0.081) |
| Constant | 0.293*** | 0.326*** | 0.338*** | 0.299*** |
| | (0.036) | (0.056) | (0.035) | (0.050) |
| No. observations | 156 | 88 | 161 | 89 |
| Adjusted $R$ squared | 0.003 | 0.005 | 0.012 | 0.026 |
| **Ln. Gini (averages)** | | | | |
| East Asia | −0.205*** | −0.084 | −0.275*** | −0.243*** |
| | (0.065) | (0.063) | (0.054) | (0.056) |
| Latin America and East Asia | 0.233*** | 0.134*** | 0.291*** | 0.118*** |
| | (0.046) | (0.048) | (0.035) | (0.037) |
| Constant | 3.666*** | 3.764*** | 3.647*** | 3.820*** |
| | (0.033) | (0.035) | (0.026) | (0.028) |
| No. observations | 88 | 55 | 142 | 77 |
| Adjusted $R$ squared | 0.105 | 0.067 | 0.125 | 0.111 |
| **Incidence of external wars (% of years)** | | | | |
| East Asia | 0.168*** | 0.141** | 0.115*** | 0.114** |
| | (0.056) | (0.071) | (0.034) | (0.047) |
| Latin America and East Asia | −0.056*** | −0.010 | −0.021*** | −0.023** |
| | (0.010) | (0.009) | (0.007) | (0.010) |
| Constant | 0.070*** | 0.024*** | 0.028*** | 0.030*** |
| | (0.009) | (0.008) | (0.006) | (0.010) |
| No. observations | 156 | 88 | 161 | 89 |
| Adjusted $R$ squared | 0.092 | 0.173 | 0.103 | 0.113 |
| **Incidence of internal wars (% of years)** | | | | |
| East Asia | 0.112* | 0.143* | 0.066 | 0.135 |
| | (0.061) | (0.083) | (0.080) | (0.110) |
| Latin America and East Asia | −0.006 | −0.028 | 0.026 | −0.009 |
| | (0.020) | (0.029) | (0.039) | (0.044) |
| Constant | 0.048*** | 0.070*** | 0.069*** | 0.104*** |
| | (0.012) | (0.024) | (0.014) | (0.025) |
| No. observations | 156 | 88 | 161 | 89 |
| Adjusted $R$ squared | 0.030 | 0.020 | 0.009 | 0.009 |

*Statistically significant at the 10 percent level.
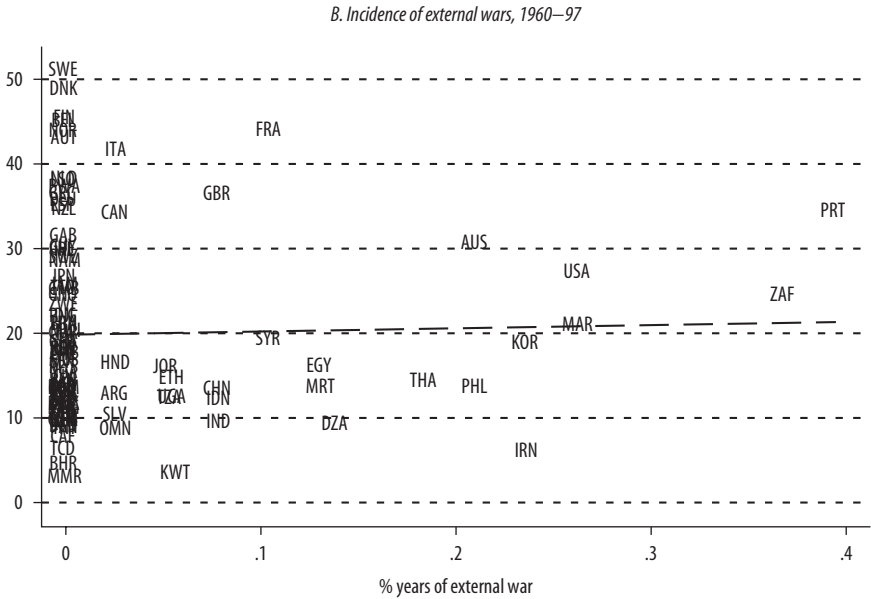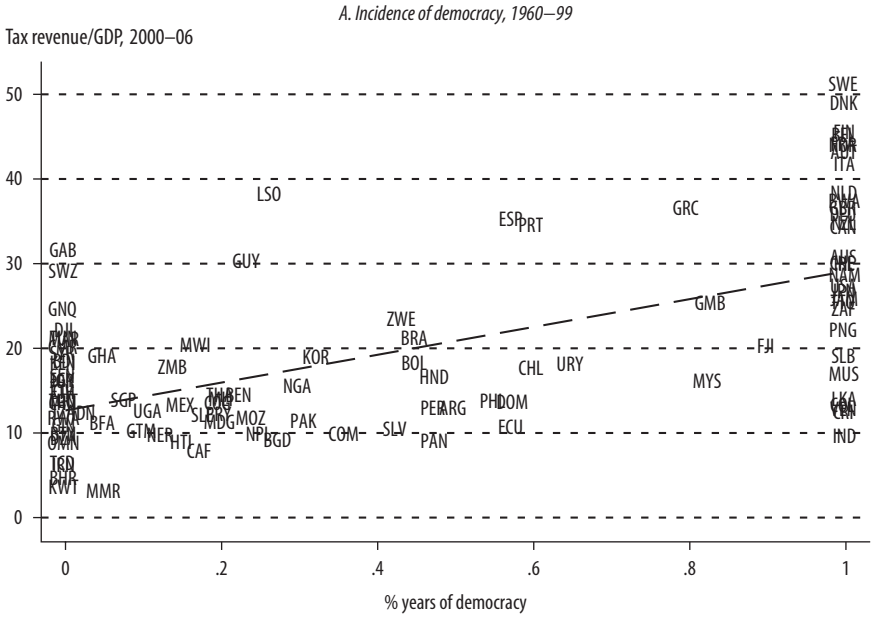**Statistically significant at the 5 percent level.
***Statistically significant at the 1 percent level.
a.  Standard errors are in parentheses.
b.  For incidence of external and internal wars, the period is 1960–97.

**F I G U R E  4 .**  **Cross-Correlates: Tax Revenue versus the Determinants of State Capacity**



A. Incidence of democracy, 1960—99

B. Incidence of external wars, 1960—97

**F I G U R E   4 .    Cross-Correlates: Tax Revenue versus the Determinants of State Capacity (*Continued*)**

*C. Incidence of internal wars, 1960—97*

Tax revenue/GDP, 2000—06

50 — SWE
      DNK

      FIN
      BEL
      AUT
40 — ITA

      NLD
      DEU
      GBR
      FRA
30 — GAB
      AUS
      NZL
      ESP
      GRC
      PNG                        ZWE
20 — PRT
                                    BDI
      CHL
      KOR                 THA    NGA                        ETH   PHL
      DOM CHN                            UGA PER  LKA COL
      IDN        PAK SLE RWA              STM              MOZ
10 —              DZA              IND
      CAF
      BHR                                      TCD
      KWT              IRN                MMR

0 —

      0              .2              .4              .6              .8

                        % years of internal war

*D. Income inequality, 1960—99*

50 —      SWE
                    DNK

          FIN BEL      NOR FRA
          AUT          ITA
40 —
          LUX NLD              SYC        BWA      LSO
          GBR DEU ESP GRC
              CAN NZL PRT
                  AUS        BRB              GAB
30 —          CHL              GUY          SWZ    NAM
          SUR    JPN  USA
                      JAM    TTO        GMB      ZWE
                          MLI PNG
20 —              BDI  FJI CMR  MWI BRA
          KOR  GHA  MUS  URY  SEN KEN BOL  ZMB
              EGY  NGA  MYS  CHL HND
          CHN          IDN MOZ  MDG  SLE PRY BFA
10 —      PAK  DZA  NER  NPL  GTM  CAF
          IND BGD              IRN HTI PAN

      3              3.5              4              4.5

                        log of gini

includes the percentage of years under democracy, external wars, internal wars, and a measure of the Gini coefficient. $\mathbf{Z}_{it}$ is the vector of other controls, which are the dummy variables for the legal origin of the corresponding country.[42] The coefficients β are the parameters of interest. Specifically, the incidence of democracy (a proxy for lower political inequality) should have a positive effect on state capacity, as should the fraction of years under external war (a proxy for the probability of being engaged in an external war, which should increase the future value of public goods). In contrast, a higher percentage of years under intrastate conflict (a proxy for the probability of an internal conflict) and the Gini coefficient (a measure of economic inequality) should have a negative impact on state capacity, according to the model's predictions.

A word of caution is necessary given the potential endogeneity and simultaneity problems that affect the estimation results. The explanatory variables used in the regressions may have been jointly determined with the different measures of state capacity through channels that the theoretical model fails to capture. To address these potential problems, the explanatory variables shown in the model to be driving the decisions to invest in state capacity should precede in time the actual measures of state capacity.

This section reports the results from the regressions estimated with data from two different sample periods. First, taking a long-run perspective, the average value of the explanatory variables corresponds to the period 1900–75. The purpose of these regressions is to see the extent to which the historical levels of democracy, inequality, and war have affected the average values of state capacity after 1980. The second set of regressions correlates the average level of the explanatory variables between 1960 and 1999 with measures of state capacity corresponding to the 2000–06 period. Both sets of regressions include a dummy variable for Latin America.

Table 5 shows the first set of regressions using the seven measures of state capacity as dependent variables. The results indicate that countries with more democratic political systems between 1900 and 1975 have, on average, higher levels of state capacity than countries with less democratic political systems. Quantitatively, a one-standard-deviation increase in the fraction of years under democracy is associated with a 4.1 percentage point increase in the

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42. This is now a standard procedure in the empirical literature. The corresponding dummies control for British, French (omitted category), German, Scandinavian, and Socialist legal origin. To save space, the results discussed below do not report the estimated coefficients on these variables.

**T A B L E  5 .  Long-Run Determinants of State Capacity**[a]

| Explanatory variable | Total taxes (% of GDP) 1980–2006 | Income taxes (% of GDP) 1980–2000 | Protection ag. expropriation risk index 1982–1997 | Ease of doing business ranking 2009 | Gov. effectiveness index 1996–2008 | State's ability index | Policy impl. and enforcement index |
|---|---|---|---|---|---|---|---|
| Democracy 1900–75 | 10.790*** | 9.274*** | 1.878*** | 0.229*** | 1.039*** | 1.429*** | 0.613*** |
| | (2.861) | (2.546) | (0.365) | (0.070) | (0.230) | (0.494) | (0.140) |
| External wars 1900–75 | 21.560** | 16.470** | 3.368*** | 0.630*** | 1.984*** | 4.191*** | 1.177*** |
| | (8.526) | (7.490) | (1.056) | (0.158) | (0.540) | (1.462) | (0.432) |
| Internal wars 1900–75 | −12.700* | −3.414 | −2.205** | −0.486*** | −1.495*** | −3.435*** | −1.071*** |
| | (7.409) | (4.223) | (1.048) | (0.148) | (0.449) | (1.076) | (0.308) |
| Latin American dummy | −3.554** | −3.591*** | −0.043 | 0.120* | 0.147 | 0.036 | −0.086 |
| | (1.655) | (1.261) | (0.315) | (0.064) | (0.159) | (0.611) | (0.170) |
| Constant | 15.190*** | 5.004*** | 6.121*** | 0.269*** | −0.583*** | 4.779*** | 1.755*** |
| | (1.215) | (0.857) | (0.233) | (0.037) | (0.106) | (0.314) | (0.098) |
| No. observations | 104 | 104 | 119 | 147 | 154 | 128 | 144 |
| Adjusted $R$ squared | 0.528 | 0.578 | 0.465 | 0.439 | 0.472 | 0.227 | 0.350 |

*Statistically significant at the 10 percent level.
**Statistically significant at the 5 percent level.
***Statistically significant at the 1 percent level.
a.  Standard errors are in parentheses.

GDP share of total tax revenues and a 3.5 percentage point increase in the GDP share of income tax revenues. The same increase in the share of years under democracy is associated with a 0.7 increase (on a ten-point scale) in the protection against expropriation risk and a 0.4 increase in the government effectiveness (on a scale that ranges from −2.5 to +2.5). The implementation and enforcement of policy (0.2) and the state's ability to formulate and implement national policy initiatives (0.5) also increase (magnitudes in parentheses). Finally, the rank in the ease of doing business measure is improved by 10 percent.

The results also show that the incidence of external wars between 1990 and 1975 is positively correlated with the level of state capacity. A country with a one-standard-deviation higher share of years under external war has a higher GDP share of total tax revenues by 2.4 percentage points and a higher GDP share of income tax revenues by 1.8 percentage points. The effects are also sizable when the other measures of state capacity are considered. Meanwhile, countries engaged in internal wars have lower levels of state capacity, on average. More precisely, a one-standard-deviation increase in the incidence of internal wars corresponds to a 1.7 percentage point decrease in the GDP share of total tax revenues (the coefficients are not significant for the other two measures of fiscal capacity). A country with a one-standard-deviation higher incidence of internal wars has lower protection against expropriation risk and government effectiveness by 0.3 and 0.2, respectively. The ease of doing business ranking is also lower (by 0.1), as are the state's ability to formulate and implement national policy initiatives (by 0.5) and the implementation and enforcement of policy (by 0.1).

Given the data limitations, adding income inequality to the list of explanatory variables comes at a cost in terms of the number of observations. Table 6 reports these regressions and shows that the previous results generally hold. The only exception is that the estimate of the internal wars coefficient loses significance in the regression that uses the GDP share of total tax revenues as the dependent variable. The main result is that higher income inequality is associated with lower levels in two of the measures of state capacity. More specifically, a one-standard-deviation increase in the Gini coefficient is associated with a decrease of 0.4 in the protection against expropriation risk index and a decrease of 0.2 in the government effectiveness index. When the other state capacity measures are used, the coefficient estimate of the Gini coefficient turns out to be not statistically significant.

Finally, the coefficient estimate of the Latin American dummy is statistically significant when state capacity is measured with the two fiscal vari-

**T A B L E  6 .  Long-Run Determinants of State Capacity, Including Income Inequality**[a]

| Explanatory variable | Total taxes (% of GDP) 1980–2006 | Income taxes (% of GDP) 1980–2000 | Protection ag. expropriation risk index 1982–1997 | Ease of doing business ranking 2009 | Gov. effectiveness index 1996–2008 | State's ability index | Policy impl. and enforcement index |
|---|---|---|---|---|---|---|---|
| Democracy 1900–75 | 8.400*** | 7.290*** | 1.788*** | 0.276*** | 1.121*** | 1.879*** | 0.612*** |
|  | (2.850) | (2.663) | (0.487) | (0.094) | (0.238) | (0.593) | (0.192) |
| External wars 1900–75 | 25.800*** | 19.890*** | 3.352*** | 0.620*** | 2.024*** | 4.013** | 1.543*** |
|  | (8.656) | (7.342) | (1.201) | (0.197) | (0.577) | (1.666) | (0.527) |
| Internal wars 1900–75 | –15.020 | –4.742 | –3.713*** | –0.574*** | –2.184*** | –6.906*** | –1.957*** |
|  | (9.467) | (5.081) | (1.093) | (0.172) | (0.397) | (2.217) | (0.417) |
| Latin American dummy | –6.267** | –4.809** | 0.364 | 0.136 | 0.294 | 0.558 | 0.101 |
|  | (2.443) | (1.960) | (0.425) | (0.082) | (0.203) | (0.730) | (0.206) |
| Ln. Gini 1900–75 | 5.455 | 1.511 | –1.444* | –0.098 | –0.964** | –0.177 | –0.107 |
|  | (5.818) | (4.043) | (0.778) | (0.112) | (0.395) | (1.601) | (0.403) |
| Constant | –2.410 | 0.765 | 11.540*** | 0.642 | 3.147** | 5.261 | 2.134 |
|  | (22.010) | (15.180) | (2.911) | (0.436) | (1.552) | (6.188) | (1.562) |
| No. observations | 67 | 67 | 76 | 78 | 80 | 69 | 77 |
| Adjusted R squared | 0.583 | 0.591 | 0.565 | 0.502 | 0.599 | 0.295 | 0.437 |

*Statistically significant at the 10 percent level.
**Statistically significant at the 5 percent level.
***Statistically significant at the 1 percent level.
a.  Standard errors are in parentheses.

ables and the ease of doing business ranking. These results suggest that the model is not able to capture all the variation when the fiscal measures and the ease of doing business ranking is used to measure state capacity. However, when the remaining bureaucratic measures of state capacity are considered, the coefficient estimate of the Latin American dummy is not statistically significant.

Table 7 reports the regressions using measures of democracy and inequality between 1960 and 1999 and wars between 1960 and 1997 as determinants of three measures of state capacity for which recent data for the 2000s are available (namely, taxes over GDP, government effectiveness, and the ease of doing business). The basic results (reported in columns 1, 4, and 7) are similar to the ones obtained with the long-run data. The incidence of democracy and internal conflict seem to have a strong correlation with these measures of state capacity (positive in the case of former and negative in the latter). Importantly, economic inequality (measured as the log of the Gini coefficient) does have a negative and significant impact on state capacity. However, the effect of external wars vanishes in the case of tax revenues over GDP, suggesting that interstate confrontations no longer play the role they did in the earlier part of the twentieth century, when they contributed to the development of the state in Europe and the United States.[43]

The Latin American dummy has a negative and highly significant coefficient estimate when state capacity is measured as tax revenues (over GDP), but not with the other two measures of state capacity, suggesting that it does not add any explanatory power. In the regression using the tax ratio as the dependent variable, the dummy acts as a substitute for the Gini coefficient. Since inequality is a better way of capturing the specificity of Latin America, rather than a dummy, and in order to explore the role of economic inequality even further, the regressions reported in columns 3, 6, and 9 include a new term corresponding to the interaction of the measures of political and economic inequality (that is, the Gini coefficient and the incidence of democracy). The estimate of the coefficient on the interacted term shows that when the (log) Gini coefficient is high, the positive effect of democracy on state capacity falls significantly. As Latin America has a much higher Gini coefficient than other parts of the world, this result can explain why progress in terms of democracy has failed to deliver the

43. These results are in line with the panel estimations in Cárdenas and Eslava (2010) where internal conflict, rather than external war, seems to be the key driver explaining changes in state capacity.

**T A B L E   7 .  Determinants of State Capacity: Recent Measures[a]**

| Explanatory variable | Total taxes (% of GDP) 2000–06 | | | Government effectiveness index 2002–08 | | | Ease of doing business ranking 2009 | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Democracy 1960–99 | 9.833*** | 13.150*** | 131.600*** | 1.184*** | 1.183*** | 7.111*** | 0.355*** | 0.332*** | 0.658 |
| | (2.394) | (2.390) | (43.620) | (0.188) | (0.197) | (2.262) | (0.061) | (0.063) | (0.694) |
| External wars 1960–97 | 2.203 | –4.426 | 7.443 | 1.722*** | 1.723*** | 1.802*** | 0.378** | 0.429** | 0.382** |
| | (8.495) | (8.338) | (8.174) | (0.428) | (0.436) | (0.399) | (0.165) | (0.167) | (0.168) |
| Internal wars 1960–97 | –18.840*** | –17.710*** | –16.840*** | –1.116*** | –1.117*** | –1.068*** | –0.243* | –0.250* | –0.240* |
| | (4.900) | (4.440) | (5.262) | (0.263) | (0.267) | (0.273) | (0.128) | (0.126) | (0.131) |
| Ln. of Gini 1960–99 | –9.854** | –3.144 | 10.190 | –1.433*** | –1.433*** | –0.601 | –0.271*** | –0.315*** | –0.229** |
| | (4.709) | (4.733) | (7.883) | (0.260) | (0.278) | (0.381) | (0.079) | (0.085) | (0.116) |
| Latin American dummy | – | –9.452*** | – | – | 0.001 | – | – | 0.077 | – |
| | | (2.475) | | | (0.185) | | | (0.072) | |
| Democracy * Ln. Gini 1960–99 | – | – | –32.240*** | – | – | –1.583*** | – | – | –0.081 |
| | | | (11.700) | | | (0.601) | | | (0.188) |
| Constant | 53.180*** | 30.070* | –23.920 | 4.853*** | 4.856*** | 1.685 | 1.292*** | 1.438*** | 1.133** |
| | (18.130) | (17.550) | (30.100) | (1.027) | (1.084) | (1.489) | (0.304) | (0.322) | (0.446) |
| No. observations | 93 | 93 | 93 | 131 | 131 | 131 | 129 | 129 | 129 |
| Adjusted $R$ squared | 0.532 | 0.599 | 0.587 | 0.650 | 0.647 | 0.664 | 0.513 | 0.515 | 0.510 |

*Statistically significant at the 10 percent level.
**Statistically significant at the 5 percent level.
***Statistically significant at the 1 percent level.
a. Standard errors are in parentheses.

expected results in state capacity. The conclusion to be drawn from this last set of exercises is that the model is able to explain the main determinants of state capacity. In the specific case of Latin America, democracy has a positive effect, but this effect is lower in the region compared to the other parts of the world. Higher economic inequality seems to partially undermine the effects of political democratization on the incentives to invest in state capacity.

## Conclusion

As Albert O. Hirschman said, the more conspicuous characteristic of Latin America's recent experience is diversity, and the most interesting stories are country-specific rather than broad generalizations.[44] To understand that diversity, such as the emergence of Brazil as a regional power and the exceptional performance of Chile, few concepts are as important as state capacity.

This paper has attempted to explain why state capacity is generally low in Latin America. In doing so, it has identified two key determinants: the degree of political and economic inequality and the incidence of internal and external wars. Both theory and evidence show that the concentration of political and economic power reduces the incentives to invest in state capacity. Although these forms of inequality operate through different mechanisms, their joint presence is particularly damaging. Economic inequality exacerbates the problems caused by political inequality and vice versa. By the same token, the adoption of democratic practices does not deliver its full benefits in countries that are highly unequal in economic terms. This may partly explain why democratization in Latin America has failed to deliver the expected results in terms of state capacity.

In addition to moral objections, external wars are easily discarded on empirical grounds as a viable strategy for state building. Over the last fifty years, interstate wars have had no effect in explaining fiscal state capacity, suggesting that the earlier experiences of Europe and the United States are not replicable. While the effects of external wars have lost significance, internal wars are a major and growing source of problems for many countries, especially those that are former colonies. Between 1960 and 1997, the average former colony spent 10 percent of the time fighting internal wars, with devastating effects on state capacity.

44. Hirschman (1995, chap. 15).

Although this paper makes some progress in exploring how political and economic inequalities jointly determine state capacity, as well as the role of conflict, it is silent on a number of interesting questions that deserve further study. One important issue relates to the effects of state capacity on economic inequality, which need to be modeled and incorporated in the empirical investigation. Another interesting extension is to model civil war as a joint outcome of political and economic inequality. Finally, this paper does not cover the relationship between state capacity and economic growth. Determining the precise channels though which state capacity affects economic well-being is another promising route for future research.

## Appendix

### Proof 1: The Effect of Political Inequality ($\rho^A - \rho^B$) on Investment in State Capacity

To simplify the notation in the rest of the proof, define the level of political inequality as $\rho^A - \rho^B = \psi$. Recall that the sum of the political weights is equal to unity, $\rho^A\beta^A + \rho^B\beta^B = 1$. Using the new political inequality definition and this constraint, the weighting parameters can be re-expressed as $\rho^A = 1 + \psi\,\beta^B$ and $\rho^B = 1 - \psi\,\beta^A$. Updating the optimality condition in equation 13 with these expressions and assuming that $Y^A = Y^B = Y$, gives

$$(16) \quad \lambda(\alpha_1)F_\tau(\tau_2 - \tau_1) = \left[1 - H(1 + \psi\beta^B)\right]Y\,E\left\{\alpha_2\big|\alpha_2 \geq (1 + \psi\beta^B)\right\}$$
$$-\left[1 - H(1 + \psi\beta^B)\right]Y\left[(1 + \psi\beta^B)\beta^A + (1 - \psi\beta^A)\beta^B\right]$$
$$+ H(1 + \psi\beta^B)\psi(\gamma - \beta^A)Y.$$

To determine the effect of political inequality on the state capacity investment decision, take the derivative of the right-hand side of equation 16 with respect to $\psi$, which gives $-\beta^B h(1+ \psi\,\beta^B)\,\psi\,(1 - \gamma)\,Y - H(1+ \psi\,\beta^B)\,(\beta^A - \gamma)Y$. Assuming that there is political instability $\beta^A \geq \gamma$, this derivative becomes negative. The optimality condition in equation 16 has to hold in the equilibrium; therefore as its right-hand side decreases with increasing political inequality $\psi$, the left-hand side should also decrease. This would be possible only if $F_\tau(\tau_2 - \tau_1)$ decreases, as a result of a decrease in the level of investment in state capacity $(\tau_2 - \tau_1)$.

*Proof 2: The Effect of Income Inequality ($\epsilon$) on Investment in State Capacity*

Recall the optimality condition in equation 14:

$$
(17) \quad \lambda\left(\alpha_{1}\right) F_{\tau}\left(\tau_{2}-\tau_{1}\right)=\left[1-H\left(\rho^{A}\right)\right]\left[\beta^{A}\left(Y+\epsilon\right)+\beta^{B}\left(Y-\epsilon\right)\right]
$$

$$
\bullet \ E\left\{\alpha_{2}\middle|\alpha_{2} \geq \rho^{A}\right\}-\left[1-H\left(\rho^{A}\right)\right]\left[\rho^{A}\beta^{A}\left(Y+\epsilon\right)+\rho^{B}\beta^{B}\left(Y-\epsilon\right)\right]
$$

$$
+H\left(\rho^{A}\right)\left(\rho^{A}-\rho^{B}\right)\left[\gamma\beta^{B}\left(Y-\epsilon\right)-\left(1-\gamma\right)\beta^{A}\left(Y+\epsilon\right)\right].
$$

To determine the effect of income inequality, $\epsilon$, on the level of investment in state capacity, take the derivative of the right-hand side of equation 17 with respect to $\epsilon$, which gives $-\left[1-H(\rho^{A})\right](\beta^{B}-\beta^{A}) E\{\alpha_{2}\mid\alpha_{2}\geq\rho^{A}\}-\left[1-H(\rho^{A})\right]$ $(\rho^{A}\beta^{A}-\rho^{B}\beta^{B})-H(\rho^{A})(\rho^{A}-\rho^{B})[\gamma\beta^{B}+(1-\gamma)\beta^{A}]$. This derivative is negative. As the right-hand side of equation 18 decreases with increasing income inequality, the left-hand side should also decrease to maintain the equality. This would be possible only if $F_{\tau}(\tau_{2}-\tau_{1})$ decreases, which happens when the level of investment in state capacity $(\tau_{2}-\tau_{1})$ decreases.

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