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A note on slavery and the roots of inequality ☆

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ABSTRACT

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We use various secondary historical sources to compile a database containing information on the number of African slaves received by each destination country between the 16th and 19th centuries. We then construct a measure of intensity of African slavery use based on the flow of slaves received divided by historical populations. We also construct a proxy for the use of native slavery. The slavery variables are highly correlated with current levels of inequality. The correlation between our slavery use variables and inequality is stronger than that observed between inequality and development, geographic characteristics, institutional quality, and provision of public goods. The evidence suggests that use of slavery in the historical past may be an important determinant of the levels of inequality observed today across the globe. *Journal of Comparative Economics* **40** (4) (2012) 565–580. Pontifical Catholic University of Rio de Janeiro and IZA, PUC-Rio Departamento de Economia, Rua Marquês de São Vicente, 225, Gávea Rio de Janeiro, RJ-Brazil-22451-900, Brazil; Pontifical Catholic University of Rio de Janeiro and CPI-Rio, PUC-Rio Departamento de Economia, Rua Marquês de São Vicente, 225, Gávea Rio de Janeiro, RJ-Brazil- 22451-900, Brazil; Pontifical Catholic University of Rio de Janeiro, PUC-Rio Departamento de Economia, Rua Marquês de São Vicente, 225, Gávea Rio de Janeiro, RJ-Brazi -22451-900, Brazil.

1. Introduction

Income inequality is extremely persistent within a country over time, but presents a wide variation across countries and regions of the world. Its most widely used indicator, the Gini index, ranges from above 55 in Latin America and Africa to below 25 in some Western European countries. At the same time, within country variations in the Gini rarely go beyond 5 points per decade. The persistency of inequality has been extensively documented and studied in the literature (see, for example, Deininger and Squire (1996) and Li et al. (1998)). Various theories and empirical evidence have linked it to

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intergenerational transmission of socioeconomic status, credit market imperfections, and political economy problems.[1] Much less has been said about the nature and determinants of the level of inequality within a given country, and the distribution of inequality across regions of the globe.

This paper suggests that the historical use of slavery during the colonial era may be an important underlying determinant of the levels of inequality observed in different regions of the world today. To present evidence in this direction, we draw on different sources of data and historical records to construct estimates of the total number of African slaves received by each country. To account for alternative types of slavery, we also build proxies for the use of native slavery. We then show that historical use of slavery is robustly correlated with current levels of inequality. The evidence suggests that this correlation is not related to other country characteristics that could be associated with both historical use of slavery and current inequality, such as institutional development, provision of and access to public goods, and geographic characteristics. Given the nature and intrinsic difficulties of the question posed, we make use of cross-country data and a relatively small number of observations. Still, the pattern of correlations that emerge support the idea that inequality levels observed today owe a lot to historical experiences during the first wave of European colonization.

Engerman and Sokoloff (1997, 2005a) have extensively explored the idea that countries' current socioeconomic performances may be partly explained by the historical past. In their interpretation, natural conditions associated with climate and soil determined whether colonies were adequate for certain crops and could be used to generate rents for the metropolises. Where these conditions were met and rent extraction enterprises were established, land concentration was high and there was extensive use of slavery. According to this logic, the combination of these factors had direct impacts on inequality that would persist until today and, through the political system and unequal distribution of power, would also have affected long-term development. Easterly (2007) tests some of the arguments from this interpretation, showing that current inequality is correlated with geographical suitability for sugar-cane production (relative to that of wheat) and that inequality, instrumented by this agricultural suitability variable, is negatively related to long-term development.

A recent literature has specifically focused on the impacts of historical slavery on current socioeconomic outcomes. Lagerlöf (2009) provides a theory explaining the emergence of slavery in agricultural societies in a framework of endogenous property rights. Nunn (2007), within a multiple equilibria model, shows how the effects of slavery on supplier regions may have permanent impacts. From an empirical perspective, Nunn (2008a) shows that, within Africa, the number of slaves exported by a country during colonial times is negatively related to its current economic performance. He argues that this effect works mostly through the negative impact on the formation of domestic institutions related to property rights, quality of the judicial system, and legal environment. Nunn and Wantchekon (forthcoming) show that slave exporting countries also display lower levels of trust today.

More closely related to this paper, Lagerlöf (2005) and Nunn (2008b) explore the long-term consequences of the use of slavery. Lagerlöf (2005) uses US county data and shows that a higher fraction of slaves in 1850 is associated with lower income levels today, and higher income gaps between blacks and whites. Nunn (2008b) looks at the cross country relationship between fraction of slaves in 1750 and current income per capita, finding a negative relationship. Similarly to Lagerlöf (2005), he finds this same relationship across US states and counties (with slavery measured in 1860). In order to shed light on the specific channels, the author also looks at the link between slave use and both historical land inequality and current income inequality in the US. He finds a consistent positive relationship between slavery and inequality, but no evidence that the effect of slavery on development works through economic inequality.

For Latin America and the Caribbean, which were the main users of slavery during the colonial period and constitute the bulk of our sample, there is no direct evidence available on the long-term consequences of slavery. Ferranti et al. (2004) document a high degree of inequality in Latin America across racial and ethnical groups, suggesting a potentially important role for the historical experiences of slavery in explaining the current pattern of income distribution in the region.

The first contribution of this paper is to construct a dataset on number of African slaves received by each destination country, for almost every country that made any systematic use of slavery during the first wave of European colonialism. These include the entire Americas, the North of Africa, some African islands (Cape Verde and Mauritius Islands), and a few Southern European countries (Italy, Portugal, and Spain). Following, we create a variable indicating the extent of use of African slavery which is the average of the number of slaves received in each 25-year interval, normalized by the local population during the respective periods of time. To assess the effect and control for native slavery, we also construct proxies for this variable. We then show that the use of slavery during colonial times, in particular of African slavery, is correlated with higher inequality today. Our exercise is similar to that conducted by Lagerlöf (2005) and Nunn (2008b) for US states and counties, but they use fraction of slaves in the population at a point in time rather than number of slaves received. Nunn (2008b) also looks at the cross-country relationship between number of slaves and income per capita in the long-run, but does not analyze the impact on inequality.

In addition, fraction of slaves at a point in time is probably endogenous to the living conditions faced by slaves themselves, therefore potentially biasing the estimated relationship between slavery and inequality. We believe that our variable related to number of slaves received is a more exogenous measure of the extent to which a society relied on the use of slave labor during the colonial era. Our constructed variable also leads to a sample that is roughly 45% larger than Nunn's (2008b) cross-country sample, allowing us to conduct a broader set of exercises and to control for more country specific

[1] See, for example, Beck et al. (2004), Becker and Tomes (1986), Benabou (2000), Charles and Hurst (2003), Durlauf (1996), Fernandez and Rogerson (2001), Ferranti et al. (2004), Galor et al. (2009), Glaeser and Jovanovic (2005), Iyigun and Owen (2004), and Kremer and Chen (2002). Sacerdote (2005), in particular, looks at intergenerational mobility among slave descendants in the US, comparing with the population of descendants of free blacks.

characteristics. To the best of our knowledge, our paper is the first to look at the cross-country relationship between historical use of slavery and current inequality. Given that migration is particularly important within countries, this is a context in which the cross-country analysis may indeed add important information to that available from within US studies.

An obvious question is why and how the initial shock represented by slavery would have persisted until today. We do not explore this question explicitly in the paper, but there are extensive literatures on the intergenerational transmission of socioeconomic status and on institutional persistency that speak directly to this issue. In this perspective, we think of slavery as an extreme initial shock to the distribution of endowments within a country, which creates a portion of society entirely devoid of human or physical capital assets. Within a credit constrained environment, this initial shock to the distribution of assets would have persisted through the transmission of socioeconomic status across generations (see, for example, Becker and Tomes, 1986; Charles and Hurst, 2003; Durlauf, 1996; Fernandez and Rogerson, 2001; Kremer and Chen, 2002). In addition, the literature on political economy and institutions has repeatedly stressed the idea that societies that begin with extreme levels of inequality tend to develop institutions that favor the elite and limit the political influence and access to economic opportunities for the poorer fraction of the population (as discussed in Engerman and Sokoloff, 2002, and also in Benabou, 2000; Galor et al., 2009). The combination of intergenerational transmission with reinforcing institutional mechanisms is likely to render the impact of slavery on the income distribution persistent. Adding discrimination in the post-slavery period to this equation, it would seem reasonable to expect that certain features of income distributions across the globe today would still owe something to the use of slavery in the past.

The remainder of the paper is organized as follows. Section 2 describes the construction of our main historical variables. Section 3 presents the other data used in the paper, conducts some descriptive analysis, and outlines our empirical strategy. Section 4 presents the results. Lastly, section 5 concludes the paper.

2. Measuring slavery intensity

This section explains in detail the construction of our main historical variables: arrival of African slaves and proxies for the use of native slavery. Our interest rests on countries that made intensive use of African slaves during the period of the great transatlantic navigations. To create a homogeneous group, under more or less similar conditions in terms of the treatment variable at the beginning of the colonization period, we restrict the analysis to countries that had no significant black population before the beginning of the slave trade and where, after that, slavery was adopted to some degree at some point in time. Our initial sample of countries is therefore composed by the Americas, Northern Africa, Cape Verde, Mauritius Islands, Italy, Portugal, and Spain. The use of slavery in the Americas and Northern Africa has been widely documented elsewhere (Engerman and Sokoloff, 1997, 2005a; Austen, 1979, 1988, 1992). Cape Verde and Mauritius Islands did not have native black populations and suffered colonization processes similar to those observed in the Americas (McEvedy and Jones, 1978). Italy, Portugal, and Spain, in turn, were the main European countries to make use of African slaves and were involved in smaller scale slave trade at least since the 14th century (see Russel, 2000). We measure the intensity of use of African slavery in different countries using the total arrival of slaves during colonial times. In order to construct this number, we use information from various different sources.

Our main source of data is the *Voyages – The Transatlantic Slave Trade Database* (from now on TSTD),[2] which had its previous versions used before in the economics literature by Nunn (2008a) and Nunn and Wantchekon (forthcoming). Differently from these authors, we look at the information from the TSTD from the perspective of destinations rather than departing ports. This database contains information on all transatlantic slave voyages between 1500 and 1866 that have been documented up to now, which are estimated to account for more than 85% of the total slave trade observed in the period (for the original dataset, see Assessing the Slave Trade, 2009). From this source, there is information on port of departure and arrival of slave ships, number of slaves transported, location and number of slaves boarded and disembarked at each port, mortality rates during the travels, ship origin, etc. For descriptions of the database and its earlier versions, see Eltis et al. (1999) and Eltis (2001, 2007).

In addition, we use specific information provided by a number of other sources. Eltis (2001) discusses the internal reallocation of slaves after arrival at the initial port. Austen (1988, 1992) focuses on the trans-Saharan slave trade, presenting numbers on the flow of African slaves to Northern Africa and highlighting the prominent part played by Egypt as a receiving center. Finally, McEvedy and Jones (1978) estimate the evolution of population for several countries and regions of the world throughout history. In some cases, they mention the composition of the population during the initial colonization of the country, providing figures for number of slaves.

The specific way we combine the information obtained from these sources is as follows. First, for a more aggregate set of areas (countries and groups of countries), we compute the number of slaves disembarked by period of time using the TSTD for the Americas and Europe, Austen (1988, 1992) for Northern Africa, and McEvedy and Jones (1978) for a few African islands. Based on this procedure, we obtain estimates for: Europe, North America, Jamaica, Barbados, Antigua and Barbuda, St. Kitts and Nevis, Grenada, Dominica, British Guiana, St. Vincent and the Grenadines, Montserrat and Nevis, Trinidad and Tobago, other British Caribbean, Saint Domingue, Martinique, Guadeloupe, French Guiana, other French Caribbean, Dutch Caribbean (Netherlands Antilles), Dutch Guianas, Danish West Indies (American Virgin Islands), Cuba, Puerto Rico, Spanish Central America, Rio de la Plata, other Spanish America, Brazil, Egypt, Libya, Morocco, Algeria, Tunisia, Mauritius Islands, and

[2] See: http://www.slavevoyages.org/tast/assessment/estimates.faces.

Cape Verde. The remaining challenges are to redistribute the number of slaves that were reallocated through internal trade, and to disaggregate the number of slaves received by larger areas into the countries that constitute them.

On the first issue, we apply the corrections for reallocations through trade and transportation suggested by Eltis (2001). These corrections are: (i) 85% of the slaves arriving at the Dutch Caribbean were shipped to the continental Spanish America; (ii) of the slaves arriving at Jamaica, 15% before 1700 and 20% between 1700 and 1808 were shipped to Colombia, Mexico, Panama, and Venezuela; (iii) 4% of the slaves arriving at Barbados were shipped to the continental Spanish America; (iv) Argentina and Uruguay had their slave populations doubled from trade with Brazil; (v) 182,200 slaves arriving at Barbados were shipped to Martinique; (vi) 121,600 slaves arriving at Jamaica were shipped to Martinique; and (vii) 211,400 slaves arriving at Jamaica were shipped to Guadalupe. Whenever doing these adjustments for aggregate areas, in case we have disaggregate data for the countries that constitute them, outflows and inflows are allocated across countries in proportion to the initial distribution of slaves.

The strategy outlined above still leaves us with number of slaves received by some aggregate areas (enumerated in the list of areas and countries mentioned above). The areas that we disaggregate further with the respective countries that constitute them are the following: (i) Europe: Italy, Portugal, and Spain; (ii) North America: US and Canada; (iii) Saint Domingue: Haiti and Dominican Republic; (iv) Spanish Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama, and Nicaragua; (v) Rio de la Plata: Argentina and Uruguay; (vi) other Spanish America: Bolivia, Chile, Colombia, Mexico, Ecuador, Paraguay, Peru, and Venezuela; and (vii) other British Caribbean: Bahamas, Bermuda, St. Lucia, and British Virgin Islands. For countries belonging to one of these regions, we distribute the aggregate number of slaves received by the region according to the current distribution of afro-descendents across countries.[3]

The procedure outlined above generates estimates for the number of African slaves received by all countries included in our sample. To obtain a measure of intensity of slavery use, we need to normalize the number of slaves received during a certain period of time by some measure of local population. We use historical population data from McEvedy and Jones (1978). In the few cases where these authors present historical numbers for areas aggregating more than one country, we distribute the historical population according to the current distribution of population across countries. So we divide the period from 1500 to 1866 into sub-periods of 25 years, which also correspond to the estimated life expectancy of slaves in the Americas (Fogel and Engerman, 1974). We then normalize the number of slaves received in each interval by the population at the time and calculate the average of this variable for the entire period. We calculate the average of this variable only for periods when historical populations are estimated to be positive (so we ignore periods that precede the human occupation of a certain area). This is our country specific measure of intensity of use of African slavery. In robustness exercises, we also consider the total number of slaves received by a country (summed over the entire period) divided by its 1800 population, and the fraction of slaves in the population in 1700 (from Nunn, 2008b).

But slavery in European colonies did not always make use of African manpower. Particularly in the Spanish America, enslavement of the native population was common, mainly in the first centuries of the colonial enterprise. Engerman and Sokoloff (1997) point out that in prosperous and densely populated areas, Europeans typically maintained existing extractive institutions and forced the local population to work in mining and plantations. Gallay (2010) and Whitehead (2011) highlight that occasional use of native slavery was observed in virtually every colony in the Americas, but that the Spanish seem to have been the colonizers that trusted more heavily on it. This was partly due to the argument put forth by Engerman and Sokoloff (1997), since the Spanish ended up gaining control of all the most densely populated areas of the new continent.

We do not have a straightforward measure of use of native slavery and do not have historical sources to build anything similar to the African slavery variable defined above. So, based on the arguments from the historical literature, we use a proxy for the relevance of native slavery in the colonies of the Americas. In line with the argument from Engerman and Sokoloff (1997), our main native slavery variable is defined as the ratio of native population in 1500 to total population in 1850 for former colonies in the Americas, and is set to zero for other countries (data from McEvedy and Jones, 1978). This variable tries to capture the relevance of the native population before colonization to what the country became later on. In some robustness exercises, we also consider alternative measures of native slavery: (i) urbanization level in 1500 (only for former colonies in the Americas, and set to zero for other countries; data from Acemoglu et al., 2002); (ii) population density in 1500 (also only for former colonies in the Americas, and set to zero for other countries; data from McEvedy and Jones, 1978); (iii) a dummy variable for native slavery (equal to 1 if population density in 1500 was above 1 in former colonies in the Americas); and (iv) a dummy variable indicating that the country was a Spanish colony.

3. Data and empirical strategy

3.1. Other variables

As a measure of inequality, we use the Gini coefficient. Deininger and Squire (1996) compile information on measures of income inequality for various countries. This work has been updated in the World Income Inequality Database 2 (WIID2). We

[3] Lagerlöf (2005) shows, using county level data for the case of the US, that the correlation between slave population in the past and black population today is very high. This indicates a substantial degree of persistence in this variable, even with the possibility of migration (much more common within in US than in our cross-country context). Even in the presence of some bias, these are countries that received a very small number of slaves, so that results should be unaffected by this specific procedure.

use data judged to be of good quality by the WIID2 (quality levels 1 and 2) and construct averages of the Gini coefficient for the entire period available (or years available within this interval) for each country. For the countries not included in the WIID2, we use data from the World Development Indicators. After that, we still do not find inequality information for Libya and a set of small Caribbean countries. We get inequality data for Antigua and Barbuda, Dominica, Granada, St. Kitts and Nevis, and St. Vincent and the Grenadines from a set of Caribbean Development Bank's Country Poverty Assessment Reports (Caribbean Development Bank, 2007, 2008a, 2008b, 2008c, 2010). We take the Gini coefficient from Libya from Maurício (2001).[4] For a smaller set of countries, we conduct robustness exercises also using as a measure of inequality the ratio of income per capita of the top 20% of the income distribution to that of the bottom 20% (data from WIID2 and WDI).

In addition, we use a series of control variables to capture confounding factors in the correlation between slavery and inequality. We save the discussion on the relevance of these control variables for later. The variables are chosen as measures of institutional development, public good provision, access to credit, and geographic characteristics. The institutional variables are an index of political rights and civil liberties from Freedom House (from Easterly and Levine, 2003); an index of property rights (from Holmes et al., 1997); and an index of perceived corruption, bureaucracy quality, and political risk from Political Risk Services (also from Easterly and Levine, 2003). The measures of public goods and access to credit in 2000 are credit as a percentage of GDP (from the World Development Indicators), average schooling (from the Barro & Lee Dataset), percentage of population with access to sewerage, and number of hospital beds per 1000 inhabitants (from the CIA World Factbook). Finally, the geographic variables are latitude, percentage of territory in areas of tropical climate, average temperature, and relative suitability for wheat and sugar-cane cultivation (from Gallup et al., 1999 and Easterly, 2007). In some robustness exercises, we also use the proportion of blacks and indigenous people in the current population, taken from the CIA World Factbook.

All variables used in the paper, with respective sources and descriptive statistics, are listed in Appendix Table A1.

3.2. Descriptive analysis

After constructing our variable of arrival of African slaves and merging it with data on income inequality, we end up with a sample of 46 countries.[5] Extensive use of African slavery in our sample was concentrated in the North of Africa and the Americas. Among these, Brazil, some Northern South American countries, and the Caribbean were the areas that received the highest number of slaves as a percentage of the local population. Considering the average flow of slaves in each 25-year interval, this number varied from above 10% in countries like Brazil, Haiti, and Jamaica, to below 1% in Bolivia, Canada, and Italy.

Fig. 1 displays the cross-country relationship between use of slavery and current inequality. Fig. 1a shows income inequality (Gini coefficient) on the vertical axis plotted against our variable indicating the use of African slavery (in logs) on the horizontal axis. There is a positive correlation between the two variables, but it seems to be challenged by the group of countries in the upper-left portion of the figure. Not surprisingly, these are all former Spanish colonies with large native populations and thought to have relied heavily on native slavery: Bolivia, Colombia, Chile, Ecuador, Mexico, Paraguay, and Peru.[6] Fig. 1b shows income inequality (Gini coefficient) on the vertical axis plotted against our variable indicating the use of native slavery on the horizontal axis. This figure complements the previous one, showing that also there seems to be a positive correlation between use of native slavery – or existence of originally large indigenous populations in former colonies – and current inequality (see Fig. 1).

Fig. 1 indeed suggests that intensity of use of slavery in the historical past is correlated with current levels of inequality. Still, there may be other omitted factors simultaneously determining historical use of slavery and current levels of inequality. We discuss these possibilities and our strategy to address other potential concerns in the next subsection.

3.3. Empirical strategy

Our goal is to present evidence that the pattern of correlation shown in Fig. 1 derives from the effect of slavery use on current inequality, not from other variables that may be simultaneously correlated with both. In order to develop this argument more formally, we estimate linear regressions of the following type:

$$Gini_i = \alpha + \beta \cdot African\_slavery_i + \theta \cdot native\_slavery_i + X_i'\delta + \varepsilon_i, \quad (1)$$

where $Gini_i$ denotes the Gini coefficient for country i, $African\_slavery_i$ is the natural logarithm of the average number of slaves received in each 25-year interval up to 1866 divided by the population at the time, $native\_slavery_i$ is the ratio of native population in 1500 to population in 1850 for the Americas (and zero for other countries), X_i is a set of country characteristics, ε_i is a random term, and α, β, θ, *and* δ are parameters.

[4] The following countries and islands are excluded from our analysis due to lack of data on the relevant socioeconomic variables: Bermuda, Guadeloupe, French Guiana, American Virgin Islands, British Virgin Islands, Martinique, and Netherlands Antilles.

[5] For the interested reader, the total number of African slaves received by each country, constructed according to the strategy outlined in Section 2, is listed in Appendix Table A.2.

[6] El Salvador constitutes somewhat of a problem in terms of our strategy for constructing the African slavery variable. Despite the fact that it is mentioned in the literature as having received African slaves, it has no black population today. So we have no way of reassigning part of the total number of slaves received by the aggregate area Spanish Central America to it. Still, we keep El Salvador in the sample in order to maintain a consistent methodology for all the countries initially chosen for the analysis (we attribute a value of 1 slave received in order for the natural logarithm to be well defined).

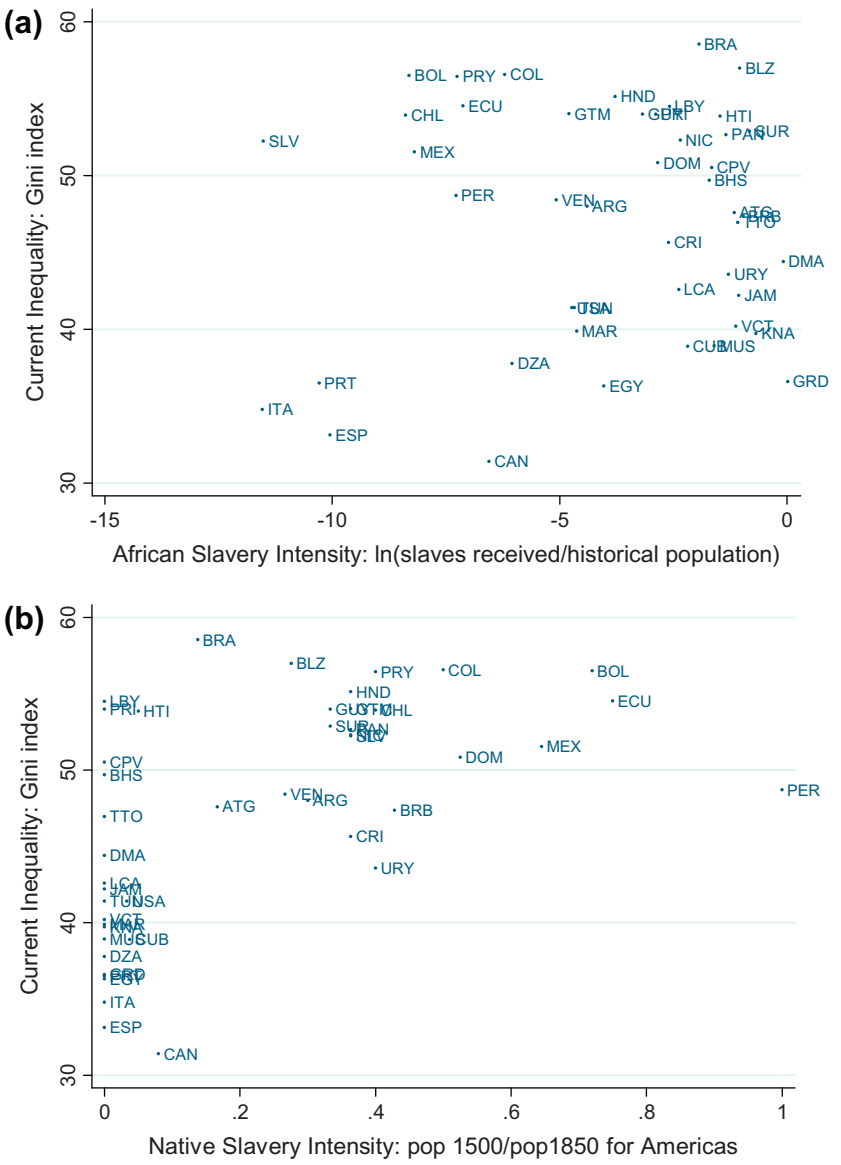

Fig. 1. Colonial use of slavery and current inequality.

Almost all specifications presented include in X_i the current income per capita and its square, to account for a supposedly inverted-U-shaped relationship between income per capita and income inequality, first noticed by Kuznets (1955) and more recently documented by Higgins and Williamson (1999) and Glaeser and Jovanovic (2005). The regression with our African and native slavery variables and these two additional controls is what we call our benchmark specification. Following, we include different sets of controls, trying to account for factors that may be correlated to use of slavery and that have been pointed out before in the literature as potential determinants of inequality in the long-run.

Our benchmark specification also allows the variance of observations to be inversely proportional to the country's current population (we use current population as analytical weights in the regressions). Several countries in our sample have very small populations, so that any measurement error in the estimate of number of slaves received could generate large errors in our African slavery variable. These would translate into higher variance for countries with smaller populations. So we weight the regressions and use robust standard errors in the estimation.

The first alternative story to the main hypothesis of the paper is that proposed by Easterly (2007), based closely on Engerman and Sokoloff (1997), or the related version presented in Leamer et al. (1999). According to this view, it is geography that determines the use of slavery and, through slavery, the current levels of inequality observed across countries. This interpretation is consistent with the evidence presented by Lagerlöf (2005), who shows that the historical distribution of slaves within the US was highly correlated with measures of climate and geography, such as precipitation, elevation, and average

Table 1
Travel costs and slavery, cross-country.

	(1)	(2)	(3)	(4)
Panel A: Dependent variable is average mortality rate of slaves by destination port				
Dist from Africa (days)	0.00201***	0.00205***	0.00204***	0.00148**
	(0.000617)	(0.000646)	(0.000667)	(0.000589)
% successful trips		−0.0827	−0.0790	−0.0964*
		(0.0549)	(0.0572)	(0.0537)
Latitude			0.0370	−0.0872
			(0.0688)	(0.0733)
Temperature				−0.00556**
				(0.00231)
Constant	0.0222	0.0900	0.0807	0.293***
	(0.0431)	(0.0568)	(0.0572)	(0.0882)
Observations	27	27	27	27
R-squared	0.299	0.332	0.335	0.422

	(5)	(6)	(7)	(8)	(9)
Panel B: Dependent variable is total number of slaves (ln) received by destination port					
Slave mort rate	−8.734	−9.000	−10.55	−8.515**	−10.86**
	(6.109)	(6.079)	(6.714)	(3.825)	(4.724)
Dist from Africa (days)	0.00769	0.00794	0.00434		
	(0.0256)	(0.0254)	(0.0265)		
% Successful trips	5.563***	5.721***	5.390***	6.074***	5.465***
	(1.629)	(1.663)	(1.684)	(1.479)	(1.583)
Latitude		1.772	0.343	1.812	0.0285
		(1.934)	(2.830)	(1.834)	(2.420)
Temperature			−0.0665		−0.0808
			(0.0801)		(0.0572)
Constant	6.954***	6.530***	9.192**	6.658***	9.861***
	(1.551)	(1.594)	(4.368)	(1.520)	(3.281)
Observations	27	27	27	29	29
R-squared	0.339	0.351	0.366	0.401	0.425

Obs.: Robust standard errors in parentheses. Dependent variable is the average Gini index of the income distribution in 1996–2005. Independent variables are the logarithm of the GDP per capita in 2005, the squared value of the logarithm of the GDP per capita in 2005, and the dummy variable indicating the existence of native slavery. Country level observations.
* Significance at 10%.
** Significance at 5%.
*** Significance at 1%.

temperature. Leamer et al. (1999) discuss a similar relationship between natural resources and inequality, but claim that current endowments may also be directly related to inequality, irrespective of their historical effects.

Our interpretation is intimately related to Easterly's (2007), but argues that there was enough variation in the use of slavery across areas with similar geographic conditions that it was indeed the actual use of slavery, and not underlying geographic conditions, that ultimately led to current inequality. In order to present some exploratory evidence in this direction, we look at the TSTD and analyze the correlates of slavery death rates during the transatlantic travels and of the total number of slaves received by each port. The TSTD has data for a little less than 30 receiving countries on slave mortality rate, travel distance from Africa, percentage of successful trips, in addition to data on number of slaves received by each receiving port. In Table 1, Panel A, we regress slave mortality rates on travel time, percentage of successful trips, latitude, and temperature.[7] Following, in Panel B, we regress the total number of slaves received by destination port on these same variables, plus survival rates during the transatlantic trips. Our results on mortality confirm what was found by Galeson (1986) using data from the Royal African Company's trade between 1673 and 1725: slave mortality per voyage was significantly related to the length of the journey. In addition, the results from Panel B indicate that, controlling for geographic characteristics, the total number of slaves received by each destination was significantly related to important dimensions of the cost of travel. Destinations with routes that had typically higher mortality rates and lower percentage of successful trips received a lower total number of slaves.

Eltis (2001) suggests that around 9.5 million slaves were disembarked in destination ports in the Americas and Africa, for a total of 11 million slaves embarked at shipping ports in Africa. The difference between number embarked and disembarked may partly reflect measurement error, but is probably mostly associated with the high mortality rate during the long travels (the simple comparison would suggest a mortality rate close to 15%, similar to what was documented by Galeson (1986), based on Royal African Company's records). This implies that mortality rates were indeed very high and should have been a relevant cost in the decision regarding trade and transportation.

[7] We use only these two geographic characteristics because of the small sample that we have with data on travel characteristics from the TSTD. Using any of the other geographic variables we use later on would imply a further reduction of virtually 50% in the sample.

Table 1 suggests that, even controlling for geographic characteristics, dimensions related to the costs of travel did impact the final number of slaves received in different countries. Still, to control for the possibility that geography and climate were the main drivers of slave use during the colonial era, we use as controls in our empirical specification the indicators of geographic conditions mentioned before: latitude, percentage of territory in tropical areas, average temperature, and relative suitability for wheat and sugar-cane cultivation.

Another possibility is that certain types of colonization were associated both with bad institutions and use of slavery. It is then possible that bad institutions led to concentration of economic and political power and these led to increased inequality in the long-run. This point, also made by Engerman and Sokoloff (2006), is a straightforward extension of the logic underlying Acemoglu et al. (2001, 2002) and Easterly and Levine (2003). It would imply that slavery would simply be a proxy for the quality of institutions during colonial times, which would be persistent and, therefore, still reflected in the quality of institutions today. To account for this possibility, we control for measures of current institutional quality commonly used in the literature: indices of political rights, civil liberties, property rights, and quality of the bureaucracy.

Finally, and closely related to the point above, the initial polarization of society may be also related to lower provision of public goods and, through poor property rights, to lack of access to credit. These, in turn, may be seen as the underlying causes behind lack of social mobility and economic inequality. To address this alternative story, we control for 2000 levels of credit as a percentage of GDP, average schooling, percentage of households with access to sewerage, and number of hospital beds per 1000 inhabitants.

Given the limited number of observations in our dataset, we first include each of these variables one at a time (some imply substantial loss in terms of number of observations). Following, we combine sets of variables from each alternative group of controls, but in such a way as to maintain the largest number of observations possible, so that we do not lose too many degrees of freedom.

The last exercises conducted in the paper deal with concerns related to the source of variation driving our results and try to identify the channel of transmission of the effect of slavery. We discuss these in detail when presenting the results, in the end of the next section.

4. Results

Table 2 displays the results from our benchmark specification. In the first column, we present a simple regression of inequality on use of African slavery. Following, we add our native slavery variable and, then, income per capita (ln) and its square. We find a positive and significant relationship between historical use of African slavery and current inequality in all cases. The coefficient increases substantially when the native slavery variables is added to the specification, and remains virtually unchanged when we control for the non-linear relation with income per capita. The native slavery variable also displays a consistent positive sign, indicating that use of native slavery was associated with increased inequality. In terms of income per capita, the coefficients on the linear and squared term indicate that a Kuznets' curve type of relationship seems to be present in our sample. We save the discussion on the magnitude of the estimated coefficients for the end of this section.

In Table 3, we deal with potential concerns related to measurement in various dimensions. First, instead of using the Gini index as our inequality variable, we use the ratio of income per capita of the top 20% of the income distribution to that of the bottom 20%. The result is displayed in column 1 and shows that we find a similar effect with this alternative inequality variable.

Table 2
Slavery and income inequality, cross-country.

	(1)	(2)	(3)
Dependent variable: Income inequality (Gini index)			
African slavery variable	1.385*	1.931***	1.900***
	(0.792)	(0.672)	(0.489)
Native slavery variable		22.91***	18.91***
		(4.789)	(5.287)
Ln(gdp)			31.35*
			(18.14)
$Ln(gdp)^2$			−1.805*
			(1.012)
Constant	53.44***	51.93***	−80.94
	(5.542)	(4.716)	(77.85)
Obs	46	46	46
R-sq	0.184	0.606	0.672

Obs.: Robust standard errors in parentheses. Dependent variable is the Gini index of the income distribution in 1996–2005. Independent variables are the ln of the average of the number of African slaves received in each 25-year interval divided by historical populations (African slavery variable), population in 1500 divided by population n 1850 (native slavery variable), logarithm of the GDP per capita in 2000, and the squared value of the logarithm of the GDP per capita in 2000. Country level observations.

* Significance at 10%.

** Significance at 5%.

*** Significance at 1%.

In columns 2 and 3, we use alternative indicators of the use of African slavery: we first consider the total number of slaves received divided by the 1800 population and, then, the fraction of slaves in the 1750 population, from Nunn (2008b). Using our alternative variable of total number of slaves received divided by 1800 population, there is virtually no noticeable difference from the previous results. With the fraction of slaves in total population in 1750, we end up with a much smaller sample and the results are not statistically significant (though positive).

Finally, in the last four columns, we use alternative measures of native slavery. Our variable indicating the use of native slavery was inspired by the argument of Engerman and Sokoloff (1997). Acemoglu et al. (2002) have suggested that urbanization in 1500 is also a good indicator of the extent to which metropolises relied on the use of native slavery in their colonies. With this in mind, we use urbanization in 1500, population density in 1500, and a dummy variable equal to 1 if density in 1500 was above 1 (native slavery dummy) as alternative indicators of native slavery. Based on Whitehead (2011) and Gallay (2010), we also use a dummy variable equal to 1 when the country was a Spanish colony, trying to capture the extensive use of native slavery in the Spanish America. The results on the variable indicating the use of African slavery are qualitatively identical to those obtained before, even though the coefficient varies a little from specification to specification. On the variables measuring native slavery, results tend to be similar or weaker than those from Table 2. So we stick to our original variables indicating inequality and use of African and native slavery throughout the remainder of the paper.

Following, Table 4 addresses the issue of confounding factors in the correlation between historical use of slavery and current inequality. Panel A presents the results controlling for different sets of geographic characteristics, Panel B presents those controlling for institutional characteristics, and Panel C those related to access to credit and public goods. In this table, we include each variable at a time, to try to capture whether the correlation portrayed in Fig. 1 can be directly attributed to some specific dimension of geography, institutional development, or public good provision. With few exceptions, the results related to the variables indicating use of slavery are very similar to those obtained before, even in terms of point estimates. The few exceptions in which there is a noticeable change in estimated coefficients – column 4 in Panel A and column 10 in Panel C – tend to be associated with major losses in terms of number of observations. In addition, once we control for use of slavery, few of the additional geographic, institutional, and public goods controls turn out to be significant. Still, we do find a significant relationship between inequality and latitude (negative), fraction of the territory in a tropical area (positive), political rights (negative), and education (negative). The only case where we observe a change in magnitude of the coefficients without major losses in terms of number of observations is that of column 2 of panel A.

These results suggest that the correlation of inequality with historical use of slavery is stronger than its correlation with the dimensions of geography, institutions, and public goods provision typically considered in the literature. This evidence is somewhat reassuring, since some of these variables are measured simultaneously to inequality, being therefore potentially endogenous. Even in this setting, the correlation between slavery and inequality seems to be stronger than that between inequality and any of these other dimensions.

A natural next step is to ask whether the relationship between slavery and inequality also survives the simultaneous inclusion of different sets of control variables. Institutional quality may be an important determinant of long-run inequality conditional on geographic characteristics, so this is an authentic concern. In order to address this issue, we present in Table 5 the results from multivariate regressions that include different combinations of the controls used in Table 4. In order not to lose too many degrees of freedom, we choose from each group of variables two that guarantee that we maintain at least 40 observations, and that seem to be more important based on the results from Table 3. These are: latitude and temperature from the geographical variables; the indices of political rights and civil liberties from the institutional indicators; and sewerage coverage and hospital beds per 1000 inhabitants from the public goods variables. In the first three columns of Table 5, we use different combinations of these three groups of variables and, in the fourth column, we use all of them simultaneously. The results related to the variable indicating use of African slavery are again qualitatively very similar to those from Table 2, despite a drop in the size of the coefficient. The results on the variable related to use of native slavery have a similar behavior in terms of magnitude, but cease to be statistically significant. Still, the coefficient is similar to that estimated in columns 2 and 4 of panel A from Table 4. So it is difficult to tell whether significance is lost due to reduced degrees of freedom when we include several controls simultaneously. Overall, controlling for geographic characteristics, institutional quality, and public goods, we still find that use of slavery is correlated with current levels of inequality.

In Table 6, we try to understand the source of variation generating our main results and also deal with potential concerns related to the sample. We first run our benchmark specification in two restricted samples: (i) excluding African countries (Northern Africa and islands), since one might be concerned that the nature of historical slavery in Africa is very different from that observed elsewhere (see Nunn, 2008a); and (ii) excluding European countries (Italy, Portugal, and Spain), given that they were not colonies and, therefore, the use of slavery was much more limited. Following, we run again our benchmark specification without weighting the regression by current population. Finally, we run the unweighted regression considering only observations with higher quality Gini data, and then run the unweighted regression with higher quality Gini data using a robust regression strategy that is less sensitive to outliers (iteratively reduces the weight attributed to extreme observations). The results are presented in Table 6.

In the first two columns, when we change the sample, the variable indicating the intensity of use of African slavery changes magnitude a bit, but remains positive and statistically significant, while the dummy for native slavery loses significance when we exclude Africa from the sample. So our results do not seem to be driven exclusively by differences across Africa, the Americas, and Europe. Excluding the first or last group of countries each at a time, we still find a robust correlation between use of

Table 3
Alternative measures, cross-country.

	Alternative dep. variable	Alternative African slavery variables		Alternative native slavery variables (positive values for Americas only)			
	Income ratio (20% Top/20% Bottom)	Ln(total received/pop 1800)	Fraction of slaves in 1750	Urbanization in 1500	Pop density in 1500	Native slavery dummy	Colonized by Spain dummy
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable: Income inequality (Gini index, if not otherwise mentioned)							
African slavery	1.547***	1.780***	20.86	1.884***	1.412***	1.789***	1.744***
	(0.416)	(0.504)	(12.19)	(0.471)	(0.463)	(0.493)	(0.521)
Native slavery	10.30**	19.03***	8.418	4.193***	0.491	8.411***	7.456**
	(4.150)	(5.557)	(10.68)	(1.366)	(0.539)	(2.837)	(3.614)
Ln(gdp), $Ln(gdp)^2$	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	39	46	27	42	46	46	46
R-sq	0.627	0.638	0.800	0.620	0.475	0.562	0.568

Obs.: Robust standard errors in parentheses. When not otherwise mentioned, dependent variable is the Gini index of the income distribution in 1996–2005, and independent variables are the ln of the average of the number of African slaves received in each 25-year interval divided by historical populations (African slavery variable), population in 1500 divided by population *n* 1850 (native slavery variable), logarithm of the GDP per capita in 2000, and the squared value of the logarithm of the GDP per capita in 2000. Alternative dependent variables is the ratio of the average income of the top quintile of the income distribution to that of the bottom quintile. Alternative African slavery variables are: (i) ln of the total number of slaves received divided by 1850 population; and (ii) fraction of slaves in the population in 1750. Alternative native slavery variables are: (i) level of urbanization in 1500; (ii) population density in 1500; (iii) native slavery dummy, equal to 1 if population density in 1500 is above 1; and (iv) dummy indicating that the country was colonized by Spain. Country level observations.

* Significance at 10%.
** Significance at 5%.
*** Significance at 1%.

Table 4
Robustness – institutions, geography, credit and public goods, cross-country.

Dependent variable: Income inequality (Gini index)				
	Suitability for wheat (1)	Latitude (2)	Temperature (3)	Tropical area (4)
Panel A: Geography				
African slavery variable	1.974***	0.929***	1.751***	1.195***
	(0.483)	(0.260)	(0.425)	(0.255)
Native slavery variable	18.55***	9.811**	21.79***	11.14**
	(5.836)	(4.633)	(7.438)	(4.921)
Geographical variable	0.649	−40.87***	0.380	10.96***
	(12.92)	(7.849)	(0.443)	(3.170)
Ln(gdp), Ln(gdp)^2	Yes	Yes	Yes	Yes
Obs	28	43	43	34
R-sq	0.723	0.810	0.697	0.778
	Political rights index (5)	Civil liberty index (6)	Property rights index (7)	Bureaucracy index (8)
Panel B: Institutions				
African slavery variable	1.902***	1.928***	1.944***	1.977***
	(0.378)	(0.423)	(0.507)	(0.425)
Native slavery variable	16.92***	17.40***	19.15***	21.62***
	(4.868)	(5.079)	(5.335)	(6.103)
Institutional variable	−2.009*	−1.780	0.227	−3.967
	(1.126)	(1.530)	(1.964)	(2.467)
Ln(gdp), Ln(gdp)^2	Yes	Yes	Yes	Yes
Observations	41	41	37	34
R-squared	0.730	0.712	0.683	0.721
	% Credit in GDP (9)	Schooling (10)	Sewage (11)	Hospital beds (12)
Panel C: Credit and public goods				
African slavery variable	1.943***	2.408***	1.901***	2.022***
	(0.479)	(0.354)	(0.448)	(0.409)
Native slavery variable	19.31***	30.14***	17.72***	22.74***
	(5.780)	(5.582)	(6.245)	(8.167)
Credit/p. good variable	0.0241	−3.473***	−0.0735	1.674
	(0.0659)	(1.004)	(0.123)	(1.515)
Ln(gdp), Ln(gdp)^2	Yes	Yes	Yes	Yes
Observations	41	33	41	41
R-squared	0.700	0.816	0.702	0.711

Obs.: Robust standard errors in parentheses. Dependent variable is the Gini index of the income distribution in 1996–2005. Independent variables are the ln of the average of the number of African slaves received in each 25-year interval divided by historical populations (African slavery variable), population in 1500 divided by population *n* 1850 (native slavery variable), logarithm of the GDP per capita in 2000, and the squared value of the logarithm of the GDP per capita in 2000, and alternative variables related to geography, institutions, credit and public goods (explained in detail in the text). Each column in each panel presents the results of a regression with country level observations.

* Significance at 10%.
** Significance at 5%.
*** Significance at 1%.

African slavery and current inequality. In the last three columns, when we are not weighting the regressions, results remain statistically significant for both slavery variables, but coefficients are considerably smaller for the African slavery variable.

Even though our results are mostly exploratory, it is worth considering their quantitative implications. Taking the coefficients from column 4 of Table 5, our most complete specification, as reference, consider a couple of illustrative exercises. The first coefficient implies that if a country like Brazil had used African slavery to an extent similar to that of Canada, its Gini coefficient today would be lower by 4.8 points. This result is only slightly larger than the effect of a movement from the 75th percentile of the distribution of our African slavery variable to the 25th percentile, which would correspond to a reduction of 5.6 points in the Gini. Similarly, if a country like Mexico had a native slavery variable at the level of that from Argentina, its current Gini coefficient would be lower by 4 points (a movement from the 75th to the 25th percentile of the native slavery variable distribution would correspond to a reduction of 4.2 points in the Gini).

Overall, if all countries had the lowest level of use of African slavery observed in the sample, the average Gini index would be 7.7 points lower (from 47.0 to 39.3). If, on top of that, there was also no use of native slavery, the average Gini would be lower by 2.5 additional points (36.8). To illustrate the estimated effect of slavery on the distribution of Gini coefficients, Fig. 2 plots the results of these exercises for all countries included in the sample (countries are ordered according to actual levels of inequality).

In our last table, we try to explore a bit the channels through which the use of slavery may have impacted current inequality. A first issue is related to whether the shocks represented by the arrival of slaves were permanent. One way to

Table 5
Robustness II – institutions, geography, credit and public goods jointly, cross-country.

	(1)	(2)	(3)	(4)
Dependent variable: Income inequality (Gini index)				
African slavery variable	1.041***	1.031***	1.959***	1.044***
	(0.309)	(0.263)	(0.338)	(0.357)
Native slavery variable	10.32	10.95	21.72***	11.57
	(7.222)	(9.603)	(7.913)	(11.15)
Geography (latitude and temperature)	Yes	Yes	No	Yes
Institutions (political rights and civil liberty)	Yes	No	Yes	Yes
Credit and public goods (sewage and hospital beds)	No	Yes	Yes	Yes
F of additional controls	11.14	7.11	1.28	8.43
(*p*-value)	(0.00)	(0.00)	(0.30)	(0.00)
Ln(gdp), Ln(gdp)^2	Yes	Yes	Yes	Yes
Obs	41	40	40	40
R-sq	0.822	0.827	0.766	0.828

Obs.: Robust standard errors in parentheses. Dependent variable is the Gini index of the income distribution in 1996–2005. Independent variables are the ln of the average of the number of African slaves received in each 25-year interval divided by historical populations (African slavery variable), population in 1500 divided by population *n* 1850 (native slavery variable), logarithm of the GDP per capita in 2000, and the squared value of the logarithm of the GDP per capita in 2000, and different configurations of the variables related to geography, institutions, credit and public goods enumerated above (explained in detail in the text). We consider variables within each group with at least 40 observations. Country level observations.

* Indicates significance at 10%.
** Significance at 5%.
*** significance at 1%.

Table 6
Sample variations, cross-country.

	Excluding Africa (1)	Excluding Europe (2)	Unweighted (3)	Unweighted, excluding lower quality Gini (4)	Unweighted, excluding lower quality Gini, outlier robust (5)
Dependent variable: Income inequality (Gini index)					
African slavery variable	1.518***	2.507***	0.606**	0.706**	0.648*
	(0.288)	(0.849)	(0.258)	(0.293)	(0.345)
Native slavery variable	8.058	23.24***	17.16***	16.85***	18.36***
	(4.918)	(8.091)	(4.360)	(4.483)	(4.474)
Ln(gdp), Ln(gdp)^2	Yes	Yes	Yes	Yes	Yes
Obs	39	43	46	40	40
R-sq	0.789	0.618	0.445	0.485	0.470

Obs.: Robust standard errors in parentheses. Dependent variable is the Gini index of the income distribution in 1996–2005. Independent variables are the ln of the average of the number of African slaves received in each 25-year interval divided by historical populations (African slavery variable), population in 1500 divided by population n 1850 (native slavery variable), logarithm of the GDP per capita in 2000, and the squared value of the logarithm of the GDP per capita in 2000. Sample variations indicated on each column (lower quality Gini information are those observations not coming from the WIID2 nor from the WDI). Country level observations.

* Significance at 10%.
** Significance at 5%.
*** Significance at 1%.

test that is to see the relationship between our variable measuring arrival of African slaves and fraction of slaves in the population in the historical past, or fraction of blacks in the current population. In columns 1 and 2 of Table 7, we keep the same basic specification that was used up to now, but replace the dependent variable by, respectively, fraction of slaves in the population in 1750 and percentage of blacks in the population today. The results show that our variable measuring intensity in the use of African slavery is significantly and positively related to fraction of slaves in the population in 1750 and fraction of blacks in the population today. The point estimates suggest that if Canada had used slavery at the same level observed in Brazil, its fraction of slaves in the population in 1750 would have been 28.8 percentage points higher, and the fraction of blacks in the population today would be 6.5 percentage points higher. In the third column, we keep the fraction of blacks in the population today as the dependent variable, but use the fraction of slaves in the population in 1750 as an additional control. The coefficient on our African slavery variable becomes negative (though small in magnitude) and looses statistically significance, while the coefficient on the percentage of slaves in 1750 turns out to be positive and borderline statistically significant. Even though there is a substantial loss in terms of number of observation from columns 2 to 3, so that the results should be seen with caution, the numbers do suggest that the relationship between number of slaves received and current black population worked through the fraction of slaves in the population during historical times, as one should expect.

In the last two columns, we look again at inequality as the dependent variable, but now control for fraction of blacks and natives in the population today, and then also for the fraction of slaves in 1750. In column 4, when we control only for frac-

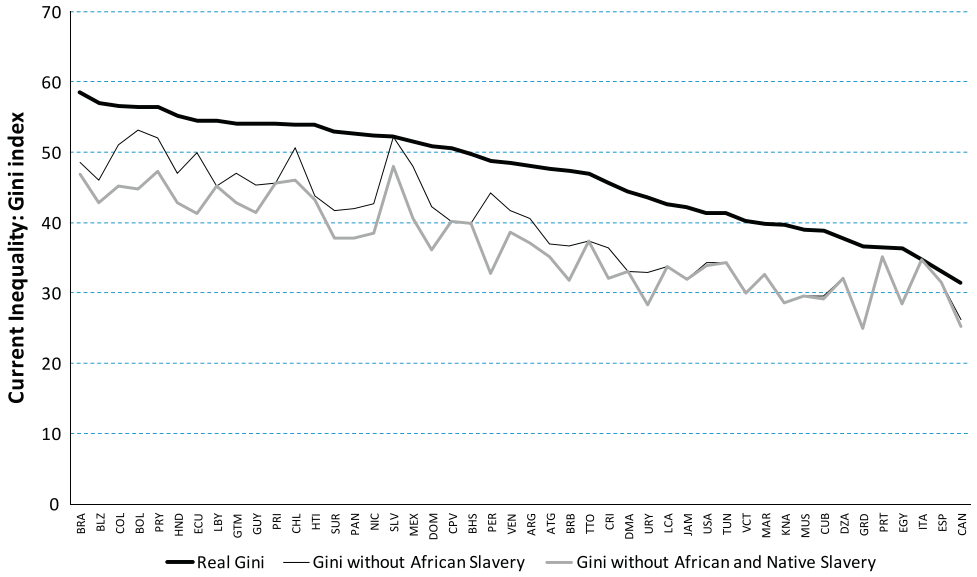

Fig. 2. Actual and simulated distribution of Gini coefficients with and without slavery (ordered from top to bottom of actual distribution).

Table 7
Channels, cross-country.

Dependent variable	Different dependent variables			Controlling for Slaves in 1800 and % black today	
	% Slaves in 1750 (1)	% Black today (2)	% Black today (3)	Gini (4)	Gini (5)
African slavery variable	0.0626***	0.0141***	−0.0263	1.724***	−0.860
	(0.0175)	(0.00327)	(0.0183)	(0.511)	(0.960)
Native slavery variable	−0.171	0.0448	−0.0330	18.42**	11.79
	(0.159)	(0.0460)	(0.111)	(7.814)	(16.08)
% of slaves in 1750			0.506*		28.46*
			(0.252)		(15.39)
% Black today				12.36	
				(9.946)	
% Indigenous today				−0.158	−11.06
				(13.33)	(17.20)
Ln(gdp), Ln(gdp)^2	Yes	Yes	Yes	Yes	Yes
Obs	27	47	27	46	27
R-sq	0.858	0.362	0.698	0.686	0.810

Obs.: Robust standard errors in parentheses. Dependent variables are the % of slaves in the population in 1800, the % of blacks in the current population, or the Gini index of the income distribution in 1996–2005. Independent variables are the ln of the average of the number of African slaves received in each 25-year interval divided by historical populations (African slavery variable), population in 1500 divided by population *n* 1850 (native slavery variable), logarithm of the GDP per capita in 2000, and the squared value of the logarithm of the GDP per capita; % of slaves in 1800 and % of blacks in the current population also used as controls in some specifications. Country level observations.

* Significance at 10%.
** Significance at 5%.
*** Significance at 1%.

tion of blacks and natives in the current population, results remain very similar to what we had before. This suggests that the effect of use of slavery on inequality was not due simply to the direct impact on the composition of the population (fraction of blacks, natives, and Europeans). There is a positive relationship between slavery and inequality even after controlling for the ethnic composition of the current population. In column 5, when we control for fraction of slaves in 1750, the coefficient on our African slavery variable drops again in magnitude (becoming even negative, but not statistically significant), while the fraction of slaves in 1750 turns out to be positive and borderline statistically significant (different from the results from Table 3, where we did not include both measures of slavery simultaneously). Though once more this should be interpreted with caution, given the major loss in number of observations in column 5, the result suggests that the impact we measure with our African slavery variable is indeed working through slavery itself, not only through the fraction of blacks in the population. This indicates that political economy channels, such as the ones mentioned in the introduction and discussed by Engerman and Sokoloff (2002), must have played a role in the persistency of inequality.

5. Concluding remarks

In this paper, we use various sources to compile a database containing information on the number of African slaves received by each destination country between the 16th and 19th centuries. We then construct a measure of intensity of African slavery use based on the flow of slaves received divided by historical population levels. We account for the use of native slavery by creating a variable based on the relative importance of native populations for former colonies in the Americas.

Our empirical exercises show that historical use of slavery is significantly correlated with current levels of inequality. The correlation between slavery and inequality survives the inclusion of variables controlling for development, geographic characteristics, institutional quality, and provision of public goods. Estimated coefficients suggest that, in the absence of any type of slavery, the average Gini index in the sample would be lower by 10 points, indicating that historical use of slavery may be an important determinant of the levels of inequality observed still today.

Appendix A

See Tables A1 and A2.

Table A1
Data: definitions, sources, and summary statistics.

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
African slavery variables						
Main African slavery variable	Average of ratio of number of slaves received to local population in each 25 year interval, calculated from the TSTD, Austen (1988, 1992) and McEvedy and Jones (1978)	53	0.181	0.253	0.000	1.016
Total received/pop 1800	Ratio of the total number of slaves received to the local population in 1850, calculated from the TSTD, Austen (1988 and 1992), and McEvedy and Jones (1978)	53	1.411	1.800	0.000	8.043
% Slaves in 1750	% Slaves in the population in 1750, from Nunn (2008b)	28	0.464	0.358	0.003	0.949
Native slavery variables						
Main native slavery variable	Ratio of local population in 1500 to local population in 1850, calculated from McEvedy and Jones (1978)	53	0.197	0.243	0.000	1.000
Urbanization in 1500	Urbanization level in 1500, from Acemoglu et al. (2002); set to equal to zero outside the Americas	42	0.893	0.959	0.000	4.620
Population density in 1500	Ratio of local population in 1500 (from McEvedy and Jones, 1978) to current area; set to equal to zero outside the Americas	53	3.891	19.356	0.000	139.535
Native slavery dummy	Dummy variable equal to 1 if population density in 1500 > 1	53	0.509	0.505	0.000	1.000
Colonized by Spain dummy	Dummy variable equal to 1 if country was colinized by Spain	53	0.358	0.484	0.000	1.000
Inequality variables						
Gini_final	Average Gini index for the income distribution from WIID2, WDI, Caribbean Development Bank Country Poverty Assessment Reports and from Maurício (2001)	46	47.043	7.484	31.383	58.550
Income ratio	Ratio of average income of top quintile of the income distribution to that of the bottom quintile, from WIID2 and WDI	39	14.344	6.004	5.650	26.630
Other country characteristics						
gdp_wb_2000	GDP per capita at 2000 US$, from WDI	47	7183.94	10028.90	423.87	56459.16
% Black today	% of current population composed by blacks, from the CIA World Factbook	53	0.313	0.363	0.000	0.950
%Native today	% of current population composed by indigenous natives, from the CIA World Factbook	53	0.059	0.132	0.000	0.550
Suitability for wheat	Relative suitability for wheat relative to sugar-cane cultivation, from Easterly (2007)	28	−0.016	0.195	−0.393	0.383
Latitude	Latitude coordinate of the country's centroid	50	0.218	0.129	0.022	0.667
Temperature	Average temperature, from Gallup et al. (1999)	50	22.500	5.112	4.000	27.000
Tropical area	% of the country's territory in a tropical area, from Gallup et al. (1999)	35	0.649	0.448	0.000	1.000
Political rights index	Political rights index, from Easterly and Levine (2003)	41	2.854	1.564	1.000	6.610
Civil liberties index	Extent of civil liberties index, from Easterly and Levine (2003)	41	3.040	1.362	1.000	6.610
Property rights index	Property rights enforcement index, from Holmes et al. (1997)	37	3.135	1.182	1.000	5.000
Bureaucracy index	Bureaucracy quality index, from Easterly and Levine (2003)	34	2.191	0.871	0.000	4.000
% Credit in GDP	Ratio of credit to GDP in 2000,from WDI	41	46.425	26.231	5.640	124.000
Schooling	Average schooling in population above 25, from Barro & Lee dataset	33	6.172	2.221	2.670	12.250
Sewage	% Households with access to sewage, from Cia World Factbook	41	80.780	18.260	34.000	100.000
Hospital beds	Hospital beds per 1000 inhabitants, from Cia World Factbook	44	3.274	2.897	0.714	18.683

Table A2
Estimates of total number of slaves received by final destination country between 1500 and 1866, from calculation based on the TSTD, Austen (1988, 1992) and McEvedy and Jones (1978).

Country code	Total number of slaves received
ANT	22,511
ARG	63,014
ATG	138,038
BHS	36,858
BLZ	23,707
BMU	5209
BOL	3049
BRA	4797,128
BRB	291,235
CAN	8363
CHL	2113
COL	25,677
CPV	93,433
CRI	32,698
CUB	861,241
DMA	110,046
DOM	82,021
DZA	88,200
ECU	6293
EGY	1255,000
ESP	5751
GFG	30,599
GPG	284,271
GRD	128,688
GTM	32,923
GUY	72,686
HND	38,788
HTI	691,522
ITA	2038
JAM	498,044
KNA	134,149
LBY	688,600
LCA	18,447
MAR	362,000
MEX	15,700
MQM	520,710
MUS	60,000
NIC	126,270
PAN	115,377
PER	16,491
PRI	57,000
PRT	1071
PRY	2180
SUR	294,652
TTO	44,003
TUN	118,200
URY	176,157
USA	380,384
VBI	5099
VCT	58,907
VEN	40,682
VIR	108,998

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