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Good, Bad, and Ugly Colonial Activities: Studying Development Across the Americas*

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Abstract

Levels of economic development vary widely within countries in the Americas. We argue that this variation can be explained by differences in institutions which in turn have their roots in the colonial era. Colonizers engaged in different economic activities in different regions of a country, depending on the local conditions and the supply of native labor. Some activities, such as mining and sugar cultivation, where "bad" in the sense that they depened heavily on the exploitation of labor and created extractive institutions, while "good" activities, created inclusive institutions. We show that areas with bad colonial activities have 18 percent lower GDP per capita today than areas with other colonial activities. Moreover, areas that had high pre-colonial population density have lower output per capita today, independent of the type of colonial activity. We attribute this to the "ugly" fact that colonizers used the pre-colonial population as an exploitable resource, thereby also creating extractive institutions. We present some evidence that the intermediating factor between history and current development is related to institutional differences across regions and not to income inequality or the current ethnic composition of the population.

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1 Introduction

Levels of economic development vary widely between and within countries. In a sample of eight of the biggest countries in the Americas, the richest country (the US) has six times the GDP per capita of the poorest country (Venezuela). Similarly, within these countries, the richest state has on average seven times the GDP per capita of the poorest state.[1] Many recent papers have argued that the variation in economic development across countries is due to differences in institutions (See Pande and Udry, 2005, for an overview of this literature). However, few papers have studied why economic development varies so widely within countries[2]. At the cross-country level, Acemoglu et al (2001, 2002) show that colonial factors can explain differences in economic development. They argue that, depending on the local conditions, colonizers either set up extractive or inclusive institutions in a given country. These institutions persisted over time and influence economic outcomes today.

This paper uses a related argument to explain within-country variation in economic development across the Americas. Colonizers engaged in different economic activities in different regions of a country. We claim that some of these activities were "bad" since they tended to create extractive institutions due to the fact that the production technology was inherently repressive. These activities are plantation agriculture involving slavery and other forms of coerced labor (sugar, cotton, rice, and tobacco) and mining. Other activities were "good" and created inclusive institutions since most individuals performing them stood on an equal footing. Independent of the economic activity, extractive institutions were also created in areas that had high pre-colonial population density. In these areas, the colonizers often used the native population as an exploitable resource (which was an "ugly" activity).

We then argue that institutions created during the colony persisted over time and affect current economic outcomes. Areas with bad colonial activities should thus have lower levels of economic development than areas with good colonial activities, which included many other economic activities that did not rely on coerced labor. Similarly, areas with high pre-colonial population density should have lower levels of economic development today.

This line of argument is not entirely new and is largely based on Engerman and

[1] Comparisons are based on data for Argentina, Brazil, Chile, Colombia, Mexico, Peru, the US, and Venezuela.

[2] Recent papers providing institutions-related explanations for within-country variation in development include Banerjee and Iyer (2004), Banerjee, Iyer and Somanathan (2004), and Iyer (2003) for India; Rosas and Mendoza (2004), Bonet and Meisel (2006) for Colombia; and Acemoglu, Jhonson, and Robinson (2005, 2006) and Tabellini (2005) for Europe.

Sokoloff (1997 and 2002) and Acemoglu et al. (2001, 2002, and 2005). The contribution of this paper is mainly two-fold:

1. We extend the previous arguments to explain within-country variation in levels of economic development. We present both anecdotal and empirical evidence supporting a within-country correlation between colonial activities and development today. In addition, we provide indirect evidence suggesting that institutions are the mechanism through which history affects current levels of economic development.

2. We argue, in contrast to Engerman and Sokoloff, that having good colonial activities did not always lead to a good development path. Instead, the technologies used in different areas with good activities were endogenous to the availability of a local labor force. Areas suitable for good activities that had low pre-colonial population density followed the predictions of Engerman and Sokoloff in terms of creating a big middle class based on a disperse property structure. However, areas suitable for good activities that had high pre-colonial population density tended to feature exploitation of labor and have a high concentration of income. Some areas that had good activities thus also had ugly activities.

We collect data on economic activities performed in different regions during the colonial period for eight countries in the Americas. Each region is assigned three dummy variables summarizing whether it had predominantly good, bad or no colonial activities. We also collect data on pre-colonial population density (mainly from Denevan, 1992 and the references therein). The paper then correlates these historical variables with two current measures of economics development for states or regions in the eight countries (PPP GDP per capita and poverty rates). The results show that areas with bad colonial activities have 18 percent lower PPP GDP per capita than other areas in 2000. They also have about 22 percentage points higher poverty rates. Pre-colonial population density is negatively and correlated with current GDP per capita. Going from the 25th percentile in pre-colonial population density (-1.16) to the 75th percentile (1.75) is associated with 16 percent lower GDP.

Next, we study the mechanism that relates history with current development. Our evidence suggests that formal institutions, and not income inequality or the current ethnic composition of the population, are an important mechanism to explain the effects of history on current development.

Overall, the results suggest that the conditions faced by colonizers (in terms of the size of the native population and the suitability for exploiting some minerals and cash

crops) affected the characteristics of the social and economic institutions established in the past and this affects current development.

The paper is organized as follows. Section 2 discusses the theoretical background. Section 3 gives historical examples for the theory. Section 4 describes the data. Section 5 analyzes the relationship between colonial activities and development. Section 6 investigates the mediating factors between colonial activities and development today and Section 7 concludes.

2 Theoretical Background

In recent years, many studies have investigated the ultimate determinants of economic development. Acemoglu et al (2001, 2002, 2005), Engerman and Sokoloff (1997, 2002), and Easterly and Levine (2002) argue that levels of economic development in New World countries go back to patterns of colonization. In particular, they argue that colonizers shaped the "institutions" of New World countries. These institutions persisted over time and have thereby affected long-run levels of economic development[3].

The types of institutions that Europeans set up in the countries they colonized can be classified into two categories - extractive institutions and extensive "neo-European" or inclusive institutions. Extractive institutions were intended to transfer as much as possible of the resources of the colony to the colonizer (p. 1370, Acemoglu et al, 2001). This colonization strategy did not require the introduction of extensive civil rights, protection of property rights, and checks and balances against government power. It therefore discouraged investment in physical and human capital and had a negative impact on long run levels of development. Setting up inclusive institutions, on the other hand, implied putting into place constraints on government expropriation, an independent judiciary, property rights enforcement, equal access to education, and civil liberties, thereby allowing Europeans to settle and thrive. Inclusive institutions lead to high long-run levels of development.

Colonizers established extractive institutions in places where the net benefits of having extractive institutions exceeded the net benefits of setting up inclusive institutions. Three factors played a major role in determining the net benefits of institutions. The first factor was settler mortality (Acemoglu et al, 2001). The higher the expected settler

[3]There are several reasons why institutions may persist over time. In fact, ruling elites replacing colonial powers after independence tended to maintain the same institutional setting. As documented in Acemoglu and Robinson (2006) in some cases, the elites controlling political power were the same even well after the independence. There are a number of mechanisms leading to inertia, even of inefficient institutions, as discussed in Acemoglu et al., 2005 and modeled in Acemoglu et al., 2006 for the case of the emergence and persistence of inefficient states.

mortality, the lower the probability of reaping future returns of establishing inclusive institutions. The second factor was pre-colonial population density (Acemoglu et al, 2002, and Engerman and Sokoloff, 1997 and 2002). The higher the population density, the higher the supply of labor that could be forced to work in agriculture or mining, the more profitable the extractive institutions, with political and economic power concentrated in the hands of small elites. Moreover, more prosperous societies probably had more structured taxes systems (Engerman and Sokoloff, 1997 and 2002), implying that colonizers could take control more easily of the systems to extract resources. The third factor was the natural environment for activities with strong economies of scale (Engerman and Sokoloff, 1997 and 2002). The higher the suitability to exploit economies of scale, the higher the net returns of extracting current resources.

Acemoglu et al (2001 and 2002) present cross-country evidence supporting the first two factors. They show that potential settler mortality and pre-colonial population density affected European settlements. European settlements in turn affected the characteristics of early institutions. These institutions have persisted to the present and have influenced levels of economic development. The third factor, the natural environment of the colonies, as well as the second factor, population density, are the subject of Engerman and Sokoloff's studies (1997 and 2002). Engerman and Sokoloff point out that the New World countries that were the richest in the early years of colonization have nowadays fallen behind in terms of economic development. They argue that differences in "factor endowments" led to different degrees of initial concentration in wealth, in human capital, and in political power. The initial inequality influenced the type of institutions set up in a given country. Inequality and institutions persisted over time and lead to different levels of economic development in the longer run.

The factor endowments discussed in Engerman and Sokoloff consist of the natural environment and pre-colonial population density. More precisely, they can be summarized by three factors: soil, climate, and the size and density of the native population (labor supply). The availability of these three factors led to the use of different production processes in different colonies. Engerman and Sokoloff identify three kinds of countries that used different production processes as determined by their factor endowments. First, there is a group of colonies that can be exemplified with Brazil and some Caribbean islands that had soil and climate suitable for producing sugar and other crops characterized by extensive economies of scale (cotton, rice, and tobacco). Given the efficiency of large plantations and the extensive use of slaves, economic and political power became highly concentrated in areas where these crops were grown. They argue that

this concentration of power explains the evolution of institutions that commonly protected the privileges of the elite and restricted opportunities for the broad mass of the population.

The second group of countries corresponds to a number of Spanish colonies, such as Mexico and Peru, characterized both by the concentration of claims on assets in the hands of a privileged few (especially valuable natural resources) and abundant native labor. The consequent large-scale properties were to some degree based on pre-conquest social organizations in which the elites charged taxes. These large-scale structures, legitimated by the Spanish Crown (through the so-called encomiendas), survived even when the main production activities did not display economies of scale. The key aspect was that the rights to operate the tax systems were assigned to a small group of people. Hence, as in the previous group of countries, these economies featured highly concentrated political and economic power that translated into exclusive institutions preserving the power of the elite.

Finally, the third group of countries is composed of the colonies of the North American mainland (Canada and United States). These economies were neither endowed with crops that displayed economies of scale nor with an abundant native population. Therefore, their development was related to small units of production in a relatively competitive environment. The existence of abundant land and low capital requirements implied that most adult men operated as independent proprietors creating a relatively egalitarian society in economic and political terms.

Engerman and Sokoloff illustrate with a number of examples and summary statistics that the differences in productive processes across New World countries translated into very different patterns of suffrage, public land, schooling policies, financial policies, and innovation policies among these countries. Easterly (2002) and Easterly and Levine (2002) provide econometric evidence linking factor endowments to institutional development. Both papers use a group of 11 dummy variables indicating whether a country produced any of a given set of leading commodities (crops and minerals). Easterly (2002) uses cross-country data to relate these measures, jointly the settler mortality variable from Acemoglu et al (2001), to a variable measuring the "middle-class consensus" (i.e. the share of the three middle quantiles in total income). He shows that factor endowments and settler mortality are correlated with the middle class consensus. The middle class share subsequently affects the level of schooling, institutional quality, and openness of countries, and these variables affect per-capita income. In a related cross-country study, Easterly and Levine (2002) correlate factor endowments and settler

mortality with the development of institutions. They find evidence that these variables affect income only through institutions.

Overall, the existing literature indicates that colonial factors can explain differences in economic development across countries. However, they are relatively silent about the effects of colonial factors on institutions and development at the sub-national level. In particular, if one takes the papers by Acemoglu et al literally, colonial factors created *homogeneous* national institutions. In turn, Engerman and Sokoloff stress institutional differences between the North and the South of the US, but they do not generalize the argument for other countries in the Americas[4]. Levels of economic development, however, vary as widely across regions within a country as they vary across country. Table 1 shows summary for GDP per capita (PPP) in different regions within eight of the biggest countries in the Americas. The standard deviation of GDP per capita within country is in some cases almost as big as the standard deviation of GDP per capita across countries, which is equal to 0.65 in our sample.

This paper builds on the arguments developed by Acemoglu et al and Engerman and Sokoloff to explain differences in economic development across regions within countries. We point out that the local conditions faced by colonizers typically varied across regions within a country. The productive activities performed by colonizers thus also varied across regions. In fact, the three types of scenarios that Engerman and Sokoloff describe for countries where often present in different regions within the same country. Based on this, we argue that current levels of development within-country can be explained by differences in colonial activities[5].

We classify the colonial activities performed in a region into four possible categories. First, some areas had "bad" colonial activities. These activities were mining and sugar, cotton, rice and tobacco plantations. They were bad in the sense that they depended

[4]Engerman and Sokoloff briefly mention that countries with good endowments tend to have more dencentralized political institutions (Gallego, 2006 present evidence supporting this idea). But they do not discuss the implications that decentralization of political power may have for development at the sub-national level.

[5]A number of recent studies present evidence that different historical events affect long-run development within countries. Banerjee and Iyer (2004) show that land revenue systems established in the colony affect long-run property ownership and development across Indian districts. In a related paper, Iyer (2004) shows that the form of British administration in different Indian areas has significant effects on current levels of development. Similarly, Rosas and Mendoza (2004) and Bonet and Meisel (2006) present evidence that the patterns of (forced) settlement of slaves during the colony in Colombia are correlated with current patterns of development. In addition, as previously discussed, many papers discuss differences of development between the North and South of the US (e.g. Engerman and Sokoloff). Interestingly, the effects of historical factors on development seem to be relevant not only among former colonies, but also in Europe. Acemoglu et al (2005 and 2006) present evidence that both the expansion of transatlantic trade and the Napoleonic invasions have a long-run effect on development at the regional level in Europe.

heavily on the exploitation of labor and created extractive institutions. Second, other areas had "good" colonial activities. Third, some areas were not reached by the colonizers and therefore had no colonial activities. Fourth, some areas had "ugly" colonial activities, in the sense that the colonizers heavily subjugated and exploited the local pre-colonial population.

Our argument differs from Engerman and Sokoloff in that we claim that having good colonial activities did not always lead to a good development path. Instead, the technologies used in different areas with good activities were endogenous to the availability of a local labor force. Areas suitable for good activities that had low pre-colonial population density followed the predictions of Engerman and Sokoloff in terms of creating a big middle class based on a disperse property structure (as in the textiles or cattle areas in New England). However, areas suitable for good activities that had high pre-colonial population density tended to be dominated by exploitation of labor creating a high concentration of income. Examples are textiles production in *obrajes* in Arequipa or cattle raising in many haciendas in Latin America.

Some areas that had good activities thus also had ugly activities. In contrast, bad activities such as mining or sugar production were highly profitable and *had* less flexibility in terms of technology adoption since the technologies depended heavily on economies of scale. In these cases the technologies used depended less heavily on the availability of local because labor could be imported from other areas, using slavery, personal service or the *mita* system.

In sum, the main hypotheses we test in this paper are the following

- Differences in current levels of development within countries can be explained by differences in colonial activities.
- More specifically, the abundance of local labor (measured by pre-colonial population density) and the existence of bad activities (such as mining and cultivation of cash crops) have a negative impact on current levels of development.
- The link between colonial activities and current levels of development are institutions. Colonial elites created institutions that benefitted predominantly the elites and not the population at large. These institutions persisted over time, and account for the lower level of economic development today.

3 Historical Background

This section illustrates the hypotheses put forward in Section 2 with specific examples. First, we consider examples that compare states within the same country in terms of their colonial activities and their current economic outcomes. These examples also discuss the institutional framework that may link current levels of development to colonial activities. Second, we consider an example in which the same activity (textile production) was developed in different regions using completely different technologies depending on the availability of labor. And, finally, we provide an example in which the initial development of an activity, (gold mining) using slaves led to the development of another activity (sugar cultivation) using the same slaves.

In Section 2 we argue that plantation agriculture (sugar, cotton, rice, and tobacco) performed by colonizers lead to extractive institutions and to lower levels of development today. An example for this mechanism is the north-eastern region of Brazil which grew sugar during the colony. Nowadays this region corresponds to the states of Alagoas and Pernambuco. These states had very unequal societies during colonial times for two reasons. First, sugar plantations required slaves, leading to the importation and subjugation of many Africans. Second, since sugar areas were rich areas, they attracted more rich people from the European elites. The sugar regions developed societal norms (institutions) that benefited only the elites and that did not leave room for the natives or slaves. The following quote from *Colonial Brazil* describes society in the sugar regions

"While the old planter families tended to intermarry, room was always found for sons-in-law who were merchants with access to capital or high-court judges and lawyers bringing prestige, family name, and political leverage. Obviously, the arranged marriage was a key element in the strategy of family success." (Bethel, 1987, p. 89)

In contrast to this elite dominated society stood São Paulo (formerly São Vicente), a region that was not favorable to growing sugar. The region was poor during the early years of the colony and displayed a very different societal structure. "Few Portuguese women were attracted to the area and the Portuguese households and farms were filled with captive and semi-captive Indians. Illicit unions between Portuguese men and Indian women were common and a large number of mamelucos (the local term for mestiços[6]) resulted. [...] In the early period of São Vicente's history, little discrimination was made between mamelucos and Portuguese so long as the former were willing to live according to what passed in the region for European norms." (Bethel, 1987, p.111-112) Colonial society in São Paulo was thus comparatively inclusive. Societal norms (institutions)

[6]Mesitços are people of mixed Indian and European decent.

benefitted a larger set of people than in the sugar regions.

Although Alagoas and Pernambuco were rich states during colonial times and São Paulo was poor, their fortunes are now reversed. In 2000, PPP GDP per capita in Alagoas was US$ 2,809 and US$ 3,531 in Pernambuco. In São Paulo, on the other hand, GDP per capita was US$ 11,718. Poverty rates show a similar pattern. In 2000, they stood at 46.5 percent in Alagoas (57.4 percent in Pernambuco) and 12.3 in São Paulo.

Section 2 also argues that areas with high pre-colonial population density developed extractive institutions during the colony and are therefore less developed today. This pattern is well illustrated by comparing two Mexican states, Aguascalientes and Tlaxcala. These states have similar background characteristics, but they had different pre-colonial population densities. Both states are landlocked and have similar average yearly temperatures and total rainfall. Aguascalientes had a pre-colonial population density of about 14, while Tlaxcala had a pre-colonial population density of more than five times this number (about 80). In 2000, PPP GDP per capita in Aguascalientes was US$ 11,558. In Tlaxcala it was US$ 4,873. In Aguascalientes, 13 percent of the population lived under the poverty line in 2000, but it was 26 percent in Tlaxcala.

The link between colonial activities and current level of development may be institutions. The Aguascalientes and Tlaxacla example is consistent with this hypothesis. A 2004 Moody's study creates an index of institutional quality (with respect to contract enforcement) for Mexican states. The index runs from 0 (weakest) to 5 (strongest). In this study, Aguascalientes obtained a value of 3.05, while Tlaxcala obtained 1.93. Similarly, according to the *Doing Business in Mexico 2007* report, Aguascalientes ranked number one for ease of doing business. Tlaxcala, on the other hand, ranked number 22.

The contrasting organizational form in textile production in different regions provides an example of the mechanisms at work in our theory. Textile production in the colonial United States was organized in many small scale mills and shops under property ownership (McGaw, 1994, p. 396). In contrast, textile production in many Spanish colonies was organized in *obrajes de paño*[7]. Obrajes were large workshops that "integrated every part of the cloth production process" (Gómez-Galvarriato, 2006, p. 377) These workshops have been likened to modern day "sweat shops," and the labor force was based on coerced labor (slavery, mita, etc.). Interestingly, obrajes did not exist in Spain itself and were developed particularly for the colonies "with the techniques and experience of Spanish masters and artisans" (Gómez-Galvarriato, 2006, p. 377). Textile production

[7]Accordingly to Gómez-Galvarriate, obrajes were widely present in Latin America since the mid XVI century, including places such as Puebla and Michoacán in México, Cuzco, Cajamarca, and Huanuco in Perú, Quito in Ecuador, La Paz in Bolivia, and Córdoba in Argentina.

in Spain was mainly organized in small shops, similarly to the United States. People from the same nation thus chose a very different production technology for producing the same product in different areas. Our hypothesis is that this technological choice was influenced by the availability of a coercible native population.

The obraje system had negative consequences for long-run development. Gómez-Galvarriato (2006) claims that the strong dependence on coerced labor destroyed incentives for the accumulation of human capital among workers and increased income inequality. It thereby contributed to the low levels of industrial development in many areas in Latin America over the XIX century.

Finally, the history of sugar cultivation in certain areas of Colombia provides an example for persistence of economic and social institutions. The Pacific lowlands of the Chocó region had significant gold mining activities during the early colonial period. Gold production relied strongly on slaves. McFarlane (2002) and Ocampo (1997) document that, after many of the gold reserves were depleted, slave owners moved slaves from the Chocó region to sugar plantations in the neighboring Valle del Cauca and Cauca regions. In this case, an activity that involved the importation of slaves seems to have affected the development of another activity using the same labor intensive technology.

Nowadays, Colombian regions that had mining activity or sugar cultivation during the colony have an average PPP GDP per capita of US$ 5090. Regions that had other activities, not using slave labor, or that had no activities today have an average PPP GDP per capita of US$ 13,324.

4 Data

We constructed a data set that covers 217 regions from 8 countries in the Americas. This section discusses general features of the data and data sources. A more detailed description of the data is in the appendix. Appendix A presents the definitions of all variables. The sources for each variable are listed in Appendix Table 1. Appendix Table 2 reports the values of the pre-colonial population density and colonial activities data for each region.

The main outcome variable of our analysis is the current level of economic development of each department, province, region, or state in the data set[8]. This paper uses two indicators to measure economic development - GDP per capita and poverty rates. Summary statistics for these two variables are in Table 2. The data on GDP per capita

[8]For Brazil, Mexico, the US, and Venezuela, the data is by state. For Argentina it is by province, for Chile it is by region, and for Colombia and Perú by department. In this paper, we use departament, province, state, and region interchangeably.

and poverty rates comes from country specific sources. GDP by state comes mostly from the statistical agency of each country, which reports GDP by region. Data on population and poverty rates comes from a country's demographic census or from household surveys. We try to use definitions that are compatible across countries to the largest extent possible. Here we briefly mention some exceptions, which are discussed in detail in Appendix A. In terms of per-capita GDP, the most important deviation occurs for Venezuela. To our knowledge, GDP is not available at the region level. Thus, we use per-capita income at the region level from a household survey.

We define poverty rates according to the national definition of poverty lines. This may produce poverty rates that are not comparable across countries. To deal with this potential problem, we run regressions using the log of our measures of development, and we include country fixed effects. This way, the variables used in the regressions (and the estimated effects) can be interpreted as log deviations from country means.

In addition to measures of current economic development, we also use a proxy for pre-colonization levels of development. This proxy is a pre-colonization health index that comes from the Backbone of History Project (Steckel and Rose, 2005). Steckel and Rose estimate a health index that goes from 0 to 100 based on archeological data. For this paper, we match the location of the archeological sites to regions within countries. In this way, we are able to obtain information for 49 regions in our sample. As explained in more detail the empirical section below, we also include information on the estimated year to which the archeological samples belong.

We construct three variables capturing colonial activities. First, we construct a measure of population density before colonization at the region level using several sources. The information comes mainly from the chapters and references in Denevan (1992). At a first level, Denevan (1992) provides estimates of the total native population for each country. Thus, at a first level, we use estimates that are comparable across countries. In a second stage, we use several sources to estimate measures of population density at the region level. Here, we lay out the main features of this variable. Appendix B presents a more detailed description of the construction procedure.

The quality of the information on pre-colonial population density at the regional level varies across countries and regions. For Argentina and the United States, Denevan (1992) provides detailed information that allows us to construct measures at the state level. For Brazil and Mexico, Denevan presents information for the main geographic regions of the countries, and we classify all current states accordingly to its location. For Colombia and Perú, we use a similar procedure, but the basic information comes

from Ocampo (1997) and Villamarín and Villamarín (2000) for Colombia and Cook (1981) for Perú. For the remaining countries, the information is sparser, and we have to rely on complementary sources. For Chile, Denevan provides information for the main native group, the *Araucarians*. We complement this with information for other main groups imputing population density estimates for a) the border regions of Argentina, for some groups that lived in the North (the *Diaguitas*) and the South (several peoples living in and to the South of Patagonia) and b) the border regions of Perú, for some groups that lived in the North (some groups linked to the Incas). Finally, the procedure for Venezuela is similar. Here, we use some information available from Denevan and Villamarín, and we impute information for regions in Colombia (for the Andes and the Caribbean Coast) and Brazil (for the Coastal Amazonas). The estimated native population density varies from 0.01 people per square meter in the Southers regions of Argentina and Chile to 392 in Mexico City.

Our other two colonial variables are dummy variables related to the main economic activity performed during colonial times in difference regions. We first identify the main economic activity using history books for each country[9]. Next, we classify the activities in good and bad activities following Engerman and Sokoloff. Bad activities include mining, rice, sugar and tobacco cultivation. Good activities include all other agricultural activities, cattle, livestock, fishery, trade, naval stores, ports, textiles, and wine production. Based on this classification, we construct two dummy variables. The first one indicates whether a region had good colonial activities. The second one indicates whether a region had bad colonial activities. Some regions did not have any activities since the colonizers did not reach them. The category "no activities" is the omitted category in our regressions. The summary statistics in Table 2 show that 49 percent of all areas had good colonial activities, 25 percent had bad colonial activities and 26 percent had no colonial activities.

This paper considers a number of current variables that may have been affected by colonial activities and that may be the link between those activities and current levels of economic development. The first variable is a measure of income inequality, the Gini index. Data on the Gini index comes from local statistical agencies and in some cases from household surveys. The second variable is the share of the population that is native or black. Data on the ethnic composition of the population typically comes from the demographic census of each country. However, there is heterogeneity in the way this variable is measured in different countries and surveys. For example, in most countries,

[9]The Appendix presents a detailed description of the sources by country.

the surveys ask the respondents about their ethnicity. For Mexico and Peru, however, the census instead asks whether the respondent speaks a native language. We take this as a proxy for the share of the native population. Other differences in the data across countries are discussed in Appendix A.

Finally, we also include control variables in the regressions to control for regional differences in climate and geography. The climate variables are average temperature and rainfall at the region level. The climate data typically comes from each country's statistical agency or meteorological institute. The geography variable is a dummy variable indicating whether the region is landlocked.

Table 3 shows how the colonial activities dummies are correlated with pre-colonial population density and with the control variables. Areas that had high pre-colonial population density are more likely to have good activities and are less likely to have no activities. Average temperature is positively correlated with good activities and negatively correlated with bad activities. Average rainfall and the landlocked dummy show no relationship with any of the colonial activities dummies.

5 The Effects of Historical Factors on Development

Section 2 argues that high pre-colonial population density and bad colonial activities are correlated with lower levels of current economic development. We test these hypotheses by running the following reduced form regression

$$Y_{rc} = \mathbf{Z}'_{rc}\alpha + \mathbf{X}'_{rc}\beta + \eta_c + e_{rc}, \tag{1}$$

where c refers to country, r refers to region, Y is a measure of development, $\mathbf{Z}$ is a vector of historical variables, $\mathbf{X}$ is a vector of control variables, η is a country fixed effect, and e is the error term.

The set of historical variables, $\mathbf{Z}$, includes pre-colonial population density and dummies for colonial activities that were, according to our hypothesis, more or less favorable to development ("good" and "bad" colonial activities). The control variables, $\mathbf{X}$, consist of climate variables and a dummy for the region being landlocked. The standard errors are clustered at the pre-colonial population density level. The reason for clustering at this level is that, as discussed in Section 4, in some cases, we impute the same value for more than one region due to missing information.

If the hypotheses stated in Section 2 are correct, the coefficient vector α should have the following signs. The coefficient on pre-colonial population density should be negative. The coefficient on good colonial activities should be zero. Finally, the coefficient on bad colonial activities should be negative.

The first measure of economic development we consider is log GDP per capita (PPP). The regressions of current log GDP per capita on historical variables are in Table 4. Column 1 of Table 4 includes only pre-colonial population density as a regressor, without control variables. Pre-colonial population density is negatively and significantly related to current GDP per capita. The coefficient of -0.056 implies that going from the 25th percentile in log pre-colonial population density (-1.16) to the 75th percentile (1.75) is associated with 16 percent lower GDP.

Column 2 of Table 4 includes only the good colonial activities and bad colonial activities dummies. The omitted dummy is no colonial activities. Areas that had good activities are not significantly different from areas with no activities in terms of current GDP per capita. Areas that had bad colonial activities, however, have 18.6 percent lower GDP per capita today than other areas.

The next column of Table 4, Column 3, includes all historical variables together as regressors. The coefficient on pre-colonial population density remains largely unchanged. The good activities dummy is still not significant. The coefficient on bad colonial activities becomes smaller and loses significance. This changes when we add control variables to the regression.

Columns 4 and 5 add the set of controls to the regression step by step. First, Column 4 includes climate variables - average yearly temperature and total rainfall and both of these variables squared. The temperature variables are not statistically significant. Rainfall, on the other hand, is negatively correlated with GDP per capita. When including the temperature variables, the coefficient on pre-colonial population density remains significant and negative. The coefficient on good activities is still not significant and the coefficient on bad activities now has the same magnitude as in Column 2 and is statistically significant. This is also is true when we add a dummy for the region being landlocked to the regression, on top of the climate variables. Column 5 shows this regression. Areas that are landlocked have 19.4 percent lower GDP per capita on average. This variable controls for access to the sea and therefore works as a proxy for transportation costs that could generate a number of negative effects on trade and development (See Frankel and Romer, 1999, Irwin and Tervio, 2000, and Spolaore and Wacziarg, 2005).

Overall, the different columns of Table 4 show that the estimated relationship between current day GDP per capita and colonial activities confirms our hypotheses. Moreover, this relationship is fairly robust to including different control variables.

Figures 1 through 3 further illustrate the relationship between current levels of eco-

nomic development and colonial activities. These figures are partial regression leverage plots for the regression in Column 5 of Table 4, which includes pre-colonial population density, colonial activities dummies and all control variables.

Figure 1 shows the partial correlation between log GDP per capita and log pre-colonial population density. Figures 2 and 3 show the partial correlation between log GDP capita and good and bad colonial activities. These figures show that the identified relationship is fairly robust and is not driven by some extreme observations or observations belonging to only some countries.

Table 5 considers poverty rates as an alternative measure of economic development. The data set for poverty rates is slightly smaller than for GDP per capita since data on poverty rates is not available for eight Colombian regions and one Argentinean region. Similarly to Table 4, Table 5 first considers the relationship between poverty rates and pre-colonial population density alone. Then it investigates the correlation between poverty rates and good and bad activities alone. Finally it includes all historical variables in the same regression and also adds control variables to the regressions.

All columns unambiguously show that current poverty rates are positively correlated with pre-colonial population density. The coefficients imply that going from the 25th percentile in log pre-colonial population density (-1.16) to the 75th percentile (1.75) is associated with a 22 percentage points higher poverty rate.

Areas that had good colonial activities in the past do not have higher poverty rates than areas that had no colonial activities. This result mirrors the finding from Table 4 that good colonial activities do not have higher GDP per capita than areas with no colonial activities. Also in line with the results from Table 4, areas with bad colonial activities have a least a 21 percent higher poverty rate than other areas.

Our argument relies on the fact that colonial activities changed the economic fortunes of certain areas. Before colonization, areas with higher population density and areas where bad colonial activities were to take place should not have been worse off than other areas. If those areas were worse off even before colonization, then there must be something else other than colonization patters that explains these differences. We would thus like to verify that population density and the type of future colonial activity were not correlated with economic development before colonization. This check is, however, not easily done since there are no measures of pre-colonial GDP per capita or other conventional measures of development at the region level.

To get a proxy measure of economic development, we use a health index which is available for 49 regions in five of the eight countries in the sample, for Brazil, Chile,

Mexico, Peru and the US. For some countries, the index exists only for some of the regions. Moreover, some regions within the same country have the same values, since the index is not always available at the region level. For these reasons, we do not include country fixed effects in the falsification exercise. The health index was calculated based on different skeletons found in each region. These skeletons often come from different centuries. To control for possible differences in the quality of the data arising from the of age the skeletons, we add the variable "year" to the health index regression. "Year" is the average of all the estimated years in which the found bodies lived.

Table 6 shows the results of the falsification exercise. Pre-colonial population density is not correlated with our measure of pre-colonial development. However, areas with high pre-colonial population density have lower levels of economic development today. Similarly, bad colonial activities are not significantly associated with pre-colonial development (if anything, the coefficient suggests a positive correlation). The correlation between bad colonial activities and current levels of economic development is negative, although the coefficient is not statistically significant.

Overall, evidence in this section shows a strong correlation between colonial activities and current levels of development. The effect of these colonial activities may operate through specific factors such as inequality, institutions, or the current ethnic composition of the population. The next section investigates this channel empirically.

6 History and Development: Looking Inside the "Black Box"

What is the channel through which colonial activities influence current levels of economic development? The hypotheses in Section 2 suggest that extractive colonial activities went along with the creation of an economic and political elite. As a result, society came to be dominated by relatively few individuals, making it difficult for others to prosper. Based on this theory, we look at two different measures, that are both related to elite dominance, as possible channels linking colonial activities to current levels of development.

The first possible channel is that extractive colonial activities led to higher inequality which led to lower GDP per capita (see also Engerman and Sokoloff who develop this argument in detail). To examine this potential mechanism, we estimate the following equation

$$I_{rc} = \mathbf{Z}'_{rc}\alpha_I + \mathbf{X}'_{rc}\beta_I + \theta_c + \varepsilon_{rc}, \tag{2}$$

where I is a measure of inequality. This regression also includes the vector of historical variables, $\mathbf{Z}$, and control variables, $\mathbf{X}$, as well as a country fixed effect, θ. We then

assess whether variable I could explain the effects of colonial factors on development by verifying wether

$$sign\left(\widehat{\alpha}_I\right) = sign\left(\widehat{\alpha}\right) * sign\left(\frac{\partial Y}{\partial I}\right),$$

where $\frac{\partial Y}{\partial I}$ is the theoretical partial effect of variable I on economic development (Y). Engerman and Sokoloff argue that more inequality leads to lower levels of development, implying that $\frac{\partial Y}{\partial I} < 0$. Therefore, the correlation of inequality and colonial activities should have the opposite sign from the correlation of economic development and colonial activities, such that $sign\left(\widehat{\alpha}_I\right) = -sign\left(\widehat{\alpha}\right)$.

Table 7 shows regressions of the log Gini index on colonial activities. Higher pre-colonial population density is weakly associated with higher inequality today. Areas that had bad colonial activities are more unequal today. The correlation between colonial activities and inequality thus has the correct sign for being a possible link between colonial activities and current levels of economic development. However, the relationship between pre-colonial population density and inequality is not robust to the inclusion of different control variables. Moreover, the magnitude of the correlation between bad colonial activities and inequality is small. If this were the correct channel, it would mean that areas with bad colonial activities have a five percent higher inequality which implies 18 percent lower GDP per capita.

The second possible link between colonial activities and current economic outcomes are institutions. As discussed in Section 2, it is possible that colonial elites created institutions that benefitted predominantly the elites and not the population at large. If these institutions persisted over time, they may account for the lower level of economic development today. For example, less secure property rights may lead to less investment in physical and human capital and thus to lower output (See Acemoglu et al, 2001).

In order to explicitly test this argument, we need a measure of institutions at the sub-national level. To our knowledge, such a measure does not yet exist for the set of countries in our analysis. Some of the countries, such as Mexico, have some measures or proxies for institutions at the state level. However, these measures differ from country to country and the coverage within country is often limited.

This paper thus uses an indirect approach to test whether institutions are a plausible link between colonial activities and current levels of economic development. If institutions explain the effect of colonial activities on development, then local colonial activities should have less effect on development in countries that have better institutions at the national level. Put differently, local elites in countries with good average institutions should have binding limitations on exploiting their political power. Testing this claim

amounts to running the following regression

$$Y_{rc} = \mathbf{Z}'_{rc}\alpha + \mathbf{Z}'_{rc}\mathbf{N}_c\gamma + \mathbf{X}'_{rc}\beta + \eta_c + e_{rc}.$$

This regression is the same as Equation (1), except that it includes the interaction term $\mathbf{Z}'\mathbf{N}$, which interactions local colonial activities, $\mathbf{Z}$, with a measure of national institutions, $\mathbf{N}$. If the reasoning above is correct, the coefficients in α should have the same sign as before, and the coefficients in γ should be positive. To facilitate the interpretation of the effects, we measure institutions as deviations from the mean value of institutions.

Table 8 presents the regressions with interaction terms. The measure of country level institutions in Column 1 is average protection against expropriation risk, 1985-1995, from the IRIS Center (University of Maryland), formerly Political Risk Services. Acemoglu et al use the same measure of institutions. The measure runs from 0 to 10, with higher values denoting more protection against expropriation and thus better institutions. The main effects in Column 1 show that both pre-colonial population density and bad colonial activities are negatively related to GDP per capita. The coefficients on the interaction terms are positive and significant, indicating that the magnitude of the negative relationship becomes smaller when institutions at the country level are better. This suggests that institutions are a possible channel that links colonial activities to current economic outcomes.

Column 2 of Table 8 addresses the concern that current institutions at the country level may be endogenous to levels of economic development. Instead of using a measure of current institutions, we use settler mortality from Acemoglu et al in the interaction terms. As argued in Acemoglu et al, settler mortality is an exogenous proxy variable for current institutions, where lower settler mortality implies better institutions. The results in Column 2 mirror the findings from Column 1. They add to the evidence that the negative correlation between extractive colonial activities and current levels of development is mitigated by good institutions at the country level[10].

Although we argue that colonial activities and current levels of development are linked through elite dominance and institutions, there is another possible channel. Areas

[10] An additional implication of this hypothesis is that we should observe a negative effect of institutions on within-country differences of per-capita GDP, i.e. countries with good institutions should have less within country differences in development. We do not have a big data set to test this claim econometrically, but informal analyses including our 8 countries (and bigger samples) show a negative and significant correlation between the standard deviation of log GDP for the regions of a country and our country measure of institutions. Moreover, to deal with potential endogeneity problems, we run IV regressions using settler mortality as an instrument for institutions and the results imply an even bigger negative impact of institutions on the within-country variability in development. The regressions are available upon request.

with bad colonial activities also had black and native slaves and areas with high pre-colonial population had a high share of natives. These areas may thus have a higher percentage of native or black population today. This could imply that these areas have lower levels of economic development if natives and blacks face discrimination which prevents them from achieving higher levels of production.

Table 9 investigates this possible channel. The dependent variable in Column 1 is the percentage of natives and blacks combined. The coefficients show that areas with high pre-colonial population density have a lower share of natives or blacks today. Areas with bad colonial activities have a much higher share of natives and blacks than other areas. To better explain this pattern, Columns 2 and 3 split up the dependent variable into percent natives and percent blacks. The regression in Column 3 only includes 105 observations, since five countries in our sample don't report which fraction of the population is black, presumably because they have very few black inhabitants. The percentage of blacks is only available for Brazil, Colombia and the US, which are the countries were black slaves were more prevalent.

Columns 2 and 3 show that areas with high pre-colonial population density have both fewer natives and blacks today. These estimated effects probably capture two different mechanisms: (i) for natives, the intensity of colonizer exploitation of native labor was stronger in areas with many natives leading to a bigger decline in native population in these areas (as documented by Newson, 2006) and (ii) for blacks, a bigger native population implied a lower demand for African slaves (as documented by Monteiro, 2006). This result contradicts the argument that areas with higher pre-colonization population density are poorer today since they have a large share of ethnic groups that face discrimination.

The results further show that areas with bad colonial activities have a higher share of blacks. Areas with good colonial activities, however, also have a higher share of blacks. If the share of blacks were the link between colonial activities and current levels of development, then areas with good activities should not have a higher share of blacks today.

Overall, the results in this section suggest that institutions seem to explain the effect of colonial factors on current levels economic development. Explanations only based on inequality or direct effects of the ethnic composition of different countries are not supported by the data.

7 Conclusion

This paper shows that within-country differences in levels of economic development in the Americas can be explained by colonial activities. In particular, it provides evidence that areas with a high supply of native labor and areas that were suitable for the exploitation of mining and cash crops have lower levels of current economic development. The estimated effects are economically relevant. Our estimates imply that going from the 25th percentile in log pre-colonial population density (-1.16) to the 75th percentile (1.75) is associated with 16 percent lower GDP than the country mean and that areas that had "bad" colonial activities (i.e. mining and cash crops), have 18.6 percent lower GDP per capita today than other areas within the same country.

We also show that a key channel behind the correlation between colonial activities on development today is related to institutions, and not to income inequality or the current ethnic composition of the population. These results extend theoretical and empirical findings of a recent literature that investigates the effects of historical factors on institutions and development *at the country level*. Moreover, our within-country findings show that it is not only the identity (nationality) of the colonizers that matters for subsequent development, as argued by some papers. The identity of the colonizer varies across countries, but we control for country effects.

In general, our results support Engerman and Sokoloff's (1997 and 2002) argument who claim that the type of colonial activity preformed in a region mattered greatly for the institutions in that region. Institutions in turn influence current levels of economic development. While we show that colonial activities are correlated with current economic development, it remains to investigate the channel connecting them in more detail. For the lack of measures of institutions at the region level, we use interactions with country level data on institutions to investigate the link. The results suggest that institutions are the channel. However, for future research we plan to construct region-level measures of institutions and elite dominance. This will allow us to study the link between colonial activities and current levels of development more extensively.

8 Appendix A: Variable Definitions

- PPP GDP per capita: Gross state product for each state divided by the contemporaneous population of that state and converted to PPP values using the 2000 value from the World Development Indicators. Due to data limitations, the data for Venezuela corresponds to household income.

- Poverty rate: Percentage of the population living below the poverty line, according to each country's definition of the poverty line.
- Gini index: Gini measure of income inequality for households.
- Health index: The health index measures the quality-adjusted-life-years (QALY) based on the health status attributed to skeletal remains, which display chronic health conditions and infections. The health index is adjusted for the age distribution of the population and is a simple average of seven health indicators: stature, hypoplasias, anemia, dental health (teeth and abscesses), infections, degenerative joint disease, and trauma.
- Pre-colonial population density: The ratio of the estimated pre-colonial population to the area of modern states.
- Colonial activities: Predominant economic activity performed during the colony in the region that matches the current day state.
- Average temperature: Average yearly temperature (°C)
- Total rainfall: Total yearly rainfall (mm)
- Landlocked dummy: This dummy is equal to one if the state does not have a sea coast.
- Percent indigenous: Percentage of the population that is indigenous (for Argentina, Chile, Colombia, Brazil, US, Venezuela). Percentage of the population speaking an indigenous language (for Mexico). For Peru, the values are the percentage of indigenous or black (not only indigenous) since they are not reported separately.
- Percent black: Percentage of the population that is black (exists only for Brazil, Colombia, US)
- Percent indigenous or black: The sum of the pervious two variables

9 Appendix B: Pre-Colonial Population Density

This appendix describes in detail how we construct the pre-colonial population density variable. We use data from several sources to estimate pre-colonial population density at the state level. The main sources of information are region-specific chapters in Denevan (1992) and references cited in that book. This section presents the main sources for each

country and explains the assumptions we used to impute population estimates for the different regions of each country. In each case we adjust the estimated size of the native population in each country to match the numbers presented in Denevan (1992, Table 00.1). Appendix Table 2 lists our pre-colonial population estimates for each region.

9.1 Argentina

The only source of information we use corresponds to Pyle (1992), a chapter in Denevan (1992). This paper includes several estimates of the native population for different regions of Argentina. We take the average of the number of natives in each region as our estimate of the denominator. In addition, using maps from the same paper, we allocate different tribes or groups to the different modern states. As some of the Argentinean regions identified in Pyle (1992) correspond to clusters of more than one modern Argentinean states, we estimated population density for the regions presented in Pyle (1992) and we impute the same population density for all the states in the same region. In particular, the regions that include more than one state are: (i) Buenos Aires and Capital Federal, (ii) Chubut, La Pampa, Neuquén, Río Negro, Santa Cruz, and Tierra del Fuego.

9.2 Brazil

The main source of information is Denevan (1992, p. 226 and 231). Denevan presents estimated population density at time of contact for different habitats in Greater Amazonia, which includes most of the Brazilian states except for portions of the coastal states in the South (Paraná, Rio Grande do Sul, Santa Catarina, and Sao Paulo). The habitats (estimated population density at contact time) considered by Denevan are: Central coast (9.5 people per square kilometer), Floodplain (14.6), Lowland–Amazon Basin (0.2), Mangrove coasts (4.75)[11], Upland and Central savannas (0.5). Using these estimates we classify each Brazilian state in each habitat and we estimate population density for the states. In the cases that a state has more than one habitat we use a weighted average considering the different habitats. In order to identify the habitats of the different regions we use information from the Natural Vegetation Map from the Perry-Castañeda Library Map Collection of the University of Texas.

For the Southern states we also use information from Denevan (1992, Table 00.1) on the total population for Southern Coastal Brazil combined (which implies a population

[11]For Mangrove coasts, Denevan states "probably considerably less than 9.5 per square kilometer". We use 50% of 9.5.

density of 4 people per square kilometer) with the previous information on the density for the different habitats of the Greater Amazonia. Finally, we impute the population density of the state of Goias to the Federal District (Brasilia).

9.3 Chile

In the case of Chile there are no detailed estimates of population by state. Instead, there is some information on the location of several native groups, except for the Mapuche people. In this case, Cooper (1946) quoted in Denevan (1992) estimates a pre-contact population of the Mapuche people of between 500,000 and 1,500,000, and we use the mean point of 1,000,000. We also know that these people were located between the fifth and the tenth region. So we estimate a pre-contact population density of 4.7. For the other regions in the country, we know the location of other people and we take the estimates of population density for these tribes in neighboring countries. In particular, we know about half of the modern first region was populated by tribes linked to the Inca empire. So we use half of the estimate we have for the Tacna region in Perú, which is equal to 1.3. For the second region, we know it was just sparely unpopulated so we use an estimate of 0.1 (similar to the estimate used by Denevan, 1992 for other sparely populated regions in Latin America). The third region was populated in part by the Diaguita people, which also lived in the Catamarca region in Argentina. So we use half of the estimate for 0.13 for the region and 0.1 for the remainder area of the region. The fourth region was populated by the Diaguita people, so we use in this case the same estimate as for Catamarca, equal to 0.17. Finally, the peoples living to the South of the tenth region were basically the same as those living in the Argentinean Patagonia, so we assume the same population density, equal to 0.01 people per square kilometer.

9.4 Colombia

We take the information on total pre-contact population for Colombia from Denevan (1992, Table 00.1). He estimates a total population of 3 million people. Using information from Ocampo (1992) and Villamarín and Villamarín (1999), we estimate population densities for 8 regions: Eastern Cordillera (13 people per square kilometer), Cauca Valley (9.2), the Caribbean Coast (2.8), Upper Magdalena (4.9), Lower Magdalena (4.3), Pasto (7.7), and Llanos (1.3). In the case of the Amazonas region, we use estimates for the Brazilian amazonas from Denevan (1992), which are equal to 0.2 people per square kilometer. Next, we classify each modern state in one of these regions accordingly to the Colombian maps of the Perry-Castañeda Library Map Collection of the Univer-

sity of Texas. Finally, the San Andrés, Providencia and Santa Catalina islands we use population density for the Caribbean islands from Denevan (1992).

9.5 Mexico

Estimates for Central Mexico come from Sanders (1992), in particular for Mexico, DF, Hidalgo, Puebla, Tlaxcala, Tamaulipas, and Morelos. In addition, Denevan (1992) presents population estimates for the following regions: (i) Baja California Norte and Sur; (ii) Campeche, Quintana Roo, and Yucatán; (iii) Chiapas; (iv) Chihuahua, Durango, Sinaloa, and Sonora; (v) Coahuila de Zaragoza and Nuevo León; (vi) Colima, (vii) and Tabasco. In the cases in which a region includes more than one state, we impute the same population density for each region. As in all the other cases, we adjust the population estimates so to match the total estimate for Mexico from Denevan (1992, Table 00.1).

9.6 Perú

The information for Perú comes from Cook (1981) for most of the regions in the country and from Denevan (1992) for the East of the country. In particular, Cook (1981, p. 96) presents his preferred estimated population figures for six different Peruvian regions: North coast, Central coast, South coast, North sierra, Central sierra, and South sierra. From Denevan (1992, pp. 228), we estimate the population density for six regions located in the East of the country: Amazonas (50% of the area), Loreto, Madre de Dios, Puno (50% of the area), and Ucayali.

9.7 United States

The raw information on the native population of the United States comes from Ubelaker (1992). This paper presents information on the native population of all the tribes in the United States and the location of these tribes (see Map 8.1, p. 244). Using this information we assign each tribe to the modern US states and in this way we estimate pre-contact population densities. In some cases it was impossible to estimate population densities for specific states because some tribes lived in more than one state so we present population density estimates for groups of modern states. This is the case for: 1. Arizona and New Mexico; 2. Delaware and New Jersey; 3. Rhode Island and Massachusetts; 4. Maryland and Washington D.C.; and 5. Virginia and West Virginia.

9.8 Venezuela

Denevan (1992) presents estimates for the total pre-contact population of Venezuela and gives pre-contact population densities for the Orinoco llanos (1.3 people per square kilometer), Amazon Basin (0.2), and Guiana Highlands (less than 0.5 people per square kilometer, we use 0.4). In order to get estimates for the other regions of Venezuela, first we use estimates available from other countries with similar habitats and native groups in the region (in particular, from North and East Colombia and the Caribbean) in the following way: 1. the Caribbean Coast: we use estimates for the same habitat in the Colombian Caribbean Coast; 2. the Selva: we use estimates for the same habitat in Colombia, and 3. the Caribbean (the Dependencias Federales region): we use estimates from Denevan for the Caribbean islands. Finally, we estimate population density for the Coastal Ranges and the Eastern Andes by choosing a pre-contact population density that matches the total population of about 1,000,000 people for Venezuela, as presented in Denevan (1992, Table 00.1).

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Table 1: Regional PPP GDP per Capita Across the Americas

Country	Obs	Mean	Log S.D.	Min	Max
Argentina*	24	11706	0.553	4578	40450
Brazil	27	5754	0.576	1793	17596
Chile	13	8728	0.423	4154	19820
Colombia	30	5869	0.489	2368	22315
Mexico	32	8818	0.461	3664	23069
Peru	24	3984	0.570	1287	13295
US	48	32393	0.179	22206	53243
Venezuela**	19	5555	0.231	3497	9088

*Data for 1993, **Income data

Table 2: Summary Statistics

	Obs	Mean	Std. Dev.	Min	Max
Outcome variables					
Log PPP GDP per capita	217	9.06	0.88	7.16	10.88
Log poverty rate	208	2.51	0.84	0.21	4.12
Health Index	49	75.86	11.09	55.40	91.80
Log Gini	207	-0.72	0.13	-1.07	-0.46
Percent native or black	217	9.58	14.30	0.08	77.40
Percent native	217	6.75	14.12	0.01	77.40
Percent black	105	6.60	9.85	0.00	65.66
Historical variables					
Log pre-colonial population density	217	0.22	2.07	-4.71	5.97
Good activities dummy	217	0.49	0.50	0	1
Bad activities dummy	217	0.25	0.44	0	1
Control variables					
Avg. temperature	217	19.30	6.34	2.38	29.00
Total rainfall	217	1.19	0.93	0.00	8.13
Landlocked dummy	217	0.53	0.50	0	1

Table 3: Predicting Colonial Activities

	Dependent variable:		
	Good acivities	Bad activities	No activities
	(1)	(2)	(3)
Log pre-colonial pop dens	0.11***	0.026	-0.136***
	(0.027)	(0.024)	-0.024
Avg. temperature	-0.09**	0.08***	0.01
	(0.034)	(0.030)	(0.025)
Avg. temp. squared	0.002*	-0.002***	0.000
	(0.001)	(0.001)	(0.001)
Total rainfall	-0.056	-0.029	0.084
	(0.074)	(0.071)	(0.075)
Total rainfall squared	0.001	0.012	-0.013
	(0.009)	(0.010)	(0.010)
Landlocked dummy	0.083	-0.105	0.0022
	(0.084)	(0.066)	(0.075)
Observations	217	217	217
	0.16	0.13	0.21

Robust standard errors (clustered at pre-colonial population density level) in brackets. Regressions include country fixed effects. Significance levels: * 10%, ** 5%, *** 1%

Table 4: Colonial Activities and Current GDP per Capita

	Dependent variable: Log PPP GDP per capita				
	(1)	(2)	(3)	(4)	(5)
Log pre-colonial pop density	-0.056**		-0.055*	-0.057**	-0.067***
	(0.028)		(0.028)	(0.025)	(0.025)
Good activities dummy		-0.038	0.036	-0.007	-0.004
		(0.102)	(0.090)	(0.090)	(0.084)
Bad activities dummy		-0.185*	-0.115	-0.161*	-0.184**
		(0.095)	(0.088)	(0.087)	(0.080)
Avg. temperature				0.026	0.034
				(0.038)	(0.033)
Avg. temp. squared				-0.001	-0.001
				(0.001)	(0.001)
Total rainfall				-0.228***	-0.194***
				(0.068)	(0.072)
Total rainfall squared				0.015*	0.01
				(0.008)	(0.009)
Landlocked dummy					-0.195***
					(0.070)
Observations	217	217	217	217	217
R-squared	0.76	0.76	0.76	0.79	0.8

Robust standard errors (clustered at pre-colonial population density level) in brackets.
Regressions include country fixed effects. Significance levels: * 10%, ** 5%, *** 1%

Table 5: Colonial Activities and Current Poverty Rates

	Dependent variable: Log poverty rate				
	(1)	(2)	(3)	(4)	(5)
Log pre-colonial pop density	0.076*		0.066*	0.056*	0.069**
	(0.040)		(0.038)	(0.034)	(0.034)
Good activities dummy		0.088	-0.001	0.052	0.057
		(0.128)	(0.111)	(0.108)	(0.098)
Bad activities dummy		0.337***	0.254**	0.299***	0.341***
		(0.121)	(0.108)	(0.105)	(0.101)
Avg. temperature				-0.004	-0.017
				(0.048)	(0.039)
Avg. temp. squared				0.001	0.001
				(0.001)	(0.001)
Total rainfall				0.360***	0.317***
				(0.087)	(0.087)
Total rainfall squared				-0.034***	-0.027**
				(0.013)	(0.013)
Landlocked dummy					0.303***
					(0.090)
Observations	208	208	208	208	208
R-squared	0.63	0.64	0.65	0.7	0.73

Robust standard errors (clustered at pre-colonial population density level) in brackets. Regressions include country fixed effects. The data set is smaller than in Table 4 since data on poverty rates is not available for eight Colombian regions and one Argentinean region. Significance levels: * 10%, ** 5%, *** 1%

Table 6: Colonial Activities and Pre-Colonial Development

	Dependent variable:	
	Log health index	Log PPP GDP per capita
	(1)	(2)
Log pre-colonial pop dens	-0.002	-0.16**
	(0.013)	(0.069)
Good activities dummy	0.01	-0.128
	(0.049)	(0.313)
Bad activities dummy	0.052	-0.301
	(0.063)	(0.382)
Log data year	0.056*	
	(0.030)	
Observations	49	49
R-squared	0.46	0.68

Robust standard errors (clustered at pre-colonial population density level) in brackets. Regressions include control variables. Health index is a proxy of pre-colonial development. The health index regression controls for the year for which the health index is observed to control for differences in the quality of the index. Significance levels: * 10%, ** 5%, *** 1%

Table 7: Colonial Activities and Current Income Inequality

	Dependent variable: Log Gini				
	(1)	(2)	(3)	(4)	(5)
Log pre-colonial pop density	0.009**		0.007*	0.005	0.005
	(0.004)		(0.004)	(0.004)	(0.004)
Good activities dummy		0.007	-0.002	0.002	0.002
		(0.013)	(0.011)	(0.011)	(0.011)
Bad activities dummy		0.054***	0.045***	0.045***	0.045***
		(0.017)	(0.016)	(0.015)	(0.015)
Avg. temperature				0.007*	0.007*
				(0.004)	(0.004)
Avg. temp. squared				0.000	0.000
				(0.000)	(0.000)
Total rainfall				0.034***	0.035***
				(0.013)	(0.012)
Total rainfall squared				-0.003	-0.003
				(0.002)	(0.002)
Landlocked dummy					-0.007
					(0.011)
Observations	207	207	207	207	207
R-squared	0.67	0.69	0.7	0.71	0.71

Robust standard errors (clustered at pre-colonial population density level) in brackets. Regressions include country fixed effects. The data set is smaller than in Table 4 since data on poverty rates is not available for eight Colombian regions and two Argentinean regions. Significance levels: * 10%, ** 5%, *** 1%

Table 8: Colonial Activities and Institutions

	Dependent variable: Log PPP GDP per capita	
	(1)	(2)
Log pre-colonial pop dens	-0.056*	-0.063**
	(0.029)	(0.029)
Good activities dummy	-0.022	-0.015
	(0.099)	(0.098)
Bad activities dummy	-0.2*	-0.196*
	(0.105)	(0.100)
Log pop dens*Country institutions	0.034**	
	(0.015)	
Good activities*Country institutions	0.035	
	(0.045)	
Bad activities*Country institutions	0.118*	
	(0.060)	
Log pop dens*Country settler mortality		-0.068**
		(0.027)
Good activities*Country settler mortality		-0.078
		(0.084)
Bad activities*Country settler mortality		-0.192*
		(0.105)
Observations	217	217
R-squared	0.81	0.81

Robust standard errors (clustered at pre-colonial population density level) in brackets. Regressions include country fixed effects and control variables. Country institutions is a measure protection against expropriation risk. Settler mortality is an instrument for country instiutions, from Acemoglu et al (2001). Significance levels: * 10%, ** 5%, *** 1%

Table 9: Colonial Activities and Ethnicity of Current Population

	Dependent variable:		
	Percentage native or black	Percentage native	Percentage black
	(1)	(2)	(3)
Log pre-colonial pop density	-1.117**	-0.613	-0.807
	(0.534)	(0.493)	(0.653)
Good activities dummy	0.277	-1.414	3.523***
	(1.803)	(1.709)	(1.227)
Bad activities dummy	8.466***	2.972	8.145***
	(2.445)	(2.179)	(1.493)
Observations	217	217	105
R-squared	0.49	0.41	0.77

Robust standard errors (clustered at pre-colonial population density level) in brackets. Regressions include country fixed effects and control variables. Significance levels: * 10%, ** 5%, *** 1%

Appendix Table 1: Data Sources

Variable	Argentina	Brazil	Chile	Colombia
GDP	INDEC - Dirección de Cuentas Nacionales - PBG por provincia y sector de actividad económica	IBGE - Contas Regionais	Central Bank of Chile	DANE - Cuentas Departamentales
Population	INDEC - Censo Nacional de Población, Hogares y Viviendas 2001	IBGE - Censo Demográfico 2000	MIDEPLAN projections based on 2002 Census	DNP projections - 2000
Poverty rate	INDEC - EPH - May 2001	http://tabnet.datasus.gov.br/cgi/idb2004/b05uf.htm	MIDEPLAN - 2000 CASEN Survey	SISD
GINI index	Own calculations from 1998 EPH	IBGE - Censo Demográfico 2000	Own calculations from 2000 CASEN	SISD
Health index	Backbone of History Project (Steckel and Rose, 2002)			
Pre-colonial population density	Own calculations from Pyle (1992)	Own calculations from Denevan (1992)	Own calculations from Denevan (1992)	Own calculations from Denevan (2002), Ocampo (1997), and Villamarín (1999)
Colonial acitvities	Brown (2003), Rock (1987)	Bethel (1987), Burns (1993)	Collier and Sater (2002)	McFarlane (1993), Ocampo (1997)
Temperature	Servicio Metereológico Nacional	IBGE - Annuário estatístico do Brazil.	Dirección Metereológica de Chile	IDEAM
Rainfall	Servicio Metereológico Nacional	IBGE - Annuário estatístico do Brazil.	Dirección Metereológica de Chile	IDEAM
Indigenous or black population	INDEC - Censo Nacional de Población, Hogares y Viviendas 2001	IBGE - Censo Demográfico 2000	Own calculations from 2000 CASEN	DANE

Variable	Mexico	Peru	US	Venezuela
GDP	INEGI - Producto Interno Bruto por Entidad Federativa	INEI - Dirección Nacional de Cuentas Nacionales - PBI por departamento.	BEA - Gross Domestic Product by State	Own calculations from 1998 EHM (household income)
Population	INEGI - Censo General de Población y Vivienda 2000	INEI	U.S. Census Bureau	INE
Poverty rate	SEDESOL	INEI	State and Metropolitan Area Data Book 1997-1998	INE
GINI index	Own calculations from 2000 ENE	Own calculations from 2000 ENAHO	U.S. Census Bureau, Table S4	Own calculations from 1998 EHM
Health index	Backbone of History Project (Steckel and Rose, 2002)			
Pre-colonial population density	Own calculations from Denevan (2002) and Sanders (2002)	Own calculations from Denevan (2002) and Cook (1981)	Own calculations from Ubelaker (2002)	Own calculations from Denevan (2002)
Colonial acitvities	Cumberland (1968), Gerhard (1979) Hamnett (1999), Knight (2002), Zabre (1969)	Fisher (1970), Dobyns and Doughty (1976)	Andrews (1914), Eccles (1972), McCusker and Menard (1985)	Lombardi (1982)
Temperature	INEGI	INEI	http://www.met.utah.edu/jhorel/html/wx/climo.html	INE
Rainfall	INEGI	INEI	http://www.met.utah.edu/jhorel/html/wx/climo.html	INE
Indigenous or black population	INEGI - Censo General de Población y Vivienda 2000	INEI	U.S. Census Bureau, Population Division	INE - 2001 Census

Appendix Table 2: Pre-Colonial Population Density and Colonial Activities Data

Country	State	Population Density	Main Activity	bad	good	none
Argentina	Buenos Aires	0.0510	cattle	0	1	0
Argentina	Catamarca	0.1669	textiles	0	1	0
Argentina	Chaco	0.6300	agriculture	0	1	0
Argentina	Chubut	0.0090	none	0	0	1
Argentina	Ciudad de Buenos Aires (Capital Federal)	0.0510	port	0	1	0
Argentina	Corrientes	1.7674	sugar-tobacco	1	0	0
Argentina	Córdoba	0.4375	cattle	0	1	0
Argentina	Entre Ríos	1.1318	cattle	0	1	0
Argentina	Formosa	0.1974	agriculture	0	1	0
Argentina	Jujuy	0.2585	trade	0	1	0
Argentina	La Pampa	0.0090	cattle	0	1	0
Argentina	La Rioja	0.1669	textiles	0	1	0
Argentina	Mendoza	0.0908	wine	0	1	0
Argentina	Misiones	2.5539	sugar-tobacco	1	0	0
Argentina	Neuquén	0.0090	none	0	0	1
Argentina	Río Negro	0.0090	none	0	0	1
Argentina	Salta	0.3666	trade	0	1	0
Argentina	San Juan	0.0787	wine	0	1	0
Argentina	San Luis	0.0726	cattle	0	1	0
Argentina	Santa Cruz	0.0090	none	0	0	1
Argentina	Santa Fe	1.1074	cattle	0	1	0
Argentina	Santiago del Estero	0.8406	textiles	0	1	0
Argentina	Tierra del Fuego	0.0090	none	0	0	1
Argentina	Tucumán	0.6107	textiles	0	1	0
Brazil	Acre	0.2000	none	0	0	1
Brazil	Alagoas	6.0396	sugar	1	0	0
Brazil	Amapá	2.6201	none	0	0	1
Brazil	Amazonas	0.4880	cacao	0	1	0
Brazil	Bahia	1.8409	sugar	1	0	0
Brazil	Ceará	3.3729	none	0	0	1
Brazil	Distrito Federal	0.5000	none	0	0	1
Brazil	Espírito Santo	7.4982	sugar	1	0	0
Brazil	Goiás	0.5000	mining	1	0	0
Brazil	Maranhão	2.3655	cotton	0	1	0
Brazil	Mato Grosso	0.9333	cattle	0	1	0
Brazil	Mato Grosso do Sul	2.1250	none	0	0	1
Brazil	Minas Gerais	0.5000	mining	1	0	0
Brazil	Paraná	2.9500	mining	1	0	0
Brazil	Paraíba	2.4100	sugar	1	0	0
Brazil	Pará	1.2246	cacao	0	1	0
Brazil	Pernambuco	2.1005	sugar	1	0	0
Brazil	Piauí	0.8093	none	0	0	1
Brazil	Rio Grande do Norte	6.0970	cattle	0	1	0
Brazil	Rio Grande do Sul	1.5500	cattle	0	1	0
Brazil	Rio de Janeiro	8.5768	sugar	1	0	0
Brazil	Rondônia	0.2000	none	0	0	1
Brazil	Roraima	0.4880	none	0	0	1
Brazil	Santa Catarina	2.9500	cattle	0	1	0

Brazil	Sergipe	7.7659	sugar	1	0	0
Brazil	São Paulo	2.2500	indians	0	1	0
Brazil	Tocantins	0.5000	mining	1	0	0
Chile	1	1.3319	none	0	0	1
Chile	2	0.1000	none	0	0	1
Chile	3	0.1335	mining	1	0	0
Chile	4	0.1669	mining	1	0	0
Chile	5	4.6642	wheat	0	1	0
Chile	6	4.6642	wheat	0	1	0
Chile	7	4.6642	wheat	0	1	0
Chile	8	4.6642	wheat	0	1	0
Chile	9	4.6642	wheat	0	1	0
Chile	10	4.6642	none	0	0	1
Chile	11	0.0090	none	0	0	1
Chile	12	0.0090	none	0	0	1
Chile	RM	4.6642	wheat	0	1	0
Colombia	Amazonas	0.4880	none	0	0	1
Colombia	Antioquia	7.9096	mining	1	0	0
Colombia	Arauca	1.3000	cattle	0	1	0
Colombia	Atlántico	2.7816	cattle	0	1	0
Colombia	Bolívar	4.2197	port	0	1	0
Colombia	Caldas	9.1916	ranching	0	1	0
Colombia	Caquetá	1.1154	none	0	0	1
Colombia	Casanare	1.3000	cattle	0	1	0
Colombia	Cauca	7.0652	mining	1	0	0
Colombia	Cesar	3.4288	ranching	0	1	0
Colombia	Chocó	0.7282	mining	1	0	0
Colombia	Cundinamarca	10.6061	cattle	0	1	0
Colombia	Córdoba	2.7816	ranching	0	1	0
Colombia	Guainía	1.3000	none	0	0	1
Colombia	Guaviare	0.4880	none	0	0	1
Colombia	Huila	4.3243	cacao	0	1	0
Colombia	La Guajira	2.7816	ranching	0	1	0
Colombia	Magdalena	2.9973	ranching	0	1	0
Colombia	Meta	1.8868	cattle	0	1	0
Colombia	Norte de Santander	13.0350	cacao	0	1	0
Colombia	Quindío	9.1916	none	0	0	1
Colombia	Risaralda	9.1916	ranching	0	1	0
Colombia	San Andrés, Providencia y Santa Catalina	12.9269	none	0	0	1
Colombia	Santafé de Bogotá, D. C.	10.6061	cattle	0	1	0
Colombia	Santander	8.9869	sugar	1	0	0
Colombia	Sucre	2.7816	none	0	0	1
Colombia	Tolima	4.3243	sugar	1	0	0
Colombia	Valle del Cauca	9.1916	mining	1	0	0
Colombia	Vaupés	0.4880	none	0	0	1
Colombia	Vichada	1.3000	cattle	0	1	0
Mexico	Aguascalientes	14.2443	trade	0	1	0
Mexico	Baja California	0.4073	none	0	0	1
Mexico	Baja California Sur	0.4073	none	0	0	1
Mexico	Campeche	5.7360	trade	0	1	0
Mexico	Chiapas	2.4378	encomiendas	0	1	0

Mexico	Chihuahua	0.4040	mining	1	0	0
Mexico	Coahuila de Zaragoza	2.3470	none	0	0	1
Mexico	Colima	2.6678	none	0	0	1
Mexico	Distrito Federal	392.3369	trade	0	1	0
Mexico	Durango	2.6678	cattle	0	1	0
Mexico	Guanajuato	14.2443	mining	1	0	0
Mexico	Guerrero	14.2443	mining	1	0	0
Mexico	Hidalgo	32.7723	mining	1	0	0
Mexico	Jalisco	14.2443	textiles	0	1	0
Mexico	Michoacan de Ocampo	14.2443	cattle	0	1	0
Mexico	Morelos	210.8860	sugar	1	0	0
Mexico	México	40.3006	maize	0	1	0
Mexico	Nayarit	14.2443	none	0	0	1
Mexico	Nuevo León	2.4378	none	0	0	1
Mexico	Oaxaca	14.2443	textiles	0	1	0
Mexico	Puebla	25.2709	textiles	0	1	0
Mexico	Querétaro de Arteaga	14.2443	textiles	0	1	0
Mexico	Quintana Roo	5.7360	none	0	0	1
Mexico	San Luis Potosí	14.2443	mining	1	0	0
Mexico	Sinaloa	2.6678	wheat	0	1	0
Mexico	Sonora	2.6678	mining	1	0	0
Mexico	Tabasco	31.3272	maize	0	1	0
Mexico	Tamaulipas	15.5214	none	0	0	1
Mexico	Tlaxcala	79.5110	textiles	0	1	0
Mexico	Veracruz de Ignacio de la Llave	14.2443	sugar	1	0	0
Mexico	Yucatán	5.7360	trade	0	1	0
Mexico	Zacatecas	14.2443	mining	1	0	0
Peru	Amazonas	3.6363	none	0	0	1
Peru	Ancash	3.3779	mining	1	0	0
Peru	Apurímac	17.3105	sugar	1	0	0
Peru	Arequipa	5.9435	textiles	0	1	0
Peru	Ayacucho	14.3126	mining	1	0	0
Peru	Cajamarca	6.4916	sugar	1	0	0
Peru	Cusco	17.3105	mining	1	0	0
Peru	Huancavelica	11.3148	mining	1	0	0
Peru	Huánuco	6.4916	coca	0	1	0
Peru	Ica	43.5010	wine	0	1	0
Peru	Junín	11.3148	wheat	0	1	0
Peru	La Libertad	47.3276	sugar	1	0	0
Peru	Lambayeque	100.1516	sugar	1	0	0
Peru	Lima	44.0456	trade	0	1	0
Peru	Loreto	0.7809	none	0	0	1
Peru	Madre de Dios	0.7809	none	0	0	1
Peru	Moquegua	2.5638	wine	0	1	0
Peru	Pasco	11.3148	mining	1	0	0
Peru	Piura	32.5921	trade	0	1	0
Peru	Puno	9.0457	mining	1	0	0
Peru	San Martín	6.4916	none	0	0	1
Peru	Tacna	2.5638	agriculture	0	1	0
Peru	Tumbes	17.2785	trade	0	1	0
Peru	Ucayali	0.7809	none	0	0	1

US	Alabama	0.3506	cotton	1	0	0
US	Arizona	0.3798	none	0	0	1
US	Arkansas	0.0915	rice	1	0	0
US	California	2.0341	none	0	0	1
US	Colorado	0.0730	fur	0	1	0
US	Connecticut	1.0761	naval stores	0	1	0
US	Delaware	0.9371	wheat	0	1	0
US	Florida	0.1452	rice	1	0	0
US	Georgia	0.4025	rice	1	0	0
US	Idaho	0.0876	none	0	0	1
US	Illinois	0.1989	wheat	0	1	0
US	Indiana	0.1280	wheat	0	1	0
US	Iowa	0.2106	fur	0	1	0
US	Kansas	0.0710	fur	0	1	0
US	Kentucky	0.0231	none	0	0	1
US	Louisiana	0.4097	rice	1	0	0
US	Maine	0.1105	fishery	0	1	0
US	Maryland	0.0728	tobacco	1	0	0
US	Massachusetts	2.1720	naval stores	0	1	0
US	Michigan	0.1350	wheat	0	1	0
US	Minnesota	0.2442	wheat	0	1	0
US	Mississippi	0.8010	cotton	1	0	0
US	Missouri	0.0178	cotton	1	0	0
US	Montana	0.1190	fur	0	1	0
US	Nebraska	0.2185	fur	0	1	0
US	Nevada	0.0584	none	0	0	1
US	New Hampshire	0.4519	fishery	0	1	0
US	New Jersey	0.9371	merchants	0	1	0
US	New Mexico	0.3798	none	0	0	1
US	New York	0.2705	merchants	0	1	0
US	North Carolina	0.1298	tobacco	1	0	0
US	North Dakota	0.1317	fur	0	1	0
US	Ohio	0.1178	wheat	0	1	0
US	Oklahoma	0.2439	fur	0	1	0
US	Oregon	0.5966	none	0	0	1
US	Pennsylvania	0.1349	wheat	0	1	0
US	Rhode Island	2.1720	naval stores	0	1	0
US	South Carolina	0.0717	rice	1	0	0
US	South Dakota	0.1870	fur	0	1	0
US	Tennessee	0.0221	none	0	0	1
US	Texas	0.1552	none	0	0	1
US	Utah	0.0624	none	0	0	1
US	Vermont	0.1777	lifestock	0	1	0
US	Virginia	0.2820	tobacco	1	0	0
US	Washington	0.8050	none	0	0	1
US	West Virginia	0.2820	none	0	0	1
US	Wisconsin	0.3754	wheat	0	1	0
US	Wyoming	0.1108	fur	0	1	0
Venezuela	Amazonas	0.3500	none	0	0	1
Venezuela	Anzoátegui	1.7445	cattle	0	1	0
Venezuela	Apure	1.3000	cattle	0	1	0

Venezuela	Aragua	2.2806	sugar	1	0	0
Venezuela	Barinas	1.3480	cattle	0	1	0
Venezuela	Bolívar	0.3800	none	0	0	1
Venezuela	Carabobo	2.7816	port	0	1	0
Venezuela	Falcón	2.7816	mining	1	0	0
Venezuela	Guárico	1.3981	cattle	0	1	0
Venezuela	Lara	2.2806	mining	1	0	0
Venezuela	Miranda	2.2806	sugar	1	0	0
Venezuela	Monagas	1.1700	cattle	0	1	0
Venezuela	Mérida	1.7795	wheat	0	1	0
Venezuela	Nueva Esparta	2.7816	pearls	0	1	0
Venezuela	Portuguesa	1.4439	cattle	0	1	0
Venezuela	Sucre	2.7816	none	0	0	1
Venezuela	Trujillo	1.7795	wheat	0	1	0
Venezuela	Táchira	1.5398	wheat	0	1	0
Venezuela	Zulia	1.6408	none	0	0	1