Guns, Germs, and Slaves: an Alternative View of the Colonial Origins of Comparative Development

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This paper shows that early colonial interactions between Europeans and indigenous populations, specifically the deaths of the latter, have long-term effects on economic development. We propose an alternative view on the historical origins of comparative development, arguing for links between pre-colonial conditions, colonial-era practices, and growth centuries later. We explore the decades of first contact between Europeans and the indigenous population for both violence against that population and the type of political-economic regime established. These violence and regime consequences affected the strength or weakness of property-protecting institutions, with the latter in turn influencing per capita income today.
JEL: O43, O47, N40
Keywords: colonialism, institutions, comparative development

For the last two decades, scholarship on the long-term effects of historical phenomena on contemporary economic development has highlighted two causal factors. On the one hand, development is linked back to the role of long-standing institutions, notably those associated with the protection of property rights; on the other hand, those institutions are themselves linked to the death toll, centuries earlier, of European settlers (Acemoglu et al., 2001, 2002; La Porta et al., 1998, 1999; Banerjee and Iyer, 2005; Nunn, 2008).

However, it is worth noting that both causal factors have, to date, been glossed in somewhat restrictive ways. Property-protecting institutions vary considerably according to the nature of the political-economic regime: for example, a newly independent state organized around large-scale plantations using slave labor will not necessarily have the same types of property protection as one organized around small landholdings by independent farmers. By the same token, deaths among the indigenous population, or depopulation from slave exports, have potentially significant effects on those regimes themselves over and above the supply of set-

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tlers from European metropoles. Although these points are recognized by some of the existing literature (though see Mahoney 2010, 2015), they have not been focused on as such.

This paper should be seen as both a follow-on to the burgeoning literature sparked by Acemoglu and his coauthors or on related pre-colonial phenomena (Herbst, 2000; Gennaioli and Rainer, 2006, 2007; Michalopoulos and Papaioannou, 2013; Guiso et al., 2016; Huillery, 2009, 2011; Easterly and Levine, 2016; Banerjee and Iyer, 2005; Iyer, 2010; Dell, 2010; Acemoglu et al., 2002), and as an explicit attempt to draw upon theoretical arguments made between the 1930s and the 1970s. The core idea of this paper, to put it bluntly, is that early interactions between European colonizers and the indigenous population, specifically the deaths of the latter, occasioned, directly or indirectly, by the former, have long-term effects on economic development. Whether the deaths in question resulted from massacres or diseases brought by the colonizers, or whether certain areas were depopulated as a result of the slave trade (spurred by the demand for labor in various colonies), these actions had significant consequences – although varying by type of regime – for centuries to come.

The paper is in three substantive sections. In Section I, after discussing the older and more recent arguments referenced above, we adduce a set of claims about the effects of colonial-era violence on institutions. The key intervening variable, we argue, is the type of colonial regime, and we distinguish four ideal types: haciendas and encomiendas, slave colonies, Jeffersonian farmers and modern export colonies. In Section II, we discuss the data construction of the variables introduced in the preceding section, notably those pertaining to colonial regimes and colonial-era violence (deaths, epidemics, and enslavement during the first century after initial contact with Europeans); to do this, we also need to integrate demographic scholarship on population at the time of first contact. In Section III, we present estimation results: first, we demonstrate that physical geography is the main determinant of the share of the indigenous population eliminated; second, we show that the type of colonial regime is determined in large part by that share; third, we find that colonial regimes contribute to both contemporary property-protecting institutions and to per capita output.

I. The Link between Early Colonial Practices, Institutions, and Development

A. Why institutions?

What explains the varying levels of economic development among former colonies? Early accounts focused on the effects of religion, work ethic, national heritage of the colonizers, or other supposed cultural features (North, 1988), yet these explanations were shown to be insufficient (Engerman and Sokoloff, 2000; Acemoglu and Robinson, 2012), leading scholars to examine additional factors. Other work has pointed towards geographical characteristics such as climate and natural re-

sources as determinants of economic growth (Diamond, 1997; Sachs and Warner, 2001). These latter arguments have in turn been criticized for relying on time-invariant traits for what are clearly time-dependent outcomes (Acemoglu et al., 2002; Acemoglu and Robinson, 2012). More recently, work by Acemoglu and colleagues (Acemoglu and Robinson, 2012; Acemoglu et al., 2014) suggest that neither political "ignorance" nor pre-existing human capital endowments can explain the economic divergence.

As indicated above, "reversal of fortune" types of explanations have called attention to the importance of property-protecting, rent-discouraging institutions for sustainable economic growth and development (Engerman and Sokoloff, 1997, 2000, 2005; Banerjee and Iyer, 2005; Acemoglu et al., 2002; Acemoglu and Robinson, 2019). In this regard, it is worth recalling that scholars have long noted the importance of institutions for economic development (North, 1986; Demsetz, 1964). Aspects of institutions often discussed within the literature on comparative development include the institutionalization of key services and the encouragement of the development and sustainability of human capital, corruption, security of property rights, investment in public infrastructure, and capital (Glaeser et al., 2004). The challenge, therefore, is to explain where differences in institutions come from.

B. Early colonial practices and institutions

In one of the earliest treatments of institutions as endogenous to economic growth and which also evaluates the impact of colonialism, Acemoglu et al. (2001) argue that in places where the disease environment was not favorable to European settlement, the establishment of extractive institutions was more likely. However, this explanation does not take into account pre-colonial political and social characteristics, features that not only helped determine the subsequent development of institutions (along with the nature of colonial arrangements and their impact on the local population) but which themselves could magnify or attenuate the significance of that disease environment.

Our claim in this paper is that the number of indigenous people killed in the first 100 years of the colonial period, along with the nature of the colonial political-economic regime, had strong long-term effects on property-regarding institutions, and hence on levels of economic development today. Thus, it was neither only Europeans' ability to settle (Acemoglu et al., 2001) nor how large their numbers were relative to the indigenous population (Easterly and Levine, 2016) that determined the extent to which they were able to establish institutions respectful of private property.

How did this work? Perhaps the most classic argument has to do with "settler colonies," positing that in countries with relatively low-density pre-encounter populations, it was easier for the colonizers to expropriate the land of the indigenous population, become commercial (though not, at this stage, capitalist) farmers, and establish egalitarian institutions respectful of private property which

arguably, many steps later, led to higher income levels (Wolfe, 1999). This process could be given an extra boost if a significant percentage of the pre-encounter indigenous population was, during the colonial period or afterward, killed by massacres and European-brought diseases, or evicted from the land in other ways. Such killings or evictions could be facilitated if the preexisting population was nomadic rather than organized in permanent villages. Classic examples include the U.S., Canada, Australia, and Argentina (Wolfe, 2006; Carter and Sutch, 2012; Tough and Dimmer, 2012; Ward, 2012). The scarcity of population resources in these areas led to other priorities for development, such as the construction of infrastructure and railways (the latter further accentuating pressures on the indigenous population); symbolically, in this latter era, directly the terms "public works" and "economic development" start to be used together.[1] Early scholarship on the subject includes Lewis (1954), Baldwin (1956), and Helleiner (1966), with arguments later extended by Harris and Todaro (1970) and by Hansen (1979).

A southern African version of the settler-colonial argument builds on, but then inverts, the initial assumption of low pre-encounter population density. After force was used to establish or maintain smallholding farms, the indigenous population, confined to reserves or restricted to certain areas, could be dragooned either by forced labor or by swingeing taxes into mines or larger-scale commercial farming. If this happened in an era of industrialization, profits from the mines or larger farms could be reinvested in industry, thereby helping to lead, again some steps later, to higher income levels (Austin, 2010; Meredith, 2012). The key contextual variable distinguishing this second settler-colonial trajectory from that evoked in the more standard Potosí-like "resource curse" and "reversal of fortune" literatures (Acemoglu et al., 2001; Nunn, 2005, 2008; Sachs and Warner, 2001), as per the effects of the *Mita* in Peru and the forced labor system in Mexico, is precisely the historical era. Settler colonialism has long-term effects on growth, but through different paths: one, more prevalent, involving massive diminution of the indigenous population; the other involving their coerced conversion into a mining labor force.

However, colonial-era massacres, epidemics, and land dispossession did not always result in long-term economic growth. On arguments going back as far as Weber (1927; also see Borah 1951 and Furtado 1969), if the indigenous population at the time of colonization was dense and there were few mineral resources which could be mined, then, in a pre-industrial era, the European conquerors could force the population into agricultural labor. This in turn sucked resources away from small-holding farmers and concentrated wealth and political power in a landowning elite, a process strengthened further by the development of institutions which reinforced these inequalities and therefore impeded future rational reallocation of capital (Cockcroft et al., 1972; Beckford, 1972; Knight, 2011).

[1] Charles Mayes, "Essay on the Manufactures More Immediately Required for the Economical Development of the Resources of the Colony" [Australia], 1861; this was known as "the doctrine of development before settlement." The key point here is that investment is explicitly for the purpose of development.

Nonetheless, as various scholars crudely grouped under the heading of "dependency theory" (Cardoso and Faletto, 1979; Gunder Frank, 1978) pointed out, it would be misleading to imagine that colonial or post-colonial agriculture in much of Latin America was feudal or noncapitalist: if plantations could be established using either indigenous forced labor or imported chattel slaves, then plantation owners would have an income source which would enable them to dominate national politics, whether on their own or through an alliance with local oligarchs, thereby leading to the development of institutions which favoured plantation exports over industry. This is, per Engerman and Sokoloff (2005), what happened in Brazil: early colonists there deemed the land suitable for growing sugar. Sugar required plenty of slave labor, hence, in Brazil, slavery was institutionalized early on, gradually turning the colony into a much more hierarchical society with very different institutions to those of, say, the northern parts of the US, namely less protection of smallholding private property. The broader argument is that the production of lucrative crops or extraction of minerals necessitated the establishment of institutions protecting the interests of landholders or mine possessors from those of the rest of the population, thereby leading to stratified societies with low protection against expropriation risk later. Inequality persisted through related institutions, such as land policy and tax systems (Adelman, 1994; Gates, 1979; Solberg, 1987; Wolf and Mintz, 1957).[2] The expectation from this line of reasoning is that deaths below a certain level have no effect on growth: most of the peasantry need to be killed or otherwise displaced to get a positive impact on institutions. Analogous stories can be told about the Caribbean, about plantation agriculture in Africa, and, most famously, about the southern states in the United States (e.g., Fogel 1974; cf. Marx's *New York Daily Tribune* articles on the U.S. Civil War and on India).

Note that both the neo-Weberian arguments and the more recent "plantation" arguments link higher population density to the subsequent skewing of institutions in favor of a landowning elite and against various forms of industrialization. This should not be interpreted to mean that the indigenous population still did not suffer from overwork and epidemics (this was notoriously the case on Hispaniola, as well as in the Congo Free State), but those effects were attenuated either through a high initial population density or through large-scale imports of chattel slaves from Africa. Somewhat ghoulishly, it might be claimed that only if the vast majority of the indigenous population was destroyed (something which high preexisting population density militated against) could the settler colonial experience have been reproduced. However, that in turn could only have occurred if significant numbers of settlers arrived; absent that condition, massacres, epidemics, or high levels of enslavement and transfer to other continents had the long-term effect, whether nationally or regionally, of atomizing the population, leading to social disintegration and, for decades after, of skewed institutions pro-

[2]Although note that the Engerman and Sokoloff argument has come under considerable criticism in recent years as understating the general level of protection of private property (Williamson, 2010, 2015).

tecting the elite and dampening entrepreneurship. There is evidence that this was a direct result from colonization in Chile, Namibia, Angola, and Paraguay (Faron, 1960; Poewe, 1985).

Our argument connecting colonial-era deaths of the indigenous population to subsequent institutional developments and, eventually, to contemporary income levels, is to some degree complementary to Mahoney's (2010) "general historical-institutional model of colonialism," which focuses on the interplay between the type of colonizer, the size and structure of the indigenous population, and the availability of resources in the colony as an explanation for varying levels of early colonization and subsequent development. He shows that the colonizers adopted different strategies depending on the possibilities for labor exploitation or capital accumulation they encountered. Mercantile colonizers preferred resource-rich and socio-politically complex colonies because this allowed them to establish themselves at the top of the societal pyramid and extract rents and resources with relative ease. Political economy factors and the institutions of the colonial powers further modified both their settlement patterns in the colonies and the types of institutions they established. This account adds to existing explanations by arguing that certain places were deliberately targeted for colonization depending on their population size and structure, as well as their mineral and agricultural endowments. The argument provides an important piece of the puzzle of why colonies had very different early colonial experiences. It also suggests that there might be correlation or interaction between factors often considered separately in the literature on the impact of colonization, such as resource endowments, population size and structure, and the number of indigenous people killed in the process of colonization.

In sum, the literature suggests a number of mechanisms translating colonial practices to differences in early institutions and subsequent economic development. One mechanism links the extermination of the indigenous population to institutions respectful of private property through the ease of settlement of the European colonizers. Another takes into account resources and suggests that the indigenous (or later, forcibly transferred) population in resource-rich colonies was bound in mines and plantations, thus contributing to the establishment of extractive institutions less protective of private property. Societal disintegration would presumably be harder to achieve in densely populated indigenous societies and much easier in sparsely-populated areas inhabited by nomads. Further, resource extraction requires plenty of labor and therefore was more common in densely-populated resource-rich areas.

C. Regimes

The above considerations can be stylized as four distinct ideal types of colonial- and immediately post-colonial-era regimes. Each regime, understood as a form of political-economic organization, results from a particular combination of economic significance of the colony for the metropole, precolonial population density, and,

to a lesser degree, settler mortality; that same combination also enables particular types and degrees of violence against indigenous and other populations. These syndromes, as we will call them, of regime type and violence type/degree conduce to particular kinds of institutions, and hence particular growth paths, for decades to come, in per capita income (cf. Austin 2008; Hopkins 2009).

Jeffersonian farmers

We begin with a particular version of the settler-colonialism argument, revolving around those whom we call "Jeffersonian farmers."[3] The idea here, abstracting from Thomas Jefferson's dithyrambs to agriculture, is that when the existing population density is relatively low (though this low level is to some degree a consequence of earlier or simultaneous waves of settler-borne diseases), when there are no apparent riches to be made with coerced labor, and when would-be colonial settlers find the biotope, including microorganisms, to be both habitable and cultivable, those settlers will immigrate to the area with the intent of engaging in family-owned subsistence farming, i.e., the bulk of their production will go to feeding their nuclear family, with a limited portion of crops being marketed in order to purchase good unavailable locally. It is critical that existing population density be low so that the land is free, in both senses of the term: settlers do not need to buy the land but simply stake a claim, and the land is free of earlier inhabitants, who have now been killed off or simply shoved out.

The consequences of Jeffersonian settler colonists are striking. First, as implied above, there is a significant symbiosis between the regime and violence: the establishment of new settlements and the protection of existing ones will give an impetus to the use of violence against the indigenous population; the latter is further reduced by epidemics caused by settler-carried diseases. As to downstream effects, over the following decades, the legal protection of farmers, combined with their political weight and with the fact that the indigenous inhabitants have already been gotten rid of and hence do not require a large standing army, conduce to the structuring of institutions that protect contracts and private property, promote widespread infrastructural development, and facilitate labor mobility. These institutions then lead to a virtuous circle of increasing per capita income.

It should be noted that the settler-colonist regime, as the others we discuss below, was neither eternal nor coextensive with the territory of the entire country. The United States, for example, was characterized by Jeffersonian-style settler colonialism in the northern colonies, as well as frontier regions of the southern ones; after independence, and the invention of the cotton gin, westward expansion involved both Jeffersonian farms and large, export-oriented plantations. In addition, even settler-colonialist regions in the U.S. arguably began to change, as farmers moved increasingly to producing crops primarily for market and, of

[3]We here do not specify the "southern African" variant, partly because there are only a handful of such cases, and partly because, as specified above, the labor used in the mines was to a significant degree produced from Jeffersonian-style land-clearing operations complementary to individual farm homesteads.

course, migrated to cities. In spite of these geographical and temporal restrictions, at the national leveled and for centuries (e.g., in the U.S., both before and after the Civil War), both the institutions established and the policies carried out toward the indigenous population reflected Jeffersonian-style settler colonialism.[4]

Haciendas and encomiendas

A second colonial-era regime also was organized in the first instance around agricultural production which was, to a great degree, commercial (though not export-oriented) but not capitalist. Although haciendas and encomiendas differed to some degree, notably in the time period (encomiendas immediately after conquest, haciendas later and for a considerably longer time period; encomiendas with formal grants of labor access), both involved Europeans or other conquerors inserting themselves into pre-existing social structures; using indigenous labor, typically on an unpaid basis, to produce a variety of crops for local and regional markets; and exhibiting an abiding concern with maintaining family status (Van Young 2006, Introduction; Lockhart 1969; Keith 1971).[5]

In order for this regime to operate, the population density of the regions had to be higher than for Jeffersonian farmers, thus permitting sufficient labor supplies while also enabling the indigenous population to continue feeding itself. The potential riches to be made with indigenous labor made it worthwhile for newcomers to grab onto that labor; in addition, although there were not massive waves of European immigrants aiming to become hacendados (land was differentially allocated, with those of high status getting the lion's share), the local biotope was sufficiently nonaversive to permit continued immigration.

The effects of the hacienda and encomienda regime were every bit as noteworthy as those of Jeffersonian farmers. To begin with, the regime was integrally linked to an ongoing type and degree of violence: both the establishment of encomiendas in the first phase and the maintenance of haciendas in the second, relied to a significant degree on violence against the indigenous population: not only the decades of initial conquest in the central regions and the extended campaigns in the periphery, but putting down the rebellions that broke out from time to time (Katz, 1988; Gabbert, 2012). More importantly, haciendas could only function because they were able to coerce labor on a long-term basis, even if this coercion did not involve swords or guns being used on a daily basis, and even if, in later years, there were some wages paid; the episodic rural rebellions that punctuated the colonial era attest to the coercion. As to effects, the influence of hacendados and violence on the growth-relevant institutions of the colonial government (and, subsequently, of the early independence era) was on the whole negative: because

[4]In future work, we will explore the possibility of subdividing countries into regions and historical eras.

[5]We add the point on non-European conquerors to cover cases such as Ethiopia, where, starting in the later 19th century, expansion into non-Amharic areas under Yohannes and, later, Menelik coincided with a series of repulsed invasions (Egypt and Italy, notably).

the colonial government was dominated both by metropole-appointed administrators and the Church, for neither of whom was efficiency or openness to new enterprises a concern; because property laws, though protective to some degree of haciendas, largely were marked by other criteria, notably a paternalistic concern with the indigenous population and a preference for limiting labor mobility (to help the haciendas, and out of paternalism); and because the state's focus on labor, the hacendados' on status, and the relative failure to update legal codes and judicial procedures led to a severe underdevelopment of the mortgage market (notably Coatsworth 2006; see also Florescano 1984, but cf. Faguet et al. 2017).

Note, as with the settler-colonist regime, that the encomienda-hacienda one, too, was mixed in certain geographical areas with others. For example, Mexico had mining operations and, later, sugar plantations, whereas Guatemala had large-scale indigo exports (Smith, 1959). Nonetheless, because the structuring of national-level institutions was principally responsive to groups connected with haciendas, property-related laws primarily reflected the interests of those groups both prior to formal independence and for decades thereafter.

Slave colonies

The third colonial-era regime involves, integrally, chattel slavery. We have in mind the way in which drastic reductions in the pre-contact population are tied to slavery, with the latter either being used to supply a labor force as a way of making up for their dead indigenous predecessors, or as itself a cause of the reductions.

The ideal-typical cases of slave colonies were the sugar plantation islands in the Caribbean. Upon arriving, Europeans enslaved the indigenous population and set it to work producing sugar, in that era and for centuries thereafter a highly lucrative export crop. However, for various reasons (overwork, diseases, warfare and punitive raids, social disintegration), the indigenous slaves soon died and were replaced by slaves drawn primarily from West Africa, thereby creating one of the legs of the canonical "triangular trade." But in fact, slave economies did not need to revolve around sugar in particular or agriculture in general: they also were characteristic of mines, such as the gold mines of Colombia (worked by African slaves) or the famous Potosí complex in Bolivia (labor furnished by both compulsion applied to the indigenous community, the *mita*, and, after they died, other African slaves).

Both the maintenance of the slave economy and the violence associated with it depended on the same three factors as for the first two regimes. When the population density was either low initially or, because of the death toll, subsequently, imported slaves were the only way to keep mines and plantations functioning. The high costs of continued slave imports made enterprises based on those imports feasible only when the potential riches from those enterprises were high. And the relatively low numbers of owners and European-born engineers needed for these operations meant that even moderately rebarbative biotopes were not a deterrent

to necessary immigration.

The symbiotic nature of the slave colony regime and its characteristic levels and types of violence are striking. The regime was not only based on a high initial number of deaths but of continued high mortality, something facilitated by the slave trade, at least in the mining sector. More generally, and especially in the early years of slave labor enterprises, the combination of the high death toll and the availability of slaves conduced to the establishment of additional plantations (this is what happened in Angola, which was in fact the single largest source of exported slaves).

Beyond the death toll, though, the slave colony regime had profound and long-term effects on institutions. The export significance of plantations and mines, as well as the near-absence of the indigenous population in the areas surrounding those enterprises, meant that infrastructure spending (for example, "enclave"-style transportation links) and property laws were oriented around them; meanwhile, the absolute reliance of plantations and mines on slave labor meant that control of that labor was massively privileged over labor mobility. Even after formal independence, these institutional effects persisted (Tandeter, 2006; Dell, 2010; Bethell and Murilho de Carvalho, 1985; Bakewell, 1984; Schwartz, 1984; Nunn, 2008; Engerman and Sokoloff, 2002; Bottero and Wallace, 2013).

Of course, as with the first two regimes, in none of the slave colonies was slavery the sole political-economic mode of organization. Peru, for example, had haciendas supplying mines; and even though slave enterprises such as sugar and gold mining dominated Brazil, there were also zones in which enterprises akin to haciendas, and in some cases, even Jefferson-style family farms, were prevalent. Moreover, there were other overlaps: in the early days of the Spanish colonies, the encomienda was used to supply both haciendas, on the one hand, and mines and plantations, on the other (Faron, 1966; Lane, 2000; Metcalf, 2005; Ferry, 1981). Nonetheless, even more than in the other regimes, the dominance of slave-derived institutions persisted well past the colonial era.

Modern export colonies

The fourth colonial-era regime is at the same time the most recent and the most heterogeneous. Although colonists in earlier regimes certainly exported the goods they produced, this focus was either secondary (Jeffersonian farmers and haciendas/encomiendas) or operating in a very different context (slave colonies), one in which slavery was legal and population density low (see the discussion of regimes in section II.B). Modern export colonies, ranging from the regions ruled by the East India Company and its VOC counterpart, through Algeria in the 1830s, the "new imperialism" scramble for Africa in the later 19th and early 20th centuries, and the associated picking up of colonies in Asia around the same time, had export enterprises of various sizes as their leading sector (Elson 1992; Wrigley 1986; Vanthemsche 2012, ch. 4; Issawi 1982, ch. 2; Chaudhuri 1983), with indigenous labor in those enterprises provided by various forms of indirect

coercion, such as salt taxes and the establishment of native reserves (Fibaek and Green, 2019; Houben and Seibert, 2013). Rebellions against both foreign rule and coerced labor were met with harsh repression; indigenous populations were, as their counterparts in the other regimes, also particularly likely to suffer from famines and epidemics (Arnold, 1986; Nguyen-Marshall, 2005).

Both the modern export colony regime and the type and degree of violence associated with it were made possible by a particular combination of the same three factors referred to above. High population density made it possible for both individual and larger enterprises to have a guaranteed labor supply even as it also made coercion a rational policy tool (van Zanden, 2010; Bose, 1993). On the other hand, the relatively lower value, to the metropole, of exports from these colonies in the era of "new imperialism" meant that there was a ceiling to the level of coercion the colonists could count on from the home country; and this, combined with the limited number of European settlers, even in cases with the least aversive biotopes, meant that the vast majority of modern export colonies lasted well under a century. (Note, though, that colonies which attracted somewhat larger numbers of settlers tended to resist independence movements in a considerably more bloody fashion.)

As this account makes clear, the symbiosis between regime and type/degree of violence is clear. What is less apparent, at least at first blush, are the institutional consequences of that pairing. The vast majority of modern export colonies were established when economic liberalism had become dominant in Europe, with property-protective institutions in the colonies modeled after those in the metropole (Lev, 1985; Washbrook, 1981). The regime, established around both large and small exporters, included such protections as a matter of course, although, as one might expect, the protections thinned out in zones exclusively settled by the indigenous population, especially when those areas were the loci of anti-colonial rebellions. On the other hand, the relatively small number of Europeans (Keitenbrouwer 1986; Marshall 1987, ch. 4; Bayly 1988, chs. 2-3) – even in areas where they had settled in some density – meant that they were relatively easy to expropriate, if not downright expel, within several decades of independence; this determination was increased by the pre-independence level of anti-indigenous violence.

Finally, and unlike the other three regimes, modern export colonies were notably less heterogeneous in terms of the political-economic mode of organization. Of course, colonies which were large in both geographical and population terms displayed considerable variation. Nonetheless, by the time most modern export colonies had come into existence, Jeffersonian farmers were a dying species; and of course slavery had been abolished. Certain areas could and were marked by forms of organization akin to haciendas, but even then, the survivability of large, inefficient landed enterprises had become increasingly aleatory. For this reason, even more than in colonies marked by one of the other three types of regime, in colonies organized around modern exports, that form of political-economic organization

was dominant over other forms.

II. Data

Data were collected or constructed for a sample of 61 countries (Appendix B), with the sampling frame being the Acemoglu, Johnson, and Robinson (2001) list of 64 former (European) colonies. We reduced the list by three, eliminating Hong Kong (not an independent country), Singapore (almost no indigenous population at first contact), and Ethiopia (only a colony for a brief period of time).[6] A complete listing of data series used in estimation is in Appendix A; here we discuss data construction for the variables used in the verbal theory.

A. Antecedent variables

We argued above that both the nature of the colonial regime as well as the degree and type of violence used against the indigenous population depend on three pre-existing conditions: the economic significance of the colony for the metropole, precolonial population density, and, to a lesser degree, settler mortality. The third of these has been measured by Acemoglu, Johnson, and Robinson (2001) and so we mention it only briefly below. The first two conditions, however, are somewhat more complicated, as we discuss below.

Date of first contact

In theory, the economic significance of the colony for the metropole could be determined by looking at measures such as exports or remittances. On the verbal theory laid out above, though, economic significance is a matter of perception by elites, which has to do with their assessment of actual and potential riches from settlements and investments. As an indirect measure of that perception, as well as of a second factor referred to above, namely attitudes toward either the widespread use of slaves for production in those particular locations or significant export of slaves from those locations, we therefore take the date of first contact, i.e., the moment at which Europeans began, through their physical presence, to change a significant proportion of the indigenous population's relationship to the land.[7] In general, the earlier the date of first contact, the greater the perception of actual and potential riches and the more likely that the use of slaves will be considered as acceptable (see below, section II.B for a discussion of the latter perception's relevance for regime type).

[6] We also created an additional predecessor for South Africa, namely Cape Colony, to take account of the different regime northeast of the Orange River post-1820. Omitting this case, however, does not appreciably change the estimation results.

[7] There were three modalities of this change: overlordship (for example, issuing orders), force (for example, massacres), and transmission (for example, disease carriers). Our concern with colonialism leads us to insist on physical presence: even if Europeans provoked important changes as buyers of commodities, whether human, agricultural, or otherwise, the political effects of the latter are quite different than that of the former.

Date of first contact (Appendix B; see also Figure 4 (b)) is not hard to find from various country or regional histories. However, the problem is that there are often several candidate dates, for example, first landfall by Europeans, or initial European settlement, or granting of a colonial charter, or the launching of a military campaign. Normally, we used the earliest of those dates, except in cases where it violated the formal definition in the preceding paragraph and for which we used instead a later event, usually colonial regime establishment, as the date of first contact. For example, we coded from initial physical presence in countries where it led to significant epidemics among the indigenous population in numerous Western Hemisphere countries; or, as in Angola or Nicaragua, from when it took the form of a large-scale slave export operation that significantly depopulated the hinterland; but on the other hand, we used a later date in numerous places in Africa and Asia, where the early establishment of trading entrepôts or occasional visits by Europeans did not result in changing a significant proportion of the indigenous population's relationship to the land for centuries (e.g., in Senegal, or Algeria, or Bangladesh, or Indonesia).

Population density at first contact

The type of colonial regime established and the degree and type of violence against the indigenous population depend on population density at the moment of first contact. To determine the population part of this ratio, when the contact in question may have occurred half a millennium ago, when a head count of some sort may not have occurred for many decades, if not centuries, after that contact, and when large numbers of people may have died in the intervening years, is not a trivial matter. Thus, although general compendia (notably that of McEvedy and Jones, 1978, with interpolations by Klein Goldewijk et al., 2017, Suppl. A; see also Livi-Bacci, 2017; Maddison, 2006) are a useful starting point, we altered those estimates (Appendix B; see also Figure 4 (c)) based on subsequent historical demographic studies for a number of countries, notably those in Latin America and the Caribbean and, to a somewhat lesser degree, in Africa.[8] Population

[8]For Latin America and the Caribbean, the pioneering work of Borah and Cook (1960; 1963; 1971), using methods drawn from earth sciences, archeology, ethnography, tributary lists, and comparative analyses of well-documented epidemics, has been followed up by literally hundreds of scholars over the past half-century; although there are still divergences in estimates, the range of those estimates is much closer to Borah and Cook than to their one prominent critic (Rosenblat, 1967). (The dismissal by McEvedy and Jones 1978, 292 is somewhat less than convincing: a vague reference to "other parts of the world at comparable levels" and an unargued – and incorrect – claim about the "improbability" of "a catastrophic decline" in population.) We have therefore used Denevan's (1992) overview and sifting-through of the post-Borah and Cook literature, as well as numerous other sources – a number of them more recent – for individual countries.

As regards Africa, there has been a comparable deepening in scholarship (see, for example, Manning 2014), even though both the numbers of researchers and some of the data sources at their disposal are considerably more limited than for the Western Hemisphere. Our principal source was, for the majority of African countries, the recent estimates by Frankema and Jerven (2014); in cases where first contact occurred earlier, we relied on a variety of sources.

Using these more recent estimates has the effect of raising significantly (by 85% on average) the population numbers of our sample (92% of countries have higher populations at first contact than the

density at first contact (Appendix B) is calculated with respect to cropland plus grazing land (Figure 4 (d)), drawn from Klein Goldewijk et al. (2017, Suppl. A).[9]

Other antecedent variables

On the verbal arguments above, settler mortality may play a role in determining both the type of colonial regime and the degree and type of violence against the indigenous population. We therefore take settler mortality data from Acemoglu et al. (2001; see also their 2012 response to Albouy 2012).[10] In addition, to capture temperate climates (claimed to conduce to Jeffersonian-type colonial regimes), we use the normalized absolute latitude of the capital city (originally from La Porta et al. 1999).[11] Finally, as we will argue below, terrain ruggedness, i.e., "small-scale terrain irregularities" theoretically affording protection from raiders, also affects the degree and type of violence against the indigenous population; we take this series from Nunn and Puga (2012).

B. Principal causal variables

Share of the indigenous population killed or removed by enslavement (SIPE)

The diminution of the indigenous population is one of the important features of colonialism, both as a consequence of the above-mentioned antecedent conditions and as a causal factor in colonial and post-colonial institutions, and in subsequent per capita growth. As one measure of that diminution, we construct estimates of the share of the indigenous population killed or otherwise removed from the country (henceforth SIPE, where the final "E" denotes "eliminated") during the first 100 years of European colonization, calculating this share on the basis of the number of people from the indigenous population killed a) by massacres; b) in battles; c) by European-borne diseases (cf. Easterly and Levine, 2016) or d) after the establishment of a colonial regime, by localized (non-global) epidemics where treatment, or at least food, could have been provided; e) by famines under colonial rule (cf. Sen, 1983); or else f) displaced from the country via enslavement

corresponding AJR figures for 1500) as compared to a straight read-out *cum* transcription of McEvedy and Jones (1978); see Figure B1 in Appendix B. It also results in considerably higher death tolls for most Western Hemisphere countries than earlier generations of scholarship would have suggested.

[9]By contrast, arable land is referenced by Acemoglu et al. (2002), although their estimation results seem instead to be based on a measure which is closer to total land area. Arguably, a land figure greater than arable land makes sense, given that in a number of countries, a significant percentage of the indigenous population was nomadic.

[10]It should be noted that for Western Hemisphere countries, settler mortality data date from between 150 to 300 years after first contact, i.e., between after and very much after the data on indigenous deaths presented below.

[11]To capture, indirectly, export potential, we sometimes include a dummy variable for landlocked status (originally from Parker 1997), although it is often collinear with colonial regime and is therefore dropped.

during the first century after first contact, as a fraction of the population at first contact.[12]

Although it may seem that SIPE should be easier to estimate than population, in fact, for most of the six sets of causes listed above, this is not the case. The one exception is displacement due to enslavement which, given shipping and auction records (cf. Nunn 2008), is somewhat easier to calculate (though assigning a country of origin to persons manacled onto ships at a particular port is not evident: Manning 2013). But for most types of death, standard compendia, whether of diseases (e.g., Kohn, 2008) or, as a way to get at battle deaths and massacres, of wars (e.g., Sarkees and Wayman, 2010), are of only limited utility, as they often do not contain even numerical ranges for particular events, an omission due to colonial regimes' lack of interest (to put it mildly) in the number of indigenous deaths.[13] This lack of interest even applies to relatively recent epidemics and famines (for example, before, during, and after the 1931 famine in Niger, the hardest-hit region was not visited by a single colonial administrator: Fuglestad 1974, 26). Thus, in numerous cases, we have had to construct figures from a variety of country-specific sources, choosing among conflicting estimates on the basis of concordant and more recent information, and being aware that for many countries, the numbers we have will significantly undercount the actual dead.

Appendix B presents, for each country in our sample, our estimates, with sources, of persons killed or displaced from the country. We group these into three categories: massacres/battles, epidemics/famines, and enslavement; however, since even these categories overlap to a great degree (famines and epidemics can contribute to each other, for example; counterinsurgency campaigns often aimed at, or resulted in, widespread hunger), we have sometimes combined those categories further, marking NA when we either have evidence of the overlap but are unable to distinguish between two or three categories, or when, as often occurred, contemporaneous counts did not take place. It should be noted that estimates of persons deported as slaves are for transatlantic or intra-Western Hemisphere routes only, given our interest in European colonialism. Note further that, under the first two categories, we have listed some of the more important events (wars, uprisings, epidemics, famines), with dates; but these should be considered as illustrative, not exhaustive. The final SIPE-related figure presented in Appendix B is the total number of deaths, over the 100 years after first contact, divided by the population at first contact. Comparing Table 1 and Figure 5 (c) on this variable (share of the indigenous population eliminated) indicates that a significant number of former colonies – mostly in Africa and Asia (see Figure 4

[12]In principle, we would create an index with both the number of deaths and the specific role of colonists in causing those deaths (e.g., overwork vs. deliberate starvation), but this latter is difficult to ascertain at the level of the colony as a whole. Note as well that causes d) and e) above are, on a Sen-like argument, included on the grounds that a colonial administration could, even in a context of drought or of pre-modern medicine, have diminished considerably the death toll among the indigenous population.

[13]This may be the reason that Easterly and Levine (2016, 232) treat "indigenous mortality due to the spread of European diseases during the initial stages of European exploration" as a dummy variable separating the countries in the New World and Oceania from everyone else.

(a)) – have a small SIPE score, even though the sheer number of persons killed or displaced in some of those countries was considerable, ranging as high as 25 million.

Regime type

The other important feature of colonialism focused on in this paper, both as a consequence of economic significance and density, and as a cause of institutions and, indirectly, of growth, is the nature of the colonial regime. Here, as indicated in section I.C, our concern is with the dominant mode of political-economic organization, with that mode capturing both a particular export orientation and a favored form of labor control, this latter being a function both of prevailing laws and norms, as well as of population density. Using our reading of export orientation and labor control from country and regional colonial histories, we therefore classified countries in the sample into one of the four regime types.

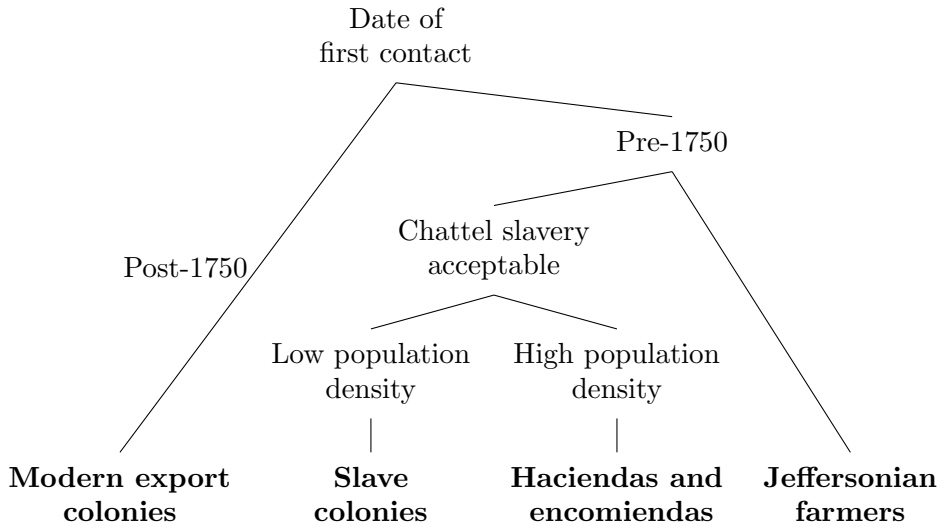

Figure 1. "Choice" of colonial regime.

We then checked that classification using the antecedent conditions mentioned above as an after-the-fact pseudo-choice among options. Figure 1 presents this as akin to a decision tree, with the principal question being whether or not the date of first contact is after 1750 (that date, as per our argument above, partitions the sample into colonies which were established before or after slavery was seen as being on the way out,[14] and also into colonies which were or were not anticipated

[14]Though of course forms of labor coercion were, as mentioned above, routinely resorted to in modern

to be of major economic significance for the metropole). This hives off modern export colonies from the other three regimes. Regarding the latter, the next question is whether chattel slavery, even if still legal, was accepted in the areas of principal economic activity: an answer of no separates Jeffersonian farmers from the other two. The final question is then whether the indigenous population density is high: if not, then slavery is the only way of making significant profits; but if the answer is yes, then haciendas and encomiendas are a rational regime to institute. This "tree" method gives results concordant with the first way of classifying; see Appendix B for a complete listing for all former colonies in our sample.

Figure 2 provides a map of the 61 ex-colonies, classified by colonial regime.

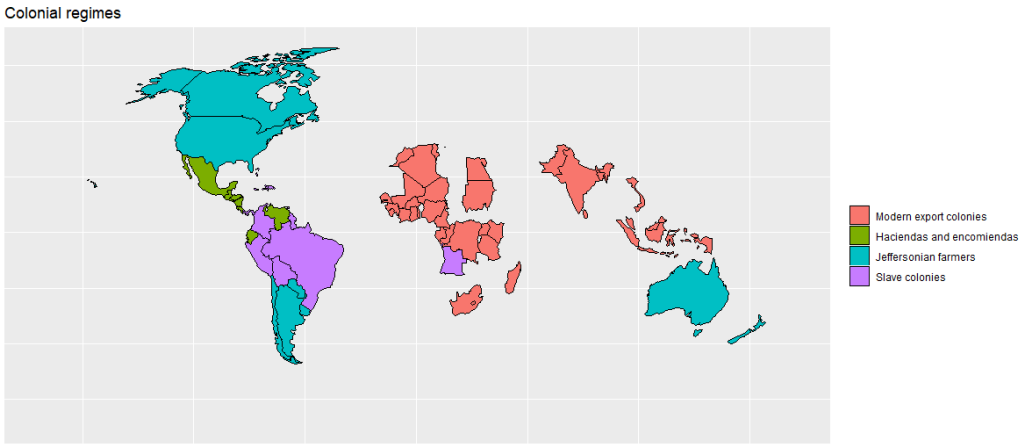

FIGURE 2. COLONIAL REGIMES IN 61 EX-COLONIES.

Although both these classifications of regimes were based on our reading of histories, simple descriptive statistics lend additional support. For example, compar-

export colonies (as they were in haciendas and encomiendas). Nonetheless, it was recognized by all that these forms of coercion were quite different from slavery; to a lesser degree, those forms also tended to diminish, particularly in the decades leading up to independence.

ing the histograms of year of first contact and population density at first contact displayed in Figures 3 (a) and (b), clearly shows separation between the different types of regimes, with the former distinguishing cleanly between modern export colonies from the other three regimes, and the latter showing an additional distinction between slave colonies, haciendas/encomiendas, and Jeffersonian farmers.

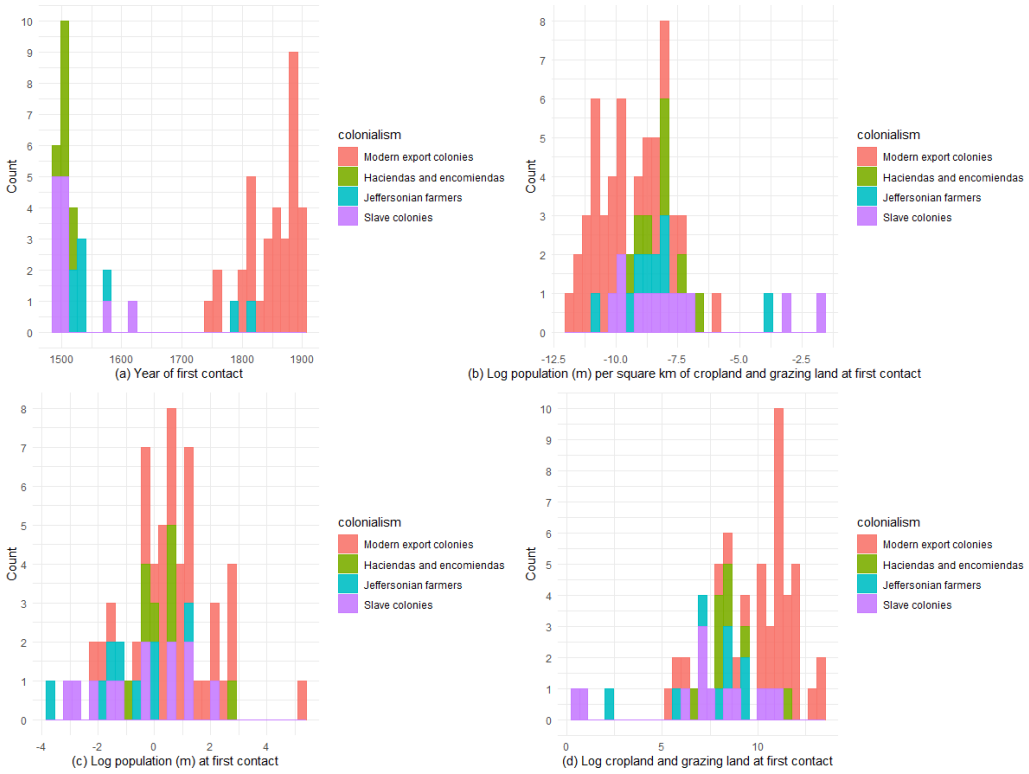

FIGURE 3. (A) YEAR OF FIRST CONTACT, (B) LOG POPULATION PER SQUARE KILOMETER OF CROP AND GRAZING LAND AT FIRST CONTACT, (C) LOG POPULATION AT FIRST CONTACT AND (D) LOG CROPLAND AND GRAZING LAND AT FIRST CONTACT, BY COLONIAL REGIME.

C. Downstream consequences

Our argument in section I.C was that the combination of regime type and degree/type of violence against the indigenous population led to the development of institutions which protected property rights on a scale ranging from extensively to barely. Those institutions were developed during the colonial era, although they may well have been modified on one or more occasions after independence. Duehto the near-impossibility of collecting and categorizing hundreds of years of

legal codes for 61 countries, not to mention making judgments about court rulings, property-respecting institutions have therefore been measured by the Acemoglu et al. (2001) convention of using average protection of expropriation risk from 1985-95 (from Knack and Keefer 1997).[15]

As regards the downstream consequences of property protection, the comparative development literature has focused most on GDP per capita. Once more, we adopt this focus, using, as do Acemoglu et al. (2001), those data, for 1995, from the World Bank's World Development Indicators.

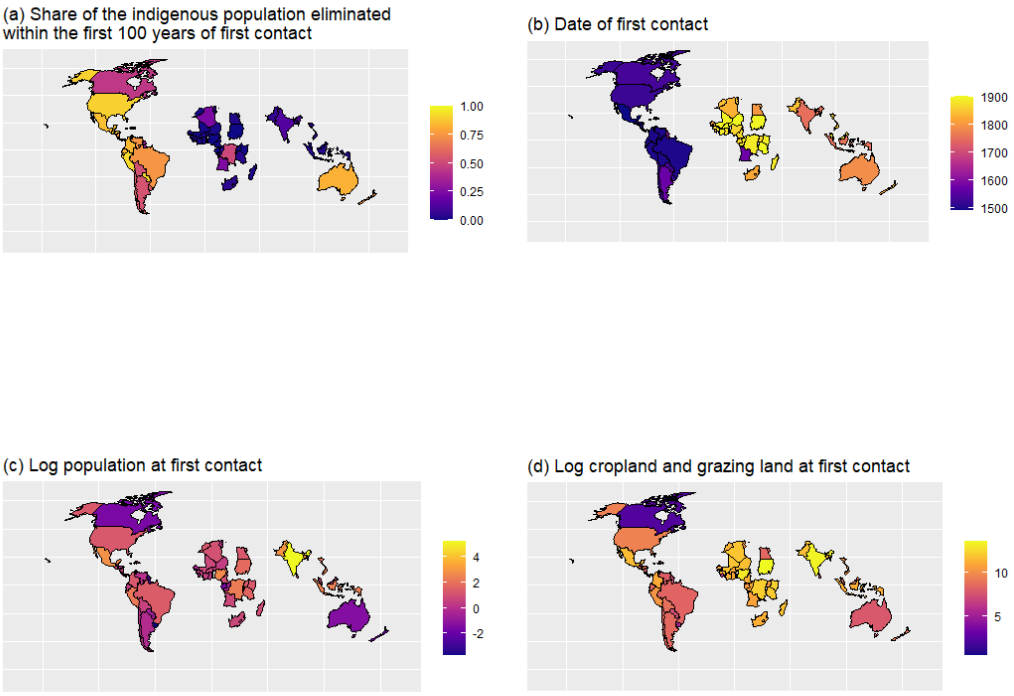

FIGURE 4. CHOROPLETH MAPS OF (A) SHARE OF THE INDIGENOUS POPULATION ELIMINATED WITHIN THE FIRST 100 YEARS OF FIRST CONTACT, (B) DATE OF FIRST CONTACT, (C) LOG POPULATION AT FIRST CONTACT, (D) LOG CROPLAND AND GRAZING LAND AT FIRST CONTACT.

[15]Both the empirical accuracy of long-term continuity claims about property-protecting institutions and the theoretical basis for those claims are topics on which we are currently working.

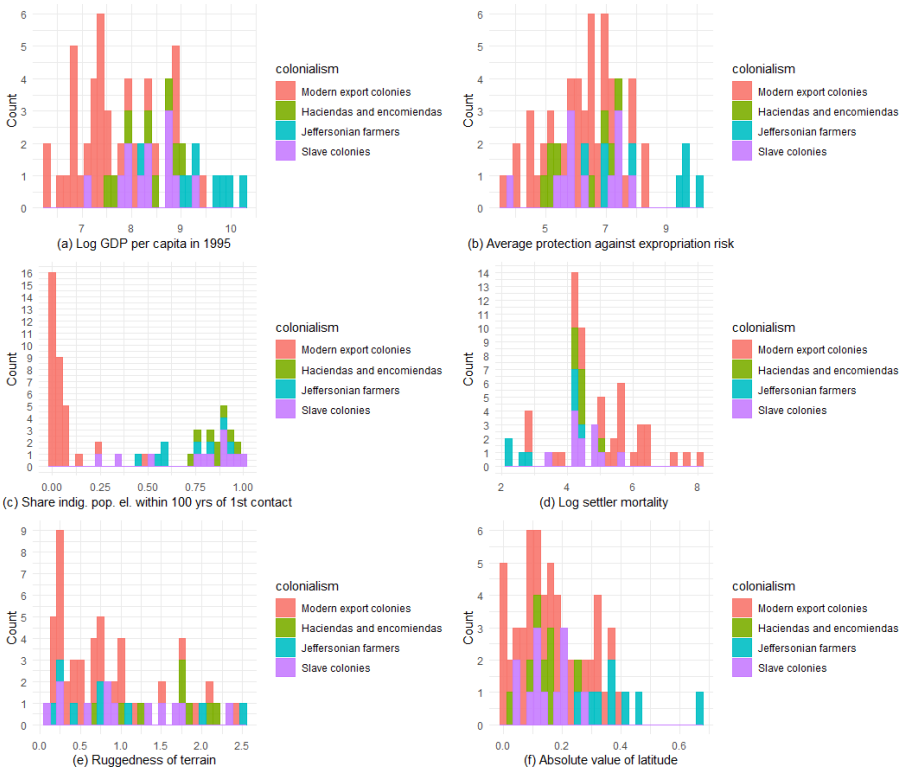

FIGURE 5. (A) LOG GDP PER CAPITA IN 1995, (B) AVERAGE PROTECTION AGAINST EXPROPRIATION RISK, (C) SHARE OF THE INDIGENOUS POPULATION ELIMINATED WITHIN 100 YEARS OF FIRST CONTACT, (D) LOG SETTLER MORTALITY, (E) RUGGEDNESS OF TERRAIN AND (F) ABSOLUTE VALUE OF LATITUDE, BY COLONIAL REGIME.

D. *Descriptive statistics*

Basic descriptive statistics for the variables discussed above, disaggregated by colonial regime, are presented in Table 1. For estimation reasons discussed below, we display both population density at first contact as well as the two components of that ratio. As adumbrated above, the SIPE variable has an extremely broad range, with some colonies having no discernible fraction of the indigenous population killed or removed by enslavement, whereas in other cases, as much as 90% of that population was dead or sent away as slaves within a century of first contact.

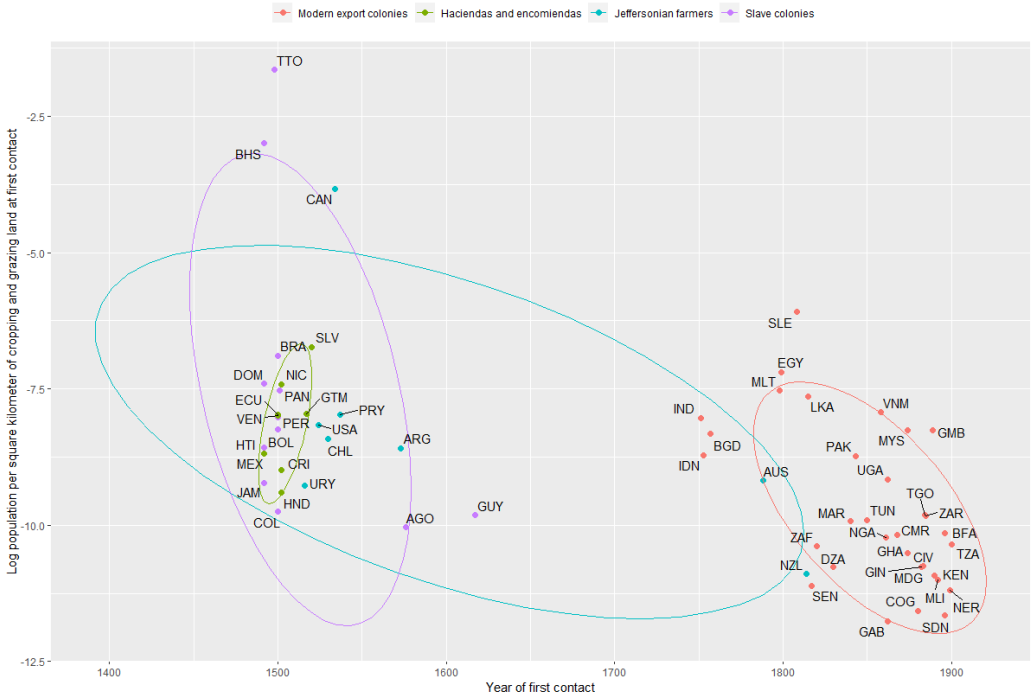

FIGURE 6. YEAR OF FIRST CONTACT *versus* LOG POPULATION PER SQUARE KILOMETER OF CROPLAND AND GRAZING LAND AT FIRST CONTACT, BY COLONIAL REGIME, WITH 70% CONFIDENCE ELLIPSES.

TABLE 1—DESCRIPTIVE STATISTICS, BY COLONIAL REGIME. 61 COUNTRIES: 33 MODERN EXPORT COLONIES, 8 HACIENDAS AND ENCOMIENDAS, 8 JEFFERSONIAN FARMERS, 12 SLAVE COLONIES.

Variable	**Colonial regime**	**Mean**	**Std.**	**Min**	**Max**
GDP per capita in 1995	Modern export colonies	2531	2608	520	12419
	Haciendas and encomiendas	4828	2576	1890	8700
	Jeffersonian farmers	14855	7972	3669	27329
	Slave colonies	4866	2643	1270	10780
	all	4908	5422	520	27329
Ave. prot. ag. exprop. risk	Modern export colonies	6.128	1.276	3.500	8.273
	Haciendas and encomiendas	6.114	1.044	5.000	7.500
	Jeffersonian farmers	8.366	1.481	6.386	10.000
	Slave colonies	6.313	1.190	3.727	7.909
	all	6.456	1.441	3.500	10.000
Share of indigenous pop. elim.	Modern export colonies	0.048	0.094	0.000	0.500
	Haciendas and encomiendas	0.854	0.084	0.721	0.975
	Jeffersonian farmers	0.693	0.180	0.445	0.920
	Slave colonies	0.758	0.251	0.251	1.000
	all	0.378	0.391	0.000	1.000
Year of 1st contact	Modern export colonies	1851	43	1751	1900
	Haciendas and encomiendas	1504	9	1492	1520
	Jeffersonian farmers	1602	124	1516	1814
	Slave colonies	1513	39	1492	1617
	all	1706	170.431	1492	1900
Population at 1st contact	Modern export colonies	9.569	31.714	0.100	184.200
	Haciendas and encomiendas	3.174	5.683	0.400	17.174
	Jeffersonian farmers	0.828	1.170	0.024	3.590
	Slave colonies	1.874	2.623	0.040	9.000
	all	6.070	23.593	0.024	184.200
Crop/graz. land at 1st cont.	Modern export colonies	109533	156270	185	695934
	Haciendas and encomiendas	16350	34386	627	101191
	Jeffersonian farmers	4389	4439	9.269	12555
	Slave colonies	12643	20772	0.793	59994
	all	64463	125250	0.793	695934
Pop. density at 1st contact	Modern export colonies	197	414	7.768	2279
	Haciendas and encomiendas	401	361	82.008	1195
	Jeffersonian farmers	2853	7566	18.663	21578
	Slave colonies	20575	56264	43.632	193282
	all	4581	25526	7.768	193282
Ruggedness of terrain	Modern export colonies	0.731	0.601	0.147	2.413
	Haciendas and encomiendas	1.557	0.540	0.634	2.150
	Jeffersonian farmers	0.996	0.845	0.143	2.481
	Slave colonies	1.037	0.707	0.055	2.362
	all	0.934	0.692	0.055	2.481
Log settler mortality	Modern export colonies	5.221	1.314	2.741	7.986
	Haciendas and encomiendas	4.414	0.279	4.263	5.096
	Jeffersonian farmers	3.358	1.003	2.146	4.358
	Slave colonies	4.562	0.547	3.471	5.635
	all	4.741	1.227	2.146	7.986
Absolute value of latitude	Modern export colonies	0.157	0.119	0.000	0.394
	Haciendas and encomiendas	0.139	0.068	0.022	0.256
	Jeffersonian farmers	0.397	0.126	0.256	0.667
	Slave colonies	0.147	0.069	0.044	0.268
	all	0.184	0.133	0.000	0.667
Landlocked	Modern export colonies	0.121	0.331	0.000	1.000
	Haciendas and encomiendas	0.000	0.000	0.000	0.000
	Jeffersonian farmers	0.125	0.354	0.000	1.000
	Slave colonies	0.083	0.289	0.000	1.000
	all	0.098	0.300	0.000	1.000

Of greater interest than the descriptive statistics are simple histograms which highlight differences between regimes. Above, we discussed two such distributions (Figures 3 (a) and (b)), in which histograms of log population density and year of first contact were differentiated by regime type; analogous distributions covering GDP per capita, property protection, SIPE, and settler mortality can be seen in Figures 5 (a)–(d). Regime differentiation further can be seen in Figure 6, which shows the relationship between year of first contact and population density at first contact. In general, the later colonies were established, the more thinly populated they were, but the nature of that relationship varies considerably by regime type. Not surprisingly, regimes also sort into those with low or relatively limited SIPE – respectively, modern export colonies and haciendas/encomiendas – and those with higher numbers of people killed: Jeffersonian farmers. Slave colonies, by contrast, are distributed across almost the entire range of SIPE. The relationship between colonial regime and SIPE will, of course, be examined more closely below, while controlling for other covariates.

III. Estimation results

We specify, and test, the verbal theory laid out in section I.C using the data described in sections II.A–II.C. To start, we study the determinants of SIPE. The SIPE equation then allows us to study the determinants of colonial regimes while endogenizing SIPE. We next estimate a system of equations that model the "downstream" consequences (property-protecting institutions and per capita income), in which colonial regimes are allowed to affect both and are, in turn, endogenized using the predicted probabilities from our modeling of the determinants of colonial regimes.

A. Death and taxes: determinants of SIPE and colonial regimes

In section I.C, we argued, in effect, that SIPE both conduced to the establishment of particular types of colonial regimes and in turn was affected by them. And indeed, as we saw in 3.4 above, the two variables are strongly linked. For estimation purposes, however, since in numerous cases regimes took a considerable while to emerge, with that emergence depending nontrivially on an initial wave of deaths, we have treated SIPE as prior to regimes. Thus, we begin with estimates of SIPE, with regimes not entering as predictors. Instead, we have focused on two principal antecedent variables and three additional ones: population at first contact and land at first contact, on the one hand, and the absolute value of latitude, settler mortality, and terrain ruggedness, on the other.

Table 2 presents these results. As can be seen in column (1), population density at first contact has a positive effect on SIPE; but this is due much more to the amount of land available for fleeing from Europeans than to the numbers of people able or unable to flee, as shown in column (2) where the two constituent elements of population density enter separately: a 1% increase in the amount of cropland

TABLE 2—DETERMINANTS OF THE SHARE OF THE INDIGENOUS POPULATION ELIMINATED DURING THE FIRST CENTURY FOLLOWING FIRST CONTACT. STANDARD ERRORS IN PARENTHESES. 61 OBSERVATIONS. TOBIT ESTIMATION ACCOUNTS FOR UPPER AND LOWER BOUNDS. FRACTIONAL LOGIT USES A QUASI-BINOMIAL LINK FUNCTION.

	OLS		*Tobit*	*Fractional logit*
	(1)	(2)	(3)	(4)
Log pop. dens. at 1st cont.	0.077			
	(0.023)			
Log pop. at 1st contact		0.008	0.011	0.089
		(0.037)	(0.036)	(0.199)
Log land at 1st contact		−0.071	−0.074	−0.405
		(0.023)	(0.023)	(0.139)
Abs. value of latitude	−0.454	−0.580	−0.589*	−3.773
	(0.371)	(0.360)	(0.350)	(2.002)
Log settler mortality	−0.086	−0.082	−0.088	−0.587
	(0.042)	(0.041)	(0.040)	(0.252)
Ruggedness of terrain	0.155	0.173	0.166	0.901
	(0.065)	(0.063)	(0.062)	(0.330)
R^2	0.363	0.423		
Log Likelihood			−15.103	

and grazing land at first contact is associated with a 7.1% decrease in the share of the indigenous population that is eliminated. Arguably, this sheer amount of space outweighs terrain ruggedness, perhaps because in highly rugged terrain, Europeans were more likely to establish settlements (towns, garrisons) which proved lethal to the indigenous population. The results are not driven by either the bunching of SIPE around zero or the fractional nature of the variable: In column (3) we move to a tobit specification (with both upper and lower bounds), whereas in column (4) we estimate using the fractional logit estimator (Papke and Wooldridge, 1996): results are qualitatively unchanged.

One noteworthy thing about Table 2 is the coefficient associated with settler mortality. It is negative in all four specifications, suggesting that as biotopes proved deadlier to Europeans, the indigenous population of those regions thrived. However, since the regimes with highest SIPE scores were in the Western Hemisphere, and because the settler mortality data for those regimes date for the most part to many years after first contact, we cannot be sure if what we are seeing is an artifact of timing: first the indigenous population of New World colonies is eliminated, then, many decades later, European settlers are able to arrive and not succumb to disease in these areas.

Table 3—Multinomial logit estimates of the determinants of the colonial regime. Base category is modern export colonies. Standard errors in parentheses. The first three columns present the model in which the share of the indigenous population eliminated is assumed to be exogenous. The last three columns present the model in which the endogeneity of the share of the indigenous population eliminated is controlled for by including the residual from the fractional logit specification reported in the last column of Table 2.

	Colonial regime			Colonial regime		
	Haciendas and encomiendas	Jeffersonian farmers	Slave colonies	Haciendas and encomiendas	Jeffersonian farmers	Slave colonies
Share ind. pop. elim.	168.384	161.123	162.621	90.067	42.723	78.630
	(0.102)	(0.012)	(0.104)	(0.113)	(0.025)	(0.129)
Year of 1st contact	−0.166	−0.146	−0.180	−0.109	−0.082	−0.092
	(0.055)	(0.055)	(0.055)	(0.017)	(0.018)	(0.017)
Log pop. at 1st contact	−18.777	−27.973	−19.035	−13.033	−19.142	−13.972
	(0.454)	(0.720)	(0.457)	(0.556)	(0.891)	(0.564)
Log land at 1st contact	8.656	13.497	8.477	5.625	6.442	4.762
	(0.617)	(1.175)	(0.612)	(0.724)	(1.375)	(0.721)
Abs. value of latitude	−58.337	190.738	−57.759	−32.016	95.725	−32.334
	(0.035)	(0.001)	(0.035)	(0.036)	(0.006)	(0.034)
Settler mortality	16.386	−4.100	17.105	12.072	4.046	11.926
	(0.605)	(0.023)	(0.606)	(0.686)	(0.015)	(0.688)
Resid. from frac. logit				−2.297	43.359	15.244
				(0.121)	(0.032)	(0.104)

We turn now to the determinants of the colonial regime, which we model in a multinomial logit (MNL) framework. SIPE is hypothesized to be a key determinant here, as the process of killing/enslavement-depopulation, and its effects on the available labor force and the use of land, should have clear and unambiguous effects on the nature of the colonial regime. The first three columns of Table 3 shows these effects for each of the three earlier types of regimes as compared to modern export colonies, effects which are equally evident when, as per our verbal theory, SIPE is endogenized: this is done in the last three columns of Table 3 in which we control for the endogeneity of SIPE through inclusion of the residuals from the fractional logit specification of column (4) of Table 2.[16] Identification is thus achieved through the exclusion of ruggedness as a covariate, because while it plausibly affects deaths of the indigenous population, there is no reason for it to affect regime type.

In addition, as we discussed in II.B above, a similar effect should be, and is, seen regarding the date of first contact: the earlier that contact, the more likely the colonial regime is to be one of Jeffersonian farmers, or haciendas/encomiendas, or a slave colony. Note, as indicated in the beginning of this section, that date of first contact does not in itself conduce to eliminating the indigenous population, as those deaths, many of them of course due to epidemics, are independent of any time-varying vector such as military technology (consider that the genocide in Rwanda was carried out primarily by individuals armed with machetes) or transportation infrastructure.

The other covariates reported in Table 3 not only operate through SIPE, but also affect regime type directly. Those effects are consistently statistically significant: the two components of population density at first contact (again, the density ratio washes out), the absolute value of latitude (note the opposite sign for Jeffersonian farmers, which is to be expected from geographical arguments), and log settler mortality (this last indicating, unsurprisingly, that higher levels make it less likely that the regime in question will be a modern export colony, though again the dating lags for the Western Hemisphere mean that we should be wary about interpreting settlers as explicitly choosing a regime in that hemisphere).

Since the raw coefficients from a MNL are, generally speaking, uninformative as to even the direction of the marginal effects on the probability of a given outcome obtaining, plots of the effects on the probability of each colonial regime obtaining are reported in the various panels of Figure 7.[17]

The indigenous deaths and date of first contact variables depicted in the first two images (Figures 7 (a) and (b)) effectively partition the cases into modern export colonies, on the one hand, and haciendas/encomiendas and slave colonies,

[16] On correcting for endogeneity in non-linear models such as MNL using residuals from a first-stage reduced form, see Terza et al. (2008), Petrin and Train (2010), and Wooldridge (2015). Results are almost identical when we use the residuals from any of the three other columns of Table 2. The null of exogeneity of SIPE is strongly rejected in that all three coefficients associated with the residuals are estimated very precisely.

[17] Recall, for an elementary MNL model such as this one with K explanatory variables (indexed by

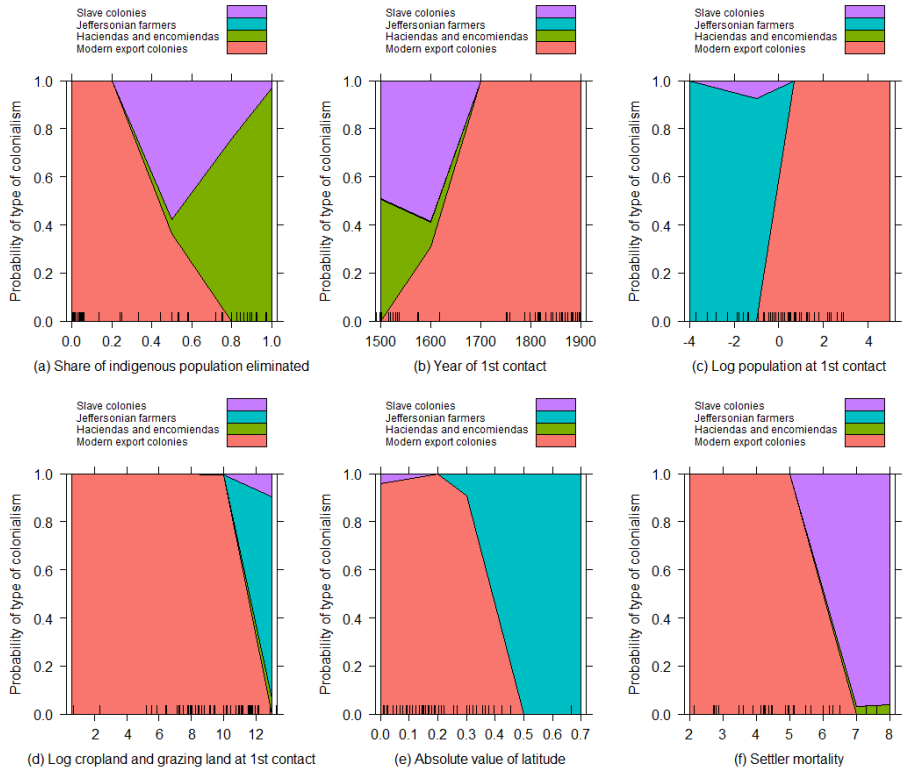

FIGURE 7. PROBABILITY OF EACH COLONIAL REGIME AS A FUNCTION OF THE SHARE OF THE INDIGENOUS POPULATION ELIMINATED DURING THE FIRST CENTURY FOLLOWING FIRST CONTACT, THE YEAR OF FIRST CONTACT, LOG POPULATION AT FIRST CONTACT, LOG CROPPING AND GRAZING LAND AT FIRST CONTACT, ABSOLUTE VALUE OF LATITUDE, AND SETTLER MORTALITY. BASED ON THE MULTINOMIAL LOGIT PARAMETER ESTIMATES REPORTED IN THE LAST THREE COLUMNS OF TABLE 3 IN WHICH THE SHARE OF THE INDIGENOUS POPULATION ELIMINATED IS ALLOWED TO BE ENDOGENOUS.

on the other. Note that as SIPE increases, the probability of the regime being a modern export colony monotonically declines, the probability of the regime being organized around haciendas/encomiendas monotonically increases, and the probability of being a slave colony first increases, then declines. The population,

$k = 1, ..., K$) and four choices (indexed by j or $h = 1, 2, 3, 4$), that the marginal effects are given by:

$$\frac{\partial \Pr[y = j|x_1, ..., x_K]}{\partial x_k} = \Pr[y = j|x_1, ..., x_K] \left(\beta_{jk} - \frac{\sum_{h=1}^{h=4} \beta_{hk} \exp\{\beta_{h0} + x_1\beta_{h1} + ... + x_K\beta_{hK}\}}{1 + \sum_{h=1}^{h=4} \exp\{\beta_{h0} + x_1\beta_{h1} + ... + x_K\beta_{hK}\}} \right),$$

$j = 1, 2, 3, 4, k = 1, ..., K$; see, e.g. any standard textbook such as Wooldridge (2001), pp. 497-8. Figure 7 "stacks" the predicted probabilities of each regime, as a function of the value of a given covariate.

land, and latitude variables depicted in the next three images (Figures 7 (c)–(e)) divide the cases primarily into Jeffersonian farmers and modern export colonies (in a few cases, slave colonies as well). By contrast, settler mortality (Figure 7 (f)) primarily differentiates slave colonies from modern export colonies, with a smattering of haciendas/encomiendas. In other words, most of the heavy lifting in sorting the colonies is done by SIPE and the date of first contact; settler mortality comes into play primarily (and not surprisingly, given its geographical distribution) in conducing to modern export colonies. On the other hand, lumping together indigenous and settler deaths, there is no doubt that killing off particular groups of people is of vital importance in helping the emergence of particular types of colonial regimes.

B. Downstream consequences: determinants of property protection and growth

The story so far is that geography and settler mortality affect the death and/or enslavement-depopulation of the indigenous population, with those deaths, along with the date of first contact, the size of the population, geographical factors, and settler mortality affecting in turn the nature of the colonial regime. We now turn to the downstream consequences of the colonial regime, namely, property protection and per capita output. As indicated at the start of this section, we model the downstream consequences as a system of equations (estimated by GMM), with the hypothesized immediately upstream variable, i.e., colonial regimes, instrumented using the predicted probabilities (Wooldridge, 2015) derived from the multinomial logit estimates reported in the last three columns of Table 3.[18] As suggested in Young (2019), we provide both conventional (clustered at the SIPE level) standard errors and BCa (Efron, 1987) bootstrapped confidence intervals for our IV results.[19] As reported at the bottom of Table 4, Hausman (1978) specification tests fail to reject any of our models at conventional levels of confidence.

[18]We explored other multinomial choice models as a basis for instrumentation. These included the Kosmidis and Firth (2009, 2011) maximum penalized likelihood estimator that uses the "Poisson trick" that reduces mean bias, the Kenne Pagui et al. (2017) median bias reduction MNL estimator and the MCMC multinomial probit estimator of Imai and van Dyk (2005). We also considered restricted choice sets in which either the Slave colonies regime is not available for countries with a post-1750 date of first contact, or both the Slave colonies and Haciendas and encomiendas regimes are not available to countries with a post-1750 date of first contact. While some of the determinants of colonial regimes are sensitive to the estimator or choice set adopted, the GMM results of Table 4 are not; moreover, SIPE is always a statistically significant determinant of the colonial regime.

[19]Note that spatial correlation issues are not present in the AJR dataset, as shown by Kelly (2019), and as we verified.

Table 4—Colonial regimes, institutions, and per capita income. Standard errors in parentheses, bootstrapped 95% BCa confidence intervals within square brackets. 61 observations. All systems of equations are estimated by 3SLS-GMM. Absolute value of latitude is assumed exogenous in both equations in all columns, whereas average protection against is always assumed endogenous. In columns (1) and (3) the three colonial regime dummies are allowed to be exogenous and the instrument set is therefore constituted by absolute value of latitude and log settler mortality. In columns (2), (4) and (5), the colonial regime dummies are allowed to be endogenous and the instrument set is therefore constituted by absolute value of latitude, log settler mortality and the three predicted probabilities derived from the MNL estimates reported in the last three columns of Table 3.

	(1)	(2)	(3)	(4)	(5)
Average prot. ag. exprop. risk					
Haciendas and encomiendas	0.530	0.170	−0.341	−1.008	−1.236
	(0.340)	(0.551)	(0.493)	(0.696)	(0.643)
	[-0.316, 1.296]	[-2.039, 1.208]	[-1.102, 0.601]	[-3.833, 0.204]	[−4.741, −0.089]
Jeffersonian farmers	1.346	1.437	1.400	1.402	1.340
	(0.487)	(0.528)	(0.609)	(0.631)	(0.372)
	[0.577, 2.385]	[0.646, 2.331]	[0.544, 2.643]	[0.384, 2.791]	[0.686, 2.053]
Slave colonies	0.618	0.802	-0.084	0.338	0.791
	(0.284)	(0.402)	(0.419)	(0.527)	(0.282)
	[−0.196, 1.177]	[-0.008, 3.437]	[-0.926, 0.773]	[-0.570, 1.364]	[0.161, 1.692]
Settler mortality	−0.447	−0.480	−0.412	−0.428	−0.448
	(0.132)	(0.143)	(0.160)	(0.166)	(0.105)
	[-0.667, -0.140]	[-0.777, -0.209]	[-0.691, 0.038]	[-0.768, -0.009]	[−0.652, −0.240]
Abs. val. of latitude	0.809	0.458	0.300	0.165	
	(1.604)	(1.656)	(1.614)	(1.674)	
	[-1.751, 4.285]	[-3.210, 4.179]	[-2.993, 3.935]	[-3.673, 3.565]	
Log GDP per capita in 1995					
Ave prot. ag. exprop. risk	0.829	0.766	0.912	0.887	0.898
	(0.179)	(0.159)	(0.283)	(0.272)	(0.137)
	[0.591, 2.062]	[0.542, 1.466]	[0.473, 3.713]	[-1.902, 3.105]	[0.739, 1.441]
Abs. val. of latitude	−0.135	0.157	0.334	0.427	
	(1.174)	(1.073)	(1.213)	(1.195)	
	[-6.282, 1.416]	[-3.570, 1.849]	[-11.186, 2.666]	[-8.577, 3.694]	
Haciendas and encomiendas			0.872	1.286	1.461
			(0.345)	(0.496)	(0.486)
			[-0.337, 1.677]	[0.301, 4.162]	[0.832, 3.493]
Jeffersonian farmers			−0.169	-0.134	
			(0.663)	(0.651)	
			[-3.644, 1.474]	[-3.468, 1.208]	
Slave colonies			0.687	0.418	
			(0.300)	(0.397)	
			[-1.024, 1.440]	[-1.536, 1.269]	
Hausman test 2SLS *vs* 3SLS: χ^2 (df)	10.839 (9)	13.552 (9)	0.000 (12)	0.000 (12)	1.280 (8)
$p-$value	[0.286]	[0.139]	[0.999]	[0.999]	[0.995]

As can be seen from Table 4, apart from the (expected, given the "reversal of fortune" literature) negative effect of settler mortality, the three regimes which are not modern export colonies (compared to that latter) all, as per our verbal theory, have significant effects on the average protection against expropriation risk (AVEXPR). Jeffersonian farmer regimes, of course, are predicted to conduce to such protection; but slave colonies do as well, perhaps because the property-protecting interests of private plantation and mine owners producing for the market overrode their presumed lack of concern with the interests of other economic actors. Conversely, haciendas and encomiendas have a negative effect on economic institutions, something very much in line with the Latin American-related literature discussed earlier in the paper. Considering the most parsimonious specification reported in column (5), this means that if by some magic a modern export colony were to become a hacienda/encomienda regime, average protection against expropriation risk would decline by 1.24 ($1.24 \div 1.44 \approx 0.86$ standard deviations); if, by contrast, the modern export colony were to become a regime of Jeffersonian farmers or a slave colony, it would increase by 1.39 and 0.81, respectively. Beyond these specifics, Table 4 is striking because it illustrates how protection against expropriation in the late 20th century is influenced not only by settler mortality (with the data on the latter applying mostly to the 19th century) but by colonial regimes set up literally centuries earlier. Logically, this kind of action at a distance implies either that there is a considerable degree of continuity in the latter, or that AVEXPR itself was highly stable over long periods of time, or that a third, mediating factor laid the groundwork for the 20th century AVEXPR results. The first of these possibilities is untenable, since both chattel slavery and Jeffersonian farmers had largely ceased to exist by the later 19th century, and since the combination of the Great Depression and assorted rural revolutions put an end to most haciendas and encomiendas. The second alternative is possible but cannot be assessed for its accuracy, since the AVEXPR data do not extend back before the 1970s and the coding rules are opaque (cf. Davis et al., eds (2012)). The third alternative, which we find intriguing, is that, as Cardoso and Faletto (1979, ch. 3) argue, the end of colonial rule brought with it power distributions that facilitated, or impeded, winner-take-all forms of politics, with clear consequences for (non)protection of losers' property. But whatever the causal mechanism, colonial regimes have a significant effect, many years later, on property-regarding institutions.

Let us turn now to the final downstream consequence: GDP per capita. Here, a principal determinant is AVEXPR (very much in line with the "reversal of fortune" literature); but on estimating the equations as a system, it turns out that one of the types of colonial regimes is also significant, namely haciendas/encomiendas (again, as compared with modern export colonies). We would speculate that when Latin American countries moved away from haciendas and encomiendas in the 19th and early 20th centuries, that change, over and above the effects of property-protecting institutions, may have resulted in the transformation of large

swathes of land into profit-seeking agricultural enterprises, which independently boosted per capita output both directly and through various spillover effects. This happened, for example, in the Porfirian era in Mexico (Womack 1968, chs. 1–2; Hart 2005, ch. 7) and in Central America (Brockett 2018, ch. 2; Weaver 2018, ch. 3). Both this possibility, as well as the institutional determinants possibilities discussed above, bear closer scrutiny in future research.

Note, in passing, that even though neither we nor the original AJR (2001) paper are claiming that colonial-era deaths have any kind of direct effect on GDP per capita (the action at a distance caveat applies, in spades), the indirect consequences of those deaths are nonetheless both striking and significant. Figure 8 depicts those consequences, on a purely bivariate basis, for both SIPE and settler mortality, illustrating that the famous dictum about capital coming into the world "dripping from head to foot from every pore with blood and dirt" (Marx, 1867, 790) may, as regards European colonialism, be a straightforward description.

In short, we have a long-term, 4-step process at work: geographical factors conduce to large-scale deaths and other forms of depopulation of the indigenous population; those deaths and depopulation help to enable particular types of colonial regimes; the regimes, quite a bit later, lead to the establishment of property-protecting institutions; and the institutions boost per capita income. Settler mortality plays a role in the second and third steps in this process, but, as per the above quotation, is part of a much larger, more political and, we daresay, more bloody historical sequence.

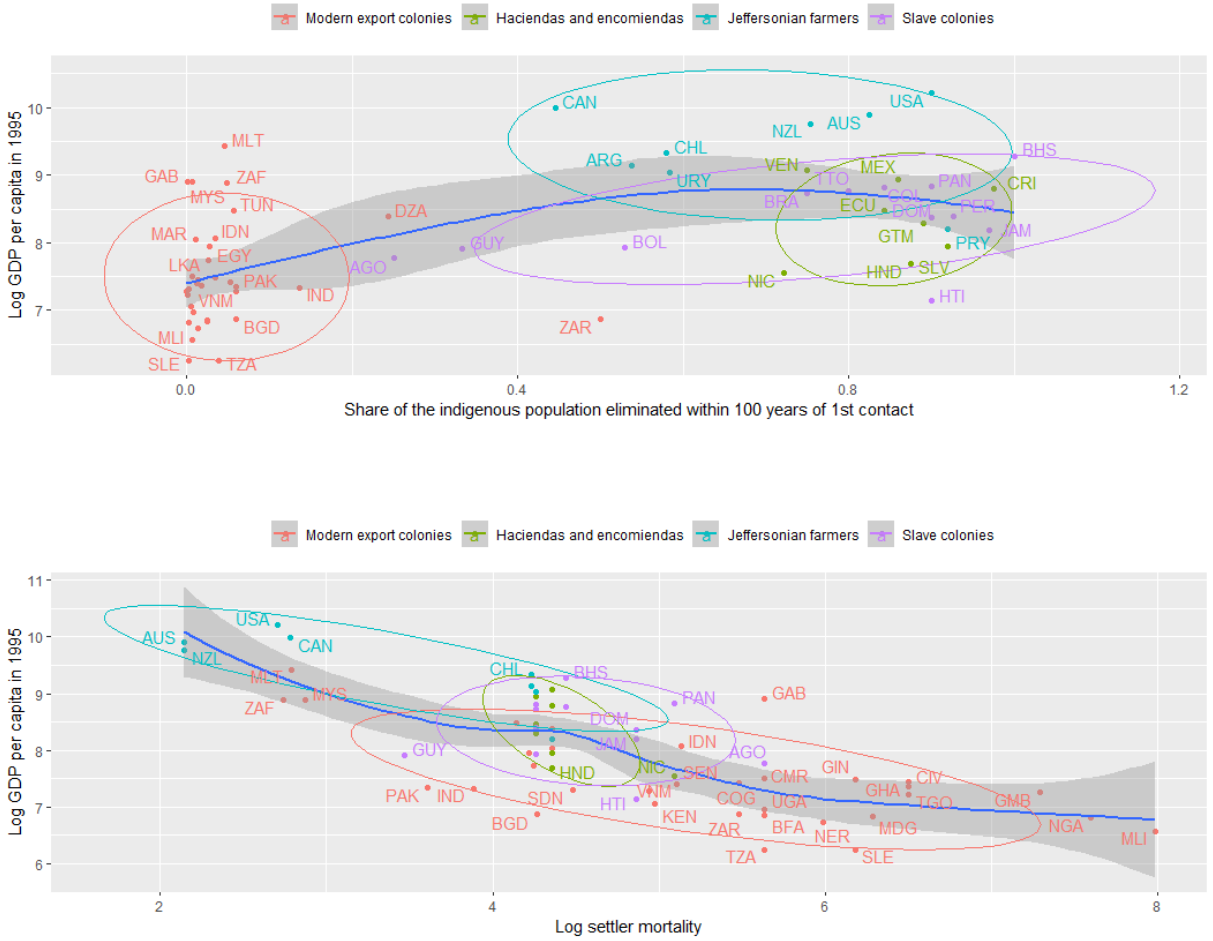

FIGURE 8. SHARE OF THE INDIGENOUS POPULATION ELIMINATED WITHIN 100 YEARS OF FIRST CONTACT AND LOG SETTLER MORTALITY, *versus* LOG GDP PER CAPITA IN 1995, BY COLONIAL REGIME, WITH 70% CONFIDENCE ELLIPSES. BLUE LINE IS A NON-PARAMETRIC SMOOTH, WITH 95% CONFIDENCE INTERVAL IN GREY.

IV. Conclusion

The results presented above indicate clearly that the colonial past matters for contemporary development. In particular, we have seen, the nature of the colonial regime is of considerable significance for property-regarding institutions established decades, if not centuries, later. Given the well-established effect of those institutions on GDP per capita, the nature of the colonial regime thus has consequences that echo for many years.

But colonial regimes are not the start of the story. The type of regime established depends critically on the depopulation of the indigenous population for the first century following contact with Europeans. That depopulation, whether due to slaves being exported, massacres, or epidemics, had consequences on regime type, consequences both greater in magnitude and more consistent across regimes than other colonial-era phenomena, notably the oft-discussed settler mortality variable.

Beyond these findings, our work highlights that there is still a need for careful and nuanced data construction. For example, in Section 3, we discussed population estimates, noting that standard compendia were unsatisfactory by not taking into account important progress by historical demographers on estimates for Latin America and Africa. Those estimates paint a very different picture of pre-European encounter population, as well as of the death toll consequent on that encounter. To some degree, the advances are due not only to more systematic analysis of vital statistics, but also to better integration of archeological evidence and geospatial mapping, something which holds as well for even variables such as arable land.

A related issue concerns aggregation. It is well known that country estimates are misleading, especially for big countries. We mentioned this point above when it came to the United States, which, prior to 1865, contained both slave plantations and Jeffersonian farmers (not to mention haciendas in the Spanish-controlled Southwest). Although, as we argued, it is not unreasonable to weight the latter more than the former in assigning a regime type to the U.S., it would obviously be better if we could develop sub-national measures of key variables. This would avoid certain heroic assumptions about aggregation. By the same token, data construction, and hence estimation, could also usefully be disaggregated by historical period. For example, some colonies arguably changed regime type: for example, after the Spaniards arrived, some areas began as encomiendas, added slave labor to the mix, then, after emancipation, shifted back, in this case to haciendas. In other cases, death tolls extended over well more than a century, waxing and waning in intensity as settlements, soldiers, and smallpox made their way inland.

Beyond these specific issues, there is one particular variable that deserves further attention, both from a conceptual and a theoretical point of view. We have in mind the institutions variable, which is supposed to be an indicator of how well countries protect private property. This concept is, in practice, measured by

experts supplying ratings of the risk of "outright confiscation" or "forced nationalization," actions which are of only partial significance to landowners or small business holders faced with challenges as varied as foreign competition or labor force desertion. However, this validity problem is less vexing than the cognate lack of a clear theoretical mechanism relating AVEXPR between 1985 and 1995 to the nature of the colonial regime at the height of the colonial era, for example in 1750 or even earlier. One such mechanism, for example, could be a configuration of political power that made significant changes in the legal code highly uncommon; another mechanism would be lock-in (e.g., QWERTY, or redlining) processes, in which an initial range of conditions was then drastically reduced; a third mechanism might be something akin to ecological niche formation, in which initial adaptation leads to alterations in the environment (for example, hacienda-protecting laws in the 1830s might result in obstacles to import of both goods and capital, which in turn means that there was less pressure to adapt to such imports later in the century).

REFERENCES

Abraham, Arthur, "Bai Bureh, the British, and the Hut Tax War," *International Journal of African Historical Studies*, 1974, *7* (1), 99–106.

Acemoglu, Daron and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*, Crown Publishers, 2012.

_ **and** _ , "Rents and Economic Development: The Perspective of *Why Nations Fail*," *Public Choice*, 2019, *181* (1), 13–28.

_ **, Francisco A. Gallego, and James A. Robinson**, "Institutions, Human Capital, and Development," *Annual Review of Economics*, 2014, *6*, 875–912.

_ **, Simon Johnson, and James A. Robinson**, "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review*, 2001, *91* (5), 1369–1401.

_ **,** _ **, and** _ , "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution," *Quarterly Journal of Economics*, 2002, *117* (4), 1231–1294.

_ **,** _ **, and** _ , "The Colonial Origins of Comparative Development: An Empirical Investigation: Reply," *American Economic Review*, 2012, *102* (6), 3077–3110.

Acuna-Soto, Rodolfo, David W. Stahle, Malcolm K. Cleaveland, and Matthew Therrell, "Megadrought and Megadeath in 16th Century Mexico," *Emerging Infectious Diseases*, 2002, *8* (4), 360–362.

Adelman, Jeremy, *Frontier Development: Land, Labour, and Capital on the Wheatlands of Argentina and Canada, 1890-1914*, Clarendon Press, 1994.

Albouy, David Y., "The Colonial Origins of Comparative Development: An Empirical Investigation: Comment," *American Economic Review*, 2012, *102* (6), 3059–3076.

Albury, Paul, *The Story of the Bahamas*, Humanity Press, 1975.

Anderson, Atholl, "Using Numbers from Somewhere Else: Comment on Chapple's 'New Zealand Numbers from Nearly Nowhere: 80,000 to 100,000 Māori Circa 1769'," *New Zealand Journal of History*, 2017, *51* (2), 122–125.

Anderson, David, *Histories of the Hanged: The Dirty War in Kenya and the End of Empire*, W.W. Norton, 2005.

Aram, Bethany, *Leyenda Negra y Leyendas Soradas en la Conquista de América: Pedrarias y Balboa*, Fundación Marcial Pons, Ediciones de Historia, 2008. Trans. Antonio J. Carrasco Álvarez.

Arnold, David, "Cholera and Colonialism in British India," *Past and Present*, 1986, *113* (November), 118–151.

_ , "Social Crisis and Epidemic Disease in the Famines of Nineteenth-century India," *Social History of Medicine*, 1993, *6* (3), 385–404.

Austin, Gareth, "The 'Reversal of Fortune' Thesis and the Compression of History: Perspectives from African and Comparative Economic History," *Journal of International Development*, 2008, *20* (8), 996–1027.

_ , "African Economic Development and Colonial Legacies," *International Development Policy*, 2010, *1*, 11–32.

Bakewell, Peter, "Mining in Colonial Spanish America," in Leslie Bethell, ed., *Cambridge History of Latin America, vol. 2: Colonial Latin America*, Cambridge University Press, 1984, chapter 4, pp. 105–152.

Baldwin, Robert E., "Patterns of Development in Newly Settled Regions," *The Manchester School*, 1956, *24*, 161–179.

Banerjee, Abhijit and Lakshmi Iyer, "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India," *American Economic Review*, 2005, *95* (4), 1190–1213.

Bayly, C.A., *The New Cambridge History of India, Vol. 2, Pt. 1: Indian Society and the Making of the British Empire*, Cambridge University Press, 1988.

Beckford, George L., *Persistent Poverty: Underdevelopment in Plantation Economies of the Third World*, Oxford University Press, 1972.

Bennoune, Mahfoud, *The Making of Contemporary Algeria, 1830-1987*, Cambridge University Press, 2002.

Bethell, Leslie and José Murilho de Carvalho, "Brazil from Independence to the Middle of the Nineteenth Century," in Leslie Bethell, ed., *Cambridge History of Latin America, Vol. 3: From Independence to c. 1870*, Cambridge University Press, 1985, chapter 16, pp. 679–746.

Black, Clinton V., *History of Jamaica*, revised ed., Longman, 1983.

Borah, Woodrow, *New Spain's Century of Depression*, University of California Press, 1951.

_ **and Sherburne F. Cook**, *The Population of Central Mexico in 1548*, University of California Press, 1960.

_ **and** _ , *The Aboriginal Population of Central Mexico on the Eve of the Spanish Conquest*, University of California Press, 1963.

_ **and** _ , *Essays in Population History: Mexico and the Caribbean, Vol. 1*, University of California Press, 1971.

Bose, Sugata, *The New Cambridge History of India, Vol. 3, Pt. 2: Peasant Labour and Colonial Capital: Rural Bengal since 1770*, Cambridge University Press, 1993.

Bottero, Margherita and Björn Wallace, "Is There a Long-term Effect of Africa's Slave Trades?," Quaderni di Storia Economica 30, Banca d'Italia April 2013.

Broche, François, *L'expédition de Tunisie, 1881*, Presses de la Cité, 1996.

Brockett, Charles D., *Land, Power, and Poverty: Agrarian Transformation and Political Conflict in Central America*, revised ed., Routledge, 2018.

Campbell, Gwyn, "The Menalamba Revolt and Brigandry in Imperial Madagascar, 1820-1897," *International Journal of African Historical Studies*, 1991, *24* (2), 259–291.

_ , *An Economic History of Imperial Madagascar, 1750-1895: The Rise and Fall of an Island Empire*, Cambridge University Press, 2005.

Cardoso, Fernando H. and Enzo Faletto, *Dependence and Development in Latin America*, University of California Press, 1979.

Carter, Susan and Richard Sutch, "Why the Settlers Soared: The Dynamics of Immigration and Economic Growth in the 'Golden Age' for Settler Societies," in Christopher Lloyd, Jacob Metzer, and Richard Sutch, eds., *Settler Economies in World History*, Brill 2012.

Chapple, Simon, "New Zealand Numbers from Nearly Nowhere: 80,000 to 100,000 Māori Circa 1769," *New Zealand Journal of History*, 2017, *51* (2), 104–121.

Chaudhuri, K.N., "Foreign Trade and Balance of Payments (1757-1947)," in Dharma Kumar, ed., *Cambridge Economic History of India, vol. 2: c. 1757 - c. 1970*, Cambridge University Press, 1983, chapter 10, pp. 804–877.

Clodfelter, Michael, *Warfare and Armed Conflicts: A Statistical Encyclopedia of Casualty and Other Figures, 1492-2015*, 4th ed., McFarland and Co., 2017.

Coatsworth, John H., "Political Economy and Economic Organization," in Victor Bulmer-Thomas, John H. Coatsworth, and Roberto Cortés Conde, eds., *Cambridge Economic History of Latin America: Vol. 1, The Colonial Era and the Short Nineteenth Century*, Cambridge University Press, 2006, chapter 7, pp. 237–273.

Cockcroft, James D., André G. Frank, and Dale L. Johnson, *Dependence and Underdevelopment: Latin America's Political Economy*, Anchor Books, 1972.

Cook, Noble David, *Demographic Collapse: Indian Peru, 1520-1620*, Cambridge University Press, 1981.

_ , "Population Data for Indian Peru: Sixteenth and Seventeenth Centuries," *Hispanic American Historical Review*, 1982, *62* (1), 73–120.

Daly, Vere T., *The Making of Guyana*, Macmillan, 1974.

Davis, Kevin, Angelina Fisher, Benedict Kingsbury, and Sally Engle Merry, eds, *Governance by Indicators: Global Power Through Quantification and Rankings*, Oxford University Press, 2012.

Decalo, Samuel, *Historical Dictionary of Niger*, 3rd ed., Scarecrow Press, 1997.

Dell, Melissa, "The Persistent Effects of Peru's Mining *Mita*," *Econometrica*, 2010, *78* (6), 1863–1903.

Demsetz, Harold, "The Exchange and Enforcement of Property Rights," *Journal of Law and Economics*, 1964, *7*, 11–26.

Denevan, William M., "Native American Populations in 1492: Recent Research and a Revised Hemispheric Estimate," in William M. Denevan, ed., *The Native Population of the Americas in 1492*, 2nd ed., University of Wisconsin Press, 1992, pp. xvii–xxxviii.

_ , "The Native Population of Amazonia in 1492 Reconsidered," *Revista De Indias*, 2003, *63* (227), 175–188.

Diamond, Jared, *The Third Chimpanzee: The Evolution and Future of the Human Animal*, Harper Collins Publishers, 1992.

_ , *Guns, Germs and Steel: A Short History of Everybody for the Last 13,000 Years*, New York: W.W. Norton and Company, 1997.

Disney, A.R., *A History of Portugal and the Portuguese Empire: From Beginnings to 1807, Vol. 2: The Portuguese Empire*, Cambridge University Press, 2009.

Doyle, Shane, *Crisis and Decline in Bunyoro: Population and Environment in Western Uganda 1860-1955*, Ohio University Press, 2006.

Dye, Alan and Sumner La Croix, "From Land Grants to Loan Farms: Property Rights and the Extent of Settlement in Dutch South Africa, 1652-1750," Technical Report 17-6 December 2017. University of Hawai'i at Mānoa, Department of Economics working Paper Series.

Easterly, William and Ross Levine, "The European Origins of Economic Development," *Journal of Economic Growth*, 2016, *21* (3), 225–257.

Echenberg, Myron, *Black Death, White Medicine: Bubonic Plague and the Politics of Public Health in Colonial Senegal, 1914-1945*, Heinemann, 2002.

Eckhardt, William G., "Wars and Deaths, 1700-1987," in Ruth Leger Sivard, ed., *World Military and Social Expenditures 1987-88*, World Priorities 1987, pp. 28–31.

Efron, Bradley, "Better Bootstrap Confidence Intervals," *Journal of the American Statistical Association*, 1987, *82* (397), 171–185.

Elson, Robert E., "International Commerce, the State and Society: Economic and Social Change," in Nicholas Tarling, ed., *Cambridge History of Southeast Asia, vol. 2: The Nineteenth and Twentieth Centuries*, Cambridge University Press, 1992, chapter 3, pp. 131–195.

Engerman, Stanley L. and Kenneth L. Sokoloff, "Factor Endowments, Institutions, and Differential Paths of Growth among New World Economies: A View from Economic Historians of the United States," in Stephen Haber, ed., *How Latin America Fell Behind*, Stanford University Press 1997.

_ **and** _ , "History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World," *Journal of Economic Perspectives*, 2000, *14* (3), 217–232.

_ **and** _ , "Factor Endowments, Inequality, and Paths of Development among New World Economies," *Economía*, 2002, *3* (1), 41–88, 103–111.

_ **and** _ , "Colonialism, Inequality and Long-run Paths of Development," 2005. National Bureau of Economic Research, WP 11057.

Evans, Raymond and Robert Ørsted-Jensen, "'I Cannot Say the Numbers That Were Killed': Assessing Violent Mortality on the Queensland Frontier," Technical Report 2014. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2467836.

Faguet, Jean-Paul, Camilo Matajira, and Fabio Sánchez, "Is Extraction Bad? *Encomienda* and Development in Colombia since 1560," Technical Report 48, Centro de Estudios Sobre Desarollo Económico, Facultad de Economía, Universidad de los Andes July 2017.

Falola, Toyin and Matthew M. Heaton, *A History of Nigeria*, Cambridge University Press, 2008.

Faron, Louis C., "Effects of Conquest on the Araucanian Picunche during the Spanish Colonization of Chile: 1536-1635," *Ethnohistory*, 1960, *7* (3), 239–307.

_ , "From Encomienda to Hacienda in Chancay Valley, Peru; 1533-1600," *Ethnohistory*, 1966, *13* (3/4), 145–181.

Fasseur, Cornelis, *The Politics of Colonial Exploitation: Java, the Dutch, and the Cultivation System* number 8. In 'Studies on Southeast Asia.', Cornell Southeast Asia Program, 1992. Trans. R.E. Elson and Ary Kraal.

Fernando, M.R., "Famine in a Land of Plenty: Plight of a Rice-growing Community in Java, 1883-84," *Journal of Southeast Asian Studies*, 2010, *41* (2), 291–320.

Ferry, Robert J., "Encomienda, African Slavery, and Agriculture in Seventeenth-century Caracas," *Hispanic American Historical Review*, 1981, *61* (4), 609–635.

Fibaek, Maria and Erik Green, "Labour Control and the Establishment of Profitable Settler Agriculture in Colonial Kenya, C. 1920-45," *Economic History of Developing Regions*, 2019, *34* (1), 72–110.

Florescano, Enrique, "The Formation and Economic Structure of the Hacienda in New Spain," in Leslie Bethell, ed., *Cambridge History of Latin America, Vol. 2: Colonial Latin America*, Cambridge University Press, 1984, chapter 5, pp. 153–88.

Fogel, Robert W., *Time on the Cross: The Economics of American Negro Slavery*, New York, NY: Norton, 1974.

Fowler, William R., "La Población Nativa de El Salvador al Momento de la Conquista Española," *Mesoamérica*, 1988, *9* (15), 79–116.

Frank, André Gunder, *Dependent Accumulation and Underdevelopment*, Monthly Review Press, 1978.

Frankema, Ewout and Morten Jerven, "Writing History Backwards or Sideways: Towards a Consensus on African Population, 1850-2010," *Economic History Review*, 2014, *67* (4), 907–931. Current data at https://www.aehnetwork.org/data-research/african-population-database-1850-1960/.

Fremigacci, Jean, "La Vérité sur la Grande Révolte de Madagascar," *L'Histoire*, March 2007, (318), 36–43.

Fuglestad, Finn, "La Grande Famine de 1931 dans l'Ouest: Réflexions autour d'une Catastrophe Naturelle," *Revue Française d'Histoire d'Outre-Mer*, 1974, *61* (222), 18–33.

Furtado, Celso M., *Formação Econômica da América Latina*, Rio de Janeiro, Brazil: Lia Editora, 1969.

Gabbert, Wolfgang, "The Longue Durée of Colonial Violence in Latin America," *Historical Social Research / Historische Sozialforschung*, 2012, *37* (3), 254–275.

Ganson, Barbara, *The Guaraní under Spanish Rule in the Río De La Plata*, Stanford University Press, 2003.

Garavaglia, Juan Carlos, *Mercado Interno y Economía Colonial*, Grijalbo, 1983.

Gates, Paul Wallace, *History of Public Land Law Development*, Arno Press, 1979.

Gennaioli, Nicola and Ilia Rainer, "Precolonial Centralization and Institutional Quality in Africa," in Mark Gradstein and Kai A. Konrad, eds., *Institutions and Norms in Economic Development*, MIT Press 2006.

_ **and** _ , "The Modern Impact of Precolonial Centralization in Africa," *Journal of Economic Growth*, 2007, *12* (3), 185–234.

Glaeser, Edward L., Rafael La Porta, Florencio Lopez de Silanes, and Andrei Shleifer, "Do Institutions Cause Growth?," *Journal of Economic Growth*, 2004, *9*, 273–303.

Goldewijk, Kees Klein, Arthur Beusen, Jonathan Doelman, and Elke Stehfest, "Anthropogenic Land Use Estimates for the Holocene – Hyde 3.2," *Earth System Science Data*, 2017, *9*, 927–953.

Greenwood, Brian, "100 Years of Epidemic Meningitis in West Africa — Has Anything Changed?," *Tropical Medicine and International Health*, 2006, *11* (6), 773–780.

Grove, Richard H., "The Great El Niño of 1789-93 and Its Global Consequences," *Medieval History Journal*, 2007, *10* (1-2), 75–98.

Guelke, Leonard and Robert Shell, "Landscape of Conquest. Frontier Water Alienation and Khoikhoi Strategies of Survival, 1652-1780," *Journal of Southern African Studies*, 1992, *18* (4), 803–824.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, "Long-term Persistence," *Journal of the European Economic Association*, 2016, *14* (6), 1401–143.

Hansen, Bent, "Colonial Economic Development with Unlimited Supply of Land: A Ricardian Case," *Economic Development and Cultural Change*, 1979, *27* (4), 611–627.

Harris, John R. and Michael P. Todaro, "Migration, Unemployment and Development: A Two-sector Analysis," *American Economic Review*, 1970, *60* (1), 126–142.

Harrison, Mark, "A Dreadful Scourge: Cholera in Early Nineteenth-century India," *Modern Asian Studies*, 2020, *54* (2), 502–53.

Hart, Paul, *Bitter Harvest: The Social Transformation of Morelos, Mexico,and the Origins of the Zapatista Revolution, 1840-1910*, University of New Mexico Press, 2005.

Hausman, Jerry A., "Specification Tests in Econometrics," *Econometrica*, 1978, *46* (6), 1251–1272.

Helleiner, Gerald K., "Typology in Development Theory: The Land Surplus Economy (Nigeria)," *Food Research Institute Studies*, 1966.

Herbst, Jeffrey, *States and Power in Africa: Comparative Lessons in Authority and Control*, Princeton University Press, 2000.

Herold, J. Christopher, *Bonaparte in Egypt*, Harper and Row, 1962.

Hochschild, Adam, *King Leopold's Ghost: A Story of Greed, Terror, and Heroism in Colonial Africa*, Houghton Mifflin Harcourt, 1998.

Hopkins, A.G., "The New Economic History of Africa," *Journal of African History*, 2009, *50* (2), 155–177.

Houben, Vincent and Julia Seibert, "(Un)freedom: Colonial Labor Relations in Belgian Congo and the Netherlands Indies Compared," in Ewout Frankema and Frans Buelens, eds., *Colonial Exploitation and Economic Development: The Belgian Congo and the Netherlands Indies Compared*, Routledge, 2013, chapter 8, pp. 178–192.

Huillery, Elise, "History Matters: The Long-term Impact of Colonial Public Investments in French West Africa," *American Economic Journal: Applied Economics*, 2009, *1* (2), 176–215.

_ , "The Impact of European Settlement within French West Africa: Did Pre-colonial Prosperous Areas Fall Behind?," *Journal of African Economies*, 2011, *20* (2), 263–311.

Imai, Kosuke and David A. van Dyk, "A Bayesian Analysis of the Multinomial Probit Model Using Marginal Data Augmentation," *Journal of Econometrics*, 2005, *124* (2), 311–334.

Issawi, Charles, *An Economic History of the Middle East and North Africa*, Columbia University Press, 1982.

Iyer, Lakshmi, "Direct Versus Indirect Colonial Rule in India: Long-term Consequences," *Review of Economics and Statistics*, 2010, *92* (4), 693–713.

Jones, Grant D., "The Lowland Mayas, from the Conquest to the Present," in Richard W.W. Adams and Murdo J. MacLeod, eds., *The Cambridge History of the Native Peoples of the Americas, vol. 2: Mesoamerica*, Cambridge University Press, 2000, chapter 20, pp. 346–389.

Kachim, Joseph Udimal, "African Resistance to Colonial Conquest: The Case of Konkomba Resistance to German Occupation of Northern Togoland, 1896-1901," *Asian Journal of Humanities and Social Studies*, 2013, *1* (3), 162–172.

Katz, Friedrich, "Rural Uprisings in Preconquest and Colonial Mexico," in Friedrich Katz, ed., *Riot, Rebellion, and Revolution: Rural Social Conflict in Mexico*, Princeton University Press, 1988, chapter 3, pp. 65–94.

Keitenbrouwer, Maarten, "Aristocracies under Colonial Rule: North India and Java," in C.H.A. Bayly and D.H.A. Kolff, eds., *Two Colonial Empires: Comparative Essays on the History of India and Indonesia in the Nineteenth Century*, Martinus Nijhoff, 1986, chapter 4, pp. 75–94.

Keith, Robert G., "Encomienda, Hacienda and Corregimiento in Spanish America: A Structural Analysis," *Hispanic American Historical Review*, 1971, *51* (3), 431–446.

Kelly, Morgan, "The Standard Errors of Persistence," June 2019. Available at SSRN: https://ssrn.com/abstract=3398303 or http://dx.doi.org/10.2139/ssrn.3398303.

Kiernan, Ben, *Blood and Soil: A World History of Genocide and Extermination from Sparta to Darfur*, Yale University Press, 2007.

Knack, Stephen and Philip Keefer, "Does Social Capital Have an Economic Payoff? A Cross-country Investigation," *Quarterly Journal of Economics*, 1997, *112*, 1251–73.

Knight, Franklin W., *The Caribbean: The Genesis of a Fragmented Nationalism*, 3rd ed., Oxford University Press, 2011.

Kohn, G.C., *Encyclopedia of Plague and Pestilence: From Ancient Times to the Present*, 3rd ed., Facts on File, 2008.

Kosmidis, I. and D. Firth, "Bias Reduction in Exponential Family Nonlinear Models," *Biometrika*, 2009, *96*, 793–804.

_ **and** _ , "Multinomial Logit Bias Reduction Via the Poisson Log-linear Model," *Biometrika*, 2011, *98* (3), 7.

La Croix, Sumner, "The Khoikhoi Population: A Review of Evidence and Two New Estimates," Technical Report 39/2018 2018. African Economic History Working Paper Series.

La Porta, Rafael, Florencio Lopez de Silanes, Andrei Shleifer, and Robert Vishny, "Law and Finance," *Journal of Political Economy*, 1998, *106*, 1113–55.

_ **,** _ **,** _ **, and** _ , "The Quality of Government," *Journal of Law, Economics and Organization*, 1999, *15*, 222–279.

Lane, Kris, "The Transition from *Encomienda* to Slavery in Seventeenth-century Barbacoas (Colombia)," *Slavery and Abolition*, 2000, *21* (1), 73–95.

Lev, Daniel S., "Colonial Law and the Genesis of the Indonesian State," *Indonesia*, 1985, *40* (Oct.), 57–74.

Lewis, W. Arthur, "Economic Development with Unlimited Supplies of Labour," *The Manchester School*, 1954, *22* (2), 139–191.

Livi-Bacci, Massimo, *A Concise History of World Population*, 6th ed., Wiley Blackwell, 2017.

Lockhart, James, "Encomienda and Hacienda: The Evolution of the Great State in the Spanish Indies," *Hispanic American Historical Review*, 1969, *49* (3), 411–429.

Lovell, W. George, "The Highland Maya," in Richard E.W. Adams and Murdo J. MacLeod, eds., *The Cambridge History of the Native Peoples of the Americas, vol. 2: Mesoamerica*, Cambridge University Press, 2000, chapter 21, pp. 392–444.

Maddison, Angus, *The World Economy, 2 Vols.*, Development Centre of the Organisation for Economic Co-operation and Development, 2006. Updated data available online: https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2018.

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

_ , "Explaining the Great Continuity: Ethnic Institutions, Colonialism , and Social Development in Spanish America," *Political Power and Social Theory*, 2015, *28*, 43–62.

Manning, Patrick, "African Population, 1650-1950: Methods for New Estimates by Region," in "African Economic History Conference" 2013. Vancouver, April.

_ , "African Population, 1650-2000: Comparisons and Implications of New Estimates," in Emmanuel Akyeampong, Robert H. Bates, Nathan Nunn, and James Robinson, eds., *Africa's Development in Historical Perspective*, Cambridge University Press, 2014, chapter 4, pp. 131–150.

Marcílio, Maria Luiza, "The Population of Colonial Brazil," in Leslie Bethell, ed., *The Cambridge History of Latin America, vol. 2: Colonial Latin America*, 1984, chapter 2, pp. 37–63.

Marks, Shuila, "Southern and Central Africa, 1886-1910," in Roland Oliver and G.N. Sanderson, eds., *The Cambridge History of Africa, vol. 6: From 1870 to 1905*, Cambridge University Press, 1985, chapter 8, pp. 422–492.

Marshall, P.J., *The New Cambridge History of India, Vol. 2, Pt. 2: Bengal: The British Bridgehead: Eastern India 1740-1828*, Cambridge University Press, 1987.

Marx, Karl, *Capital, Volume 1: A Critical Analysis of Capitalist Production*, International Publishers, 1967, 1867.

McEvedy, Colin and Richard Jones, *Atlas of World Population History*, Penguin Books, 1978.

McGowan, Winston, "Fula Resistance to French Expansion into Futa Jallon 1889-1896," *Journal of African History*, 1981, *22* (2), 245–261.

McLane, John R., *Land and Local Kingship in Eighteenth-century Bengal*, Cambridge University Press, 1993.

Meredith, David, "Coerced Labour in Southern Hemisphere Settler Economies," in Christopher Lloyd, Jacob Metzer, and Richard Sutch, eds., *Settler Economies in World History*, Brill 2012.

Metcalf, Alida C., *Family and Frontier in Colonial Brazil: Santana de Parnaíba, 1580-1822*, University of Texas Press, 2005.

Michalopoulos, Stelios and Elias Papaioannou, "Pre-colonial Ethnic Institutions and Contemporary African Development," *Econometrica*, 2013, *81* (1), 113–152.

Molina, Iván and Steven Palmer, *The History of Costa Rica*, 2d ed., Editorial UCR, 2007.

Newson, Linda A., *Aboriginal and Spanish Colonial Trinidad: A Study in Culture Contact*, Academic Press, 1976.

_ , "The Depopulation of Nicaragua in the Sixteenth Century," *Journal of Latin American Studies*, 1982, *14* (2), 253–286.

_ , *The Cost of Conquest: Indian Decline in Honduras under Spanish Rule*, Westview, 1986.

_ , *Life and Death in Early Colonial Ecuador*, University of Oklahoma Press, 1995.

_ , "The Population of the Amazon Basin in 1492: A View from the Ecuadorian Headwaters.," *Transactions Institute of British Geographers*, 1996, *21*, 5–26.

_ , "Patterns of Indian Depopulation in Early Colonial Ecuador," *Revista de Indias*, 2003, *63* (227), 135–156.

Ngalamulume, Kalala, "Keeping the City Totally Clean: Yellow Fever and the Politics of Prevention in Colonial Saint-Louis-du-Sénégal, 1850-1914," *Journal of African History*, 2004, *45* (2), 183–202.

Nguyen-Marshall, Van, "The Moral Economy of Colonialism: Subsistence and Famine Relief in French Indo-China, 1906-1917," *International History Review*, 2005, *27* (2), 237–258.

North, Douglass C., "The New Institutional Economics," *Journal of Institutional and Theoretical Economics*, 1986, *142*, 230–237.

_ , "Institutions, Economic Growth and Freedom: An Historical Introduction," in Michael A. Walker, ed., *Freedom, Democracy and Economic Welfare*, Fraser Institute Vancouver, BC 1988.

Nunn, Nathan, "Slavery, Institutional Development, and Long-run Growth in Africa, 1400-2000," 2005. International Trade Working Paper 0411007, Econ-WPA, Washington University, St. Louis, MO.

_ , "The Long-term Effects of Africa's Slave Trades," *Quarterly Journal of Economics*, 2008, *123* (1), 139–176.

_ **and Diego Puga**, "Ruggedness: The Blessing of Bad Geography in Africa," *Review of Economics and Statistics*, 2012, *94* (1), 20–36.

Nzabakomada-Yakoma, Raphaël, *L'Afrique Centrale Insurgée: La Guerre du Kongo-Wara 1928-1931*, L'Harmattan, 1986.

Omer-Cooper, J.D., "Colonial South Africa and Its Frontiers," in John E. Flint, ed., *The Cambridge History of Africa, vol. 5: From c. 1790 to c. 1870*, Cambridge University Press, 1976, chapter 10, pp. 353–392.

OnWar.com, "Armed Conflict Events Data," 2020. http://www.onwar.com.

Pagui, E. C. Kenne, A. Salvan, and N. Sartori, "Median Bias Reduction of Maximum Likelihood Estimates," *Biometrika*, 2017, *104*, 923–938.

Papke, Leslie E. and Jeffrey M. Wooldridge, "Econometric Methods for Fractional Response Variables with an Application to 401(k) Plan Participation Rates," *Journal of Applied Econometrics*, 1996, *11* (6), 619–632.

Parker, Philip M., *National Cultures of the World: A Statistical Reference*, Vol. 4, Greenwood Press, 1997.

Petrin, Amil and Kenneth Train, "A Control Function Approach to Endogeneity in Consumer Choice Models," *Journal of Marketing Research*, 2010, *47* (1), 3–13.

Poewe, Karla, *The Namibian Herero: A History of Their Psychosocial Disintegration and Survival*, Ewin Mellen Press, 1985.

Pons, Frank Moya, *The Dominican Republic: A National History*, Markus Wiener, 1988.

Pool, Ian and Tahu Kukutai, "Taupori Māori – Māori Population Change," in "Te Ara – The Encyclopedia of New Zealand" 2018. http://www.TeAra.govt.nz/en/taupori-maori-maori-population-change.

Powell, Geoffrey, *The Kandyan Wars: The British Army in Ceylon, 1803-1818*, Leo Cooper, 1973.

Pyle, Jane, "A Reexamination of Aboriginal Population Estimates for Argentina," in William M. Denevan, ed., *The Native Population of the Americas in 1492*, 2d ed., University of Wisconsin Press, 1992, chapter 6, pp. 181–204.

Reed, Richard K., *Prophets of Agroforestry: Guaraní Communities and Commercial Gathering*, University of Texas Press, 1995.

Richter, Daniel K., "War and Culture: The Iroquois Experience," *William and Mary Quarterly*, 1983, *40* (4), 528–559.

Rock, David, *Argentina 1516-1987: From Spanish Colonization to Alfonsín*, revised ed., University of California Press, 1987.

Rosenblat, Ángel, *La Población de América en 1492: Viejos y Nuevos Cálculos*, Colegio de México, 1967.

Sachs, Jeffrey D. and Andrew M. Warner, "The Curse of Natural Resources," *European Economic Review*, 2001, *45*, 827–838.

Sans, Mónica, "National Identity, Census Data, and Genetics in Uruguay," in Sahra Gibbon, Ricardo Ventura Santos, and Mónica Sans, eds., *Racial Identities, Genetic Ancestry, and Health in South America: Argentina Brazil, Colombia, and Uruguay*, Palgrave Macmillan, 2011, chapter 9, pp. 195–211.

Sarkees, Meredith Reid and Frank Whelon Wayman, *Resort to War: A Data Guide to Inter-state, Extra-state, Intra-state, and Non-state Wars, 1816-2007*, CQ Press, 2010.

Saunt, Claudio, "History until 1776," in Raymond D. Fogelson, ed., *Handbook of North American Indians, vol. 14: Southeast*, Smithsonian Institution, 2004, pp. 128–138.

Sautter, Gilles, "Notes Sur La Construction Du Chemin De Fer Congo-océan (1921-1934)," *Cahiers D'études Africaines*, 1967, *7* (26), 219–299.

Schmidt, Heike, "(re)negotiating Marginality: The Maji Maji War and Its Aftermath in Southwestern Tanzania, Ca. 1905-1916," *International Journal of African Historical Studies*, 2010, *43* (1), 27–62.

Schwartz, Stuart B., "Colonial Brazil, *c.* 1580 - *c.* 1750: Plantations and Peripheries," in Leslie Bethell, ed., *Cambridge History of Latin America, vol. 2: Colonial Latin America*, Cambridge University Press, 1984, chapter 12, pp. 421–500.

Sen, Amartya, *Poverty and Famines: An Essay on Entitlement and Deprivation*, Oxford University Press, 1983.

Small, Melvin and J. David Singer, *Resort to Arms: International and Civil Wars, 1816-1980*, 2d ed., Sage Publications, 1982.

Smith, Robert S., "Indigo Production and Trade in Colonial Guatemala," *Hispanic American Historical Review*, 1959, *39* (2), 181–211.

Solberg, C.E., *The Prairies and the Pampas: Agrarian Policy in Canada and Argentina* 1987.

Spaulding, Jay, "The Business of Slavery in the Central Anglo-egyptian Sudan, 1910-1930," *African Economic History*, 1988, *17*, 23–44.

Stanard, Mathew G., "Violence and Empire: The Curious Case of Belgium and the Congo," in Robert Aldrich and Kirsten McKenzie, eds., *The Routledge History of Western Empires*, Routledge, 2014, chapter 30, pp. 454–67.

Taithe, Bertrand, *The Killer Trail: A Colonial Scandal in the Heart of Africa*, Oxford University Press, 2009.

Tandeter, Enrique, "The Mining Industry," in Victor Bulmer-Thomas, John H. Coatsworth, and Roberto Cortés Conde, eds., *Cambridge Economic History of Latin America, vol. 1: The Colonial Era and the Short Nineteenth Century*, Cambridge University Press, 2006, chapter 9, pp. 315–356.

Tavares, Gustavo M., Guillermo Reales, Maria Cátarina Bortolini, and Nelson J.R. Fagundes, "Measuring the Impact of European Colonization on Native American Populations in Southern Brazil and Uruguay: Evidence from mtDNA," *American Journal of Human Biology*, 2019, *31* (3), e23243.

Terretta, Meredith, *Nation of Outlaws, State of Violence: Nationalism, Grassfields Tradition, and State Building in Cameroon*, Ohio University Press, 2013.

Terza, Joseph V., Anirban Basu, and Paul J. Rathouz, "Two-stage Residual Inclusion Estimation: Addressing Endogeneity in Health Econometric Modeling," *Journal of Health Economics*, 2008, *27* (3), 531–543.

Thomas, Roger G., "Forced Labour in British West Africa: The Case of the Northern Territories of the Gold Coast 1906-1927," *Journal of African History*, 1973, *14* (1), 79–103.

Thornton, Russell, *American Indian Holocaust and Survival: A Population History since 1492*, University of Oklahoma Press, 1987.

Tilman, Robert O., "The Non-lessons of the Malayan Emergency," *Asian Survey*, 1966, *6* (8), 407–419.

Tough, Frank and Kathleen Dimmer, "Dispossession by the Market on the Frontier of Property Systems: Case Studies of the Maori Land Court, Indian Reservation Allotment, and Métis Scrip," in Christopher Lloyd, Jacob Metzer, and Richard Sutch, eds., *Settler Economies in World History*, Brill Leiden 2012.

University of Newcastle, "Colonial Frontier Massacres in Australia, 1788-1930." http://https://c21ch.newcastle.edu.au/colonialmassacres/.

Vågene, Åshild J., Alexander Herbig, Michael G. Campana, Nelly M. Robles García, Christina Warinner, Susanna Sabin, Maria A. Spyrou, Andrades Valtuea, Daniel Huson, Noreen Tuross, Kirsten I. Bos, and Johannes Krause, "*Salmonella enterica* Genomes from Victims of a Major Sixteenth-century Epidemic in Mexico," *Nature Ecology and Evolution*, March 2018, *2*, 520–528.

van Zanden, Jan Luiten, "Colonial State Formation and Patterns of Economic Development in Java, 1800-1913," *Economic History of Developing Regions*, 2010, *25* (2), 155–176.

Vansina, Jan, *Being Colonized: The Kuba Experience in Rural Congo, 1880-1960*, University of Wisconsin Press, 2010.

Vanthemsche, Guy, *Belgium and the Congo, 1885-1980*, Cambridge University Press, 2012.

Vennes, Thomas, "Understanding Colonial Violence: Military Culture, Colonial Contexrt, and the Civilizing Mission in the Volta-Bani War (1915-1916)," *Strata*, 2018, *8*, 87–104.

Villamarín, Juan and Judith Villamarín, "Native Colombia: Contact, Conquest and Colonial Populations," *Revistas De Indias*, 2003, *63* (227), 105–134.

Ward, Tony, "The Aboriginal Economy in Settler Societies: Maori and Canadian Prairie Indians," in Christopher Lloyd, Jacob Metzer, and Richard Sutch, eds., *Settler Economies in World History*, Brill 2012.

Washbrook, D.A., "Law, State and Agrarian Society in Colonial India," *Modern Asian Studies*, 1981, *15* (3), 649–721.

Weaver, Frederick Stirton, *Inside the Volcano: The History and Political Economy of Central America*, re- ed., Routledge, 2018.

Weber, Max, *General Economic History*, Greenberg, 1927.

Weiskel, Timothy C., *French Colonial Rule and the Baule Peoples: Resistance and Collaboration, 1889-1911*, Clarendon Press, 1980.

Williamson, Jeffrey G., "Five centuries of Latin American income inequality," *Revista de Historia Económica / Journal of Iberian and Latin American Economic History*, sep 2010, *28* (2), 227–252.

_ , "Latin American Inequality: Colonial Origins, Commodity Booms or a Missed Twentieth-Century Leveling?," *Journal of Human Development and Capabilities*, may 2015, *16* (3), 324–341.

Wolf, Eric R. and Sidney W. Mintz, "Haciendas and Plantations in Middle America and the Antilles," *Social and Economic Studies*, 1957, *6* (3), 380–412.

Wolfe, Patrick, *Settler Colonialism and the Transformation of Anthropology: The Politics and Poetics of an Ethnographic Event*, Cassel, 1999.

_ , "Settler Colonialism and the Elimination of the Native," *Journal of Genocide Research*, 2006, *8*, 387–409.

Womack, John Jr., *Zapata and the Mexican Revolution*, Alfred A. Knopf, 1968.

Wooldridge, Jeffrey M., *Econometric Analysis of Cross-section and Panel Data*, 1st ed., Cambridge, MA: MIT Press, 2001.

_ , "Control Function Methods in Applied Econometrics," *Journal of Human Resources*, 2015, *50* (2), 420–445.

Wrigley, C.C., "Aspects of Economic History," in A.D. Roberts, ed., *Cambridge History of Africa, vol. 7: From 1905 to 1940*, Cambridge University Press, 1986, chapter 2, pp. 77–139.

Yates, Douglas A., *Historical Dictionary of Gabon*, 4th ed., Rowman and Littlefield, 2017.

Young, Alwyn, "Consistency without Inference: Instrumental Variables in Practical Applications," August 2019. London School of Economics.

Young, Eric Van, *Hacienda and Market in Eighteenth-century Mexico: The Rural Economy of the Guadalajara Region, 1675-1820*, 2nd ed., Rowman & Littlefield, 2006.

Zapater, Horacio, "Huincas y Mapuches (1550-1662)," *Historia*, 1997, *30*, 441–504.

Zulawski, Ann, *They Eat from Their Labor: Work and Social Change in Colonial Bolivia*, University of Pittsburgh Press, 1994.

Appendix A: Data descriptions and sources

- Log GDP per capita, 1995. See section II.C. Purchasing Power Parity Basis, from Acemoglu et al. (2001). Originally from the World Bank, *World Development Indicators*.
- Average protection against expropriation risk, 1985-1995. See section II.C. Risk of expropriation of private foreign investment by government, from 0 to 10, where a higher score means less risk. Mean value for all years from 1985 to 1995. These data are from Acemoglu et al. (2001). Originally used in Knack and Keefer (1997).
- Year of first contact. See section II.A and Appendix B.
- Population at first contact. See section II.A, including for general sources, and Appendix B.
- Population density at first contact. See section II.A and Appendix B.
- Share of indigenous population killed or removed by enslavement during the 100 years after first contact. See section II.B, including for general sources, as well as Clodfelter (2017),Small and Singer (1982), Eckhardt (1987), OnWar.com (2020), and Appendix B.
- Regime type. See section II.B and Appendix B.
- Dummy for landlocked. Equal to 1 if country does not adjoin the sea. From Acemoglu et al. (2001). Originally from Parker (1997).
- Latitude. See section II.A. Absolute value of the latitude of the country (i.e., a measure of distance from the equator), scaled to take values between 0 and 1, where 0 is the equator. From Acemoglu et al. (2001). Originally from La Porta et al. (1999).

- Terrain ruggedness. "Small-scale terrain irregularities" based on squared differences in elevation. See section II.A. From Nunn and Puga (2012).
- Log European settler mortality. See section II.A. From Acemoglu et al. (2001).

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Appendix B: Year of first contact, population at first contact, deaths by type and/or enslavement removal from country during first century after first contact, regime type and country sources if used[20]

Algeria

First contact 1830; population first contact 2.800 million; massacres/battles 681,500 (French conquest); epidemics/famines NA; enslavement removal NA; SIPE .243; regime type: modern export colony; country sources: Bennoune (2002), Kiernan (2007).

Angola

First contact 1576; population first contact 2.073 million; massacres/battles NA; epidemics/famines NA; enslavement removal 520,832; SIPE .251; regime type: slave colony; country sources: Disney (2009, 70-83).

Argentina

First contact 1573; population first contact 0.888 million; massacres/battles + epidemics/famines 476,678 (Spanish conquest); enslavement/removal NA; SIPE .537; regime type Jeffersonian farmers; country sources: Pyle (1992), Rock (1987, tbl. 1).

Australia

First contact 1788; population first contact 0.250 million; massacres/battles 53,654 (frontier wars); epidemics/famines 106,346 (1788-89 smallpox, 1875-76 scarlet fever, 1880 measles, 1881-82 smallpox); enslavement removal 0; SIPE .825; regime type Jeffersonian farmers; country sources: Diamond (1992), University of Newcastle (n.d.), Evans and Ørsted-Jensen (2014).

[20]Note: when population or deaths/removal estimates are missing for particular years, interpolation or extrapolation from nearest and most reliable "bookend" or "anchor" figures is used; when modern-day countries are limited to one, or spread across several, historical regions, figures pertaining to the latter are reduced by the ratio of the former's population or, conversely, added, adjusting again by population ratios.

Bahamas

First contact 1492; population first contact 0.040 million; massacres/battles 0; epidemics/famines 0; enslavement/removal 40,000; SIPE 1.000; regime type: slave colony; country sources: Albury (1975, ch. 4).

Bangladesh

First contact 1757; population first contact 17.130 million; massacres/battles NA; epidemics/famines 1,035,000 (1769-70 famine/smallpox, 1817-21 cholera); enslavement/removal 0; SIPE .060; regime type: modern export colony; country sources: Arnold (1986, 1993), McLane (1993, ch. 10), Harrison (2020).

Bolivia

First contact 1500; population first contact 1.712 million; massacres/battles NA; epidemics/famines 906,380; enslavement/removal 0; SIPE .529; regime type: slave colony; country sources: Zulawski (1994, ch. 3).

Brazil

First contact 1500; population first contact 4.000 million; massacres/battles 1,000,000 (colonial conquest); epidemics/famines 2,000,000 (1555-62 smallpox); enslavement/removal 0; SIPE .750; regime type: slave colony; country sources: Marcílio (1984), Newson (1996), Denevan (2003), Tavares et al. (2019).

Burkina Faso

First contact 1896; population first contact 2.200 million; massacres/battles 30,000 (1915-17 Volta-Bani War); epidemics/famines 24,118 (1922 relapsing fever, 1939 meningitis); enslavement/removal 0; SIPE .025; regime type: modern export colony; country sources: Vennes (2018).

Cameroon

First contact 1868; population first contact 2.520 million; massacres/battles 17,100 (1955-60 [independence] Bamileke War); epidemics/famines 0; enslavement/removal 0; SIPE .007; regime type: modern export colony; country sources: Terretta (2013, 178-9).

Canada

First contact 1564; population first contact 0.200 million; massacres/battles 80,000 (wars with Iroquois); epidemics/famines 9,070 (1634-40 measles, influenza, scarlet fever, smallpox); enslavement/removal 0; SIPE .445; regime type: Jeffersonian farmers; country sources: Richter (1983).

Chile

First contact 1530; population first contact 1.000 million; massacres/battles 580,000 (1546-1630 [end of first century] Arauco War); epidemics/famines NA; enslavement/removal 0; SIPE .580; regime type: Jeffersonian farmers; country sources: Zapater (1997).

Colombia

First contact 1500; population first contact 3.500 million; massacres/battles NA; epidemics/famines 2,948,750 (multiple outbreaks of smallpox, measles, typhus, unidentified); enslavement/removal NA; SIPE .843; regime type: slave colony; country sources: Villamarín and Villamarín (2003).

Congo (Brazzaville)

First contact 1880; population first contact 0.519 million; massacres/battles 27,000 (1921-34 Congo-Ocean railway [overwork], 1928-30 Kongo-Wara War); epidemics/famines 0; enslavement/removal 0; SIPE .052; regime type: modern export colony; country sources: Sautter (1967), Nzabakomada-Yakoma (1986).

Congo (Kinshasa)

First contact 1885; population first contact 9.726 million; massacres/battles 4,863,000; epidemics/famines NA; enslavement/removal 0; SIPE .500; regime type: modern export colony; country sources: Hochschild (1998), Vansina (2010), Vanthemsche (2012), Stanard (2014).

Costa Rica

First contact 1502; population first contact 0.400 million; massacres/battles 390,000 (conquest); epidemics/famines NA; enslavement/removal NA; SIPE .975; regime type: haciendas and encomiendas; country sources: Molina and Palmer (2007).

Côte d'Ivoire

First contact 1883; population first contact 1.540 million; massacres/battles 20,000 (Baule rebellions); epidemics/famines 0; enslavement/removal 0; SIPE .013; regime type: modern export colony; country sources: Weiskel (1980).

Dominican Republic

First contact 1492; population first contact 0.739 million; massacres/battles 665,500 (overwork/mines); epidemics/famines NA; enslavement/removal NA; SIPE .900; regime type: slave colony; country sources: Pons (1988, ch. 2).

Ecuador

First contact 1500; population first contact 1.615 million; massacres/battles 1,361,428 (conquest, forced labor); epidemics/famines NA; enslavement/removal NA; SIPE .843; regime type: haciendas and encomiendas; country sources: Newson (1995, 2003).

Egypt

First contact 1799; population first contact 3.500 million; massacres/battles 1,500 (1799 Damanhur massacre); epidemics/famines 92,000 (1834-35 plague, 1882-86 diphtheria, 1883 cholera); enslavement/removal 0; SIPE .027; regime type modern export colony; country sources: Herold (1962).

El Salvador

First contact 1520; population first contact 0.750 million; massacres/battles NA; epidemics/famines 690,000; enslavement/removal 0; SIPE 0.920; regime type: haciendas and encomiendas; country sources: Fowler (1988).

Gabon

First contact 1862; population first contact 0.200 million; massacres/battles 100 [undercount] (1903 Mitsogo, 1928-29 Awandji revolt); epidemics/famines 0; enslavement/removal 0; SIPE .001; regime type: modern export colony; country sources: Yates (2017).

Gambia

First contact 1889; population first contact .154 million; massacres/battles 0; epidemics/famines 0; enslavement/removal 0; SIPE .000; regime type: modern export colony.

Ghana

First contact 1874; population first contact 1.300 million; massacres/battles 5,700 (1873-74 Third Anglo-Ashanti War, 1900 War of the Golden Stool, 1906-27 overwork mines); epidemics/diseases 16,624 (1906, 1945-49 meningitis, 1908, 1924 plague, 1926 yellow fever, 1926 relapsing fever, 1942-44 tuberculosis, 1945-47 yellow fever); enslavement/removal 0; SIPE .017; regime type: modern export colony; country sources: Thomas (1973), Greenwood (2006).

Guatemala

First contact 1517; population first contact 2.000 million; massacres/battles 1,780,000; epidemics/diseases NA; enslavement/removal 0; SIPE .890; regime type: haciendas and encomiendas; country sources: Jones (2000), Lovell (2000).

Guinea

First contact 1882; population first contact 1.495 million; massacres/battles 150 (1896 Battle of Porédaka); epidemics/diseases 51,278 (1921 relapsing fever, 1926-58 [independence] smallpox) ; enslavement/removal 0; SIPE .035; regime type: modern export colony; country sources: McGowan (1981).

Guyana

First contact 1617; population first contact 0.100 million; massacres/battles NA; epidemics/diseases 33,000; enslavement/removal 0; SIPE .333; regime type: slave colony; country sources: Daly (1974, chs. 2-5).

Haiti

First contact 1492; population first contact 0.261 million; massacres/battles 234,900 (overwork/mines); epidemics/famines NA; enslavement/removal 0; SIPE .900; regime type: slave colony; country sources: Pons (1988, ch. 2).

Honduras

First contact 1502; population first contact 0.800 million; massacres/battles 700,000; epidemics/famines NA; enslavement/removal 0; SIPE .875; regime type: haciendas and encomiendas; country sources: Newson (1986).

India

First contact 1751; population first contact 184.200 million; massacres/battles NA; epidemics/famines 25,000,000 (1769-70 famine/smallpox, 1791-92 famine, 1817-21 cholera, 1833 famine/cholera, 1837-38 famine); enslavement/removal 0; SIPE .136; regime type: modern export colony; country sources: Arnold (1986, 1993), McLane (1993, chap. 10), Grove (2007), Harrison (2020).

Indonesia

First contact 1753; population first contact 10.600 million; massacres/battles 200,000 (1825-30 Java War); epidemics/famines 165,000 (1821 cholera, 1843-44 famine, 1849-50 famine); enslavement/removal NA; SIPE .034; regime type modern export colony; country sources: Fernando (2010), Fasseur (1992, 71).

Jamaica

First contact 1492; population first contact 0.060 million; massacres/battles 0; epidemics/famines 58,000 (includes overwork); enslavement/removal NA; SIPE .970; regime type: slave colony; country sources: Black (1983).

Kenya

First contact 1890; population first contact 3.500 million; massacres/battles 16,000 (1890-96 Nandi Resistance, 1952-60 Mau Mau Uprising); epidemics/famines 3,000 (1897-99 smallpox, 1941-42 plague, 1945-46 relapsing fever, 1954 typhoid); enslavement/removal 0; SIPE .005; regime type: modern export colony; country sources: Anderson (2005).

Madagascar

First contact 1883; population first contact 2.495 million; massacres/battles 47,300 (1883-96 Franco-Hova Wars, 1895-1903 Menalamba rebellion, 1947-49 Malagasy Uprising); epidemics/famines 14,000 (1924-25, 1933-37 plague); enslavement/removal 0; SIPE .025; regime type: modern export colony; country sources: Campbell (1991, 2005, ch. 6), Fremigacci (2007).

Malaysia

First contact 1874; population first contact 1.720 million; massacres/battles 11,036 (1948-57 Rebellion); epidemics/famines 0; enslavement/removal 0; SIPE .006; regime type: modern export colony; country sources: Tilman (1966).

Mali

First contact 1892; population first contact 2.116 million; massacres/battles NA; epidemics/famines 15,000 (1921-22 relapsing fever); enslavement/removal 0; SIPE .007; regime type: modern export colony.

Malta

First contact 1798; population first contact 0.100 million; massacres/battles 0; epidemics/famines 4,486 (1813 plague); enslavement/removal 0; SIPE .045; regime type: modern export colony.

Mexico

First contact 1492; population first contact 17.174 million; massacres/battles NA; epidemics/famines 14,750,000 (1520-21 smallpox, 1545-48, 1576-78 *cocoliztli*); enslavement/removal NA; SIPE .859; regime type: haciendas and encomiendas; country sources: Acuna-Soto et al. (2002),Vågene et al. (2018).

Morocco

First contact 1840; population first contact 3.650 million; massacres/battles 22,500 (1859-60, 1907-11 Spanish-Moroccan Wars, 1911 Berber uprising, 1915-17, 1921-26 civil war and French intervention); epidemics/famines 17,040 (1911 plague, 1942-45 typhus); enslavement/removal 0; SIPE .011; regime type: modern export colony.

New Zealand

First contact 1814; population first contact 0.170 million; massacres/battles 3,000; epidemics/famines 125,000; enslavement/removal 0; SIPE .753; regime type: Jeffersonian farmers; country sources: Chapple (2017), Anderson (2017), Pool and Kukutai (2018).

Nicaragua

First contact 1502; population first contact 1.652 million; massacres/battles 391,000; epidemics/famines 450,000; enslavement/removal 350,000; SIPE .721; regime type: haciendas and encomiendas; country sources: Newson (1982).

Niger

First contact 1899; population first contact 1.508 million; massacres/battles 1,459 (1898-99 Voulet-Chanoine expedition, 1902 Kounta War, 1916-17 Kaocen Rebellion); epidemics/ famines 20,000 (1913-14, 1931-32, 1942 famines); enslavement/removal 0; SIPE .014; regime type: modern export colony; country sources: Fuglestad (1974), Decalo (1997), Taithe (2009).

Nigeria

First contact 1861; population first contact 14.128 million; massacres/battles 2,430 (1897 British-South Nigerian War, 1897 Benin Expedition, 1901 Anglo-Aro War, 1903 conquest of Kano and Sokoto, 1906 Sokoto uprising, 1918 Adubi War); epidemics/famines 26,493 (1930-35 smallpox, 1949-50 meningitis); enslavement/removal 0; SIPE .002; regime type: modern export colony; country sources: Falola and Heaton (2008, ch. 4).

Pakistan

First contact 1843; population first contact 17.975 million; massacres/battles NA; epidemics/famines 1,078,000 (1791-92 famine); enslavement/removal 0; SIPE .060; regime type: modern export colony; country sources: Grove (2007).

Panama

First contact 1501; population first contact 0.800 million; massacres/battles NA; epidemics/famines 720,000; enslavement/removal 0; SIPE .900; regime type: slave colony; country sources: Aram (2008).

Paraguay

First contact 1537; population first contact 0.500 million; massacres/battles NA; epidemics/famines 460,000; enslavement/removal NA; SIPE .920; regime type: Jeffersonian farmers; country sources: Garavaglia (1983), Reed (1995, ch. 2), Ganson (2003, ch. 1).

Peru

First contact 1500; population first contact 9.000 million; massacres/battles NA; epidemics/famines 8,330,000; enslavement/removal 0; SIPE .926; regime type: slave colony; country sources: Cook (1981, 1982).

Senegal

First contact 1817; population first contact 0.700 million; massacres/battles 350 (1825 Franco-Trarzan War, 1854-55 battles with Waalo, 1859 Battle of Logandème); epidemics/famines 8,294 (1867, 1878, 1880-81, 1900 yellow fever, 1868, 1893 cholera, 1914-15 plague); enslavement/removal 0; SIPE .012; regime type: modern export colony; country sources: Echenberg (2002), Ngalamulume (2004).

Sierra Leone

First contact 1808; population first contact 0.800 million; massacres/battles 1600 (1898 Hut Tax War); epidemics/famines 285 (1829 smallpox); enslavement/removal 0; SIPE .002; regime type: modern export colony; country sources: Abraham (1974).

South Africa

First contact 1820; population first contact 2.096 million; massacres/battles 92,462 (1836-37 Boer-Ndebele War, 1838, 1876, 1906 British-Zulu Wars, 1846-47, 1850-52, 1877-78 British-Xhosa Wars, 1865-66 Seqiti War, 1899-1902 Second Boer War); epidemics/famines 7,949 (1882-85 smallpox, 1900-04 plague, 1906-14 tuberculosis); enslavement/removal 0; SIPE .048; regime type: modern export colony; country sources:[21] Omer-Cooper (1976), Marks (1985).

Sri Lanka

First contact 1815; population first contact 1.225 million; massacres/battles 10,000 (1817-18 Uva Rebellion, 1848 Matale Rebellion); epidemics/famines 22,000 (1866-67, 1877 cholera); enslavement/removal 0; SIPE .026; regime type: modern export colony; country sources: Powell (1973).

Sudan

First contact 1896; population first contact 6.027 million; massacres/battles 18,000 (1896-99 Second British-Mahdi War); epidemics/famines 22,643 (1926-28 relapsing fever, 1926-31 meningitis, 1940 yellow fever); enslavement/removal 789; SIPE .007; regime type: modern export colony; country sources: Spaulding (1988).

[21] **Cape Colony** (South Africa) First contact 1652; population first contact 0.025 million; massacres/battles NA; epidemics/famines 12,500 (1713, 1755, 1762 smallpox); enslavement/removal NA; SIPE .500; regime type Jeffersonian farmers; country sources Guelke and Shell (1992), Dye and La Croix (2017), La Croix (2018)

Tanzania

First contact 1900; population first contact 4.995 million; massacres/battles 180,000 (1905-07 Maji Maji Rebellion); epidemics/famines 7,268; enslavement/removal NA; SIPE .037; regime type: modern export colony; country sources: Schmidt (2010).

Togo

First contact 1884; population first contact 0.642 million; massacres/battles 800 (1896 conquest of Dagomba, 1897 conquest of Konkomba); epidemics/famines 0; enslavement/removal 0; SIPE .001; regime type: modern export colony; country sources: Kachim (2013).

Trinidad and Tobago

First contact 1498; population first contact 0.200 million; massacres/battles NA; epidemics/famines NA; enslavement/removal 160,000; SIPE .800; regime type: slave colony; country sources: Newson (1976).

Tunisia

First contact 1850; population first contact 1.113 million; massacres/battles 1,800 (1881-82 post-Treaty of Bardo rebellions); epidemics/famines 61,000 (1849-50 cholera, 1868 typhus); enslavement/removal 0; SIPE .056; regime type: modern export colony; country sources: Broche (1996).

Uganda

First contact 1862; population first contact 3.543 million; massacres/battles 10,000 (conquest); epidemics/famines 18,000 [undercount] (1908 famine, 1926-31 plague); enslavement/removal NA; SIPE .008; regime type: modern export colony; country sources: Doyle (2006).

Uruguay

First contact 1516; population first contact 0.024 million; massacres/battles NA; epidemics/famines 14,000; enslavement/removal 0; SIPE .583; regime type: Jeffersonian farmers; country sources: Sans (2011).

USA

First contact 1524; population first contact 3.590 million; massacres/battles NA; epidemics/famines 3,231,000; enslavement/removal 0; SIPE .511; regime type: Jeffersonian farmers; country sources: Thornton (1987), Saunt (2004).

Venezuela

First contact 1500; population first contact 1.000 million; massacres/battles NA; epidemics/diseases 750,000; enslavement/removal NA; SIPE .750; regime type: haciendas and encomiendas.

Vietnam

First contact 1858; population first contact 9.574 million; massacres/battles 316,100 [undercount] (1858-62, 1873-74, 1882-84 Franco-Vietnamese Wars, 1930-31 Yen Bai Uprising, 1946-54 French-Indochina War); epidemics/famines 251,018 (1911 plague; 1944-45 famine); enslavement/removal 0; SIPE .059; regime type: modern export colony.

Figure B1. Log population in 1500 from Acemoglu, Johnson, and Robinson(2001) versus our measure of population at first contact. Blue line is a non-parametric smooth, with 95% confidence interval in grey.