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Latin American Inequality: Colonial Origins, Commodity Booms, or a Missed 20th Century Leveling?

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ABSTRACT

Most analysts of the modern Latin American economy have held the pessimistic belief in historical persistence -- they believe that Latin America has always had very high levels of inequality, and that it's the Iberian colonists' fault. Thus, modern analysts see today a more unequal Latin America compared with Asia and most rich post-industrial nations and assume that this must always have been true. Indeed, some have argued that high inequality appeared very early in the post-conquest Americas, and that this fact supported rent-seeking and anti-growth institutions which help explain the disappointing growth performance we observe there even today. The recent leveling of inequality in the region since the 1990s seems to have done little to erode that pessimism. It is important, therefore, to stress that this alleged persistence is based on an historical literature which has made little or no effort to be comparative, and it matters. Compared with the rest of the world, inequality was not high in the century following 1492, and it was not even high in the post-independence decades just prior Latin America's belle époque and start with industrialization. It only became high during the commodity boom 1870-1913, by the end of which it had joined the rich country unequal club that included the US and the UK. Latin America only became relatively high between 1913 and the 1970s when it missed the Great Egalitarian Leveling which took place almost everywhere else. That Latin American inequality has its roots in its colonial past is a myth.

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Latin American Inequality in the Very Long Run:
Myths and Realities

Most analysts of the modern Latin American economy have held a pessimistic belief in historical persistence. That is, they believe that Latin America has always had very high levels of income and wealth inequality, suggesting it will be hard, or even impossible, for modern policy to create a more egalitarian society. They see a more unequal Latin America today compared with Asia and the rich post-industrial nations (López and Perry 2008) and then assume that this must always have been true. Indeed, many argue that high inequality appeared very early in the post-conquest Americas, and that this fact supported rent-seeking and anti-growth institutions which help explain the region's disappointing growth performance until very recently. The ubiquitous leveling of incomes in Latin America since the 1990s (Lopez-Calva and Lustig 2010; Birdsal *et al.* 2011) and appears to have done little to erode this pessimism, especially since the recent slowdown in the region's growth seems to have stunted that income leveling (World Bank 2014). This paper argues that the persistence view is based on very limited historical evidence which has rarely been used comparatively, and it matters. Furthermore, other studies have shown that even where there is measured historical persistence, the effects decay over time (Banerjee and Iyer 2005; Nunn 2008; Bruhn and Gallego 2009). Why not Latin America?

The paper argues the following: Compared with the rest of the world, inequality was *not* high in the post-conquest decades following 1492. Indeed, it was not even high just prior to Latin America's emerging industrial growth during its 19th century *belle époque*. It did become high after the commodity boom during the *belle époque* up to 1913, but not compared with the industrial world. The history that made it a *relatively*

unequal region was the absence of a 20th century Great Egalitarian Leveling in Latin America, something that appeared in most industrial economies from World War 1 to the 1970s. That Latin American inequality has its main roots in its colonial past is a myth.

The next section places Latin American pre-industrial inequality in context by comparing it with inequality the world around over the two millennia since Rome. It turns out that there was little that was unusual about pre-industrial Latin American inequality. The paper then offers explanations for the variance in pre-industrial inequality the world around. Next, the paper uses an estimated relationship found in the pre-industrial sample to fill in the empirical gaps in Latin American inequality history from 1491 through the end of the *belle époque*. These predictions are then compared with the few but a growing number of Latin American inequality facts. Next, the paper shows that inequality at the start of the *belle époque* was no higher, and perhaps even lower, than that of the United States or Western Europe. In addition, it shows that inequality in Latin America was no higher than it was in rich industrial countries in 1913. Finally, it reports the Great Egalitarian Leveling of incomes from World War 1 to the 1970s that Latin America missed.

What Did Pre-Industrial Inequality Look Like in Latin America and How Should We Measure It?[1]

We have no evidence documenting inequality for the Inca, Aztec or other indigenous civilizations in the Americas prior to the arrival of the Iberian conquerors.[2] But we can guess. Recently, Branko Milanovic, Peter Lindert and myself (2011; hereafter MLW) collected what we call an ancient inequality data base for 29 places, ranging over

[1] This and the next section draw on Milanovic *et al.* (2011).
[2] Well, almost none. But see footnote 14 where some archaeological inequality evidence is reported.

two millennia. The sample includes four Latin American observations: Nueva España 1790, Chile 1865, Brazil 1872, and Peru 1876, although a new Mexican 1844 observation is added to the MLW sample here. Most of the MLW observations have been constructed from what are called *social tables*, sources which report average income and number of income recipients by social class and occupation, but do not report income variance within them.

Figure 1 shows what the ancient inequality data look like (see Milanovic *et al.* 2011: Table 1), where the Gini estimates are plotted against income per capita. Figure 1 also displays what we call the *inequality possibility frontier* (solid line), a curve based on the maximum inequality the elite could have extracted at that income per capita. The maximum is constructed under the assumption that everybody but the elite in such repressive societies would have gotten just the World Bank's subsistence minimum of $PPP 300 in 1990 prices. The ratio of the actual inequality to the maximum feasible inequality is called the *extraction rate*.[3] In most cases, the calculated pre-industrial Ginis lie pretty close to the inequality possibility frontier (IPF): that is, the pre-industrial elite did a pretty good job at extracting for themselves all the surplus. The countries farthest below the IPF curve – with the lowest extraction rates -- are the most advanced pre-industrial economies in northwestern Europe: that is, 1561-1808 Holland, 1788 France, and 1688-1801 England.

The inequality possibility frontier allows us to better situate these ancient pre-industrial inequality estimates in a modern context. Milanovic *et al.* (2011: Table 1) report inequality extraction rates for 25 contemporary societies. Brazil has often been cited as an extremely unequal society, driven by a long history of slavery, racial

[3] The extraction rate is not unlike an index of the percent in poverty, but where the poverty line is fixed.

discrimination and regional dualism. Indeed, Brazil's Gini in 2002 is comparable to the most unequal pre-industrial societies in our ancient inequality sample. But Brazil is more than four times richer than the average ancient society in our sample, so its maximum feasible inequality (92.7) is much higher than our ancient society average (60.6). Thus, modern Brazilian elites have extracted only a little more than 63 percent of the maximum feasible inequality, and its inequality extraction rate is about the same as what we find among the *least* exploitative and repressive ancient societies like 1801-3 England and 1886 Japan. What is true of Brazil, is also true of contemporary Chile, Mexico and Peru. All three have Ginis today well above the world average (Chile 2003 = 54.6, Mexico 2000 = 53.8 and Peru 2002 = 52 versus the world average = 40.6)[4], but all three have extraction rates well below the *least* exploitative in our ancient societies sample.

Most Latin American societies – at least those that we can document -- have much higher Ginis today than they had 150-200 years ago. Indeed, inequality has fallen over two centuries in only one Latin American republic for which even rough data exist -- Mexico 1790 = 63.5 to 2000 = 53.8, or 15 percent lower. It has been stable in another -- Chile 1865 = 54 to 2003 = 54.6. But inequality has been on the rise in the other two Latin American republics for which data exist: Brazil 1872 = 43.3 to 2002 = 58.8, or 36 percent higher; and Peru 1876 = 42.2 to 2002 = 52, or 23 percent higher.

What about *extraction rates*? As a country becomes richer, and its surplus above subsistence rises, its feasible inequality expands. Consequently, if recorded inequality is stable, the extraction rate falls. This can be seen in Figure 2 where the extraction rate is plotted against income per capita for both ancient societies and their modern

[4] The "modern" Ginis reported here are for around 2000 to avoid the leveling observed over the last decade or so in Latin America.

counterparts. Thus, the social consequences of increased inequality may not entail as much *relative deprivation* as might appear if we looked only at the recorded Gini.

The extraction rate has *fallen* everywhere in Latin America over the past century or two, and in some cases by a lot: it has fallen by 15 percent in Brazil (from 74.2 in 1872 to 63.4 in 2002), by 32 percent in Chile (from 83 in 1865 to 56.4 in 2003), by 47 percent in Mexico (from 105.5 in 1790 to 56.2 in 2000), and by 27 percent in Peru (from 78.1 in 1876 to 56.7 in 2002). While the rest of this paper will focus on actual or measured inequality, future debates over social justice and economic development will have to struggle with the implications of different trends in actual inequality and extraction rates.[5]

Fundamentals: Explaining Pre-Industrial Inequality

Next, we offer an explanation for the observed differences in pre-industrial inequality. The Kuznets hypothesis posits that inequality tends to follow a bell-shape as average real income increases. Although Kuznets formulated his hypothesis explicitly with a view toward industrializing and industrialized economies, one might wonder whether his Curve is even more apparent among our pre-industrial economies. After all, a secular inequality upswing could be easily explained by increases in per capita income: poor countries do not have much surplus for the elite to extract, but as income rises in pre-industrial economies, so does the surplus and potential inequality. In addition to log average income and its square, Table 1 includes the urbanization rate, population density

[5] The extraction rate relates well to the Acemoglu and Robinson (2006) notion of elite power. They see its maximization as a function of the expected rent which the exploitative institutions can extract (times one minus the probability of a popular uprising) minus the cost of reducing the probability of an uprising. Since the IPF traces out the *maximum* feasible inequality, it takes both the suppression cost and uprising probability as zero.

and colonial status. The regression also includes a number of controls for country-specific eccentricities in the data: the number of social groups available for calculating the Gini, whether the social table is based on tax data, and, if a colony, whether the social table includes the income of resident colonists. We expect higher inequality for the more urbanized countries (reflecting a common finding that inequality in urban areas tends to be higher than in rural areas: Ravallion *et al.* 2007), and for those that are ruled by foreign elites, since powerful colonizers are presumed to be able to achieve higher extraction rates than weaker local elites, and since countries with weak local elites but with large surpluses will attract powerful colonizers to extract it (Acemoglu, Johnson and Robinson 2001, 2002).

The empirical results confirm all expectations. Both income terms are of the right sign and significant, supporting a pre-industrial Kuznets Curve. The sign on the *urbanization rate* is, as predicted, positive, but since it competes with population density, its statistical significance is somewhat lower. Still, each percentage point increase in the urbanization rate is associated with an increase in the Gini by 0.35 points. Colonies were clearly much more unequal: holding everything else constant, colonies had a Gini almost 13 points higher than non-colonies. *Foreigner* is a dummy variable that controls for two observations (South Serbia 1455 and Levant 1596) that were colonies but where their surveys did not report the incomes and numbers of colonizers at the top. This is therefore simply another control for data eccentricity, and its negative sign shows that being a colony, but not having colonizers included in the survey, reduces recorded inequality considerably (9 to 10 points).

The number of social groups or the tax census origins of the data used in the inequality calculations do not affect the Gini in any significant way. This finding is comforting because it shows that our estimates of inequality are being driven by fundamentals, not by the way the social tables were constructed.

Population density is negatively associated with inequality. It might have been expected that the introduction of a dummy variable for the more densely populated Asia would have caused the effect of density to dissipate. This is not the case, as shown in column 2 of Table 1. The negative impact of population density on inequality seems to be counter-intuitive. After all, conventional theory would predict that more population pressure should raise land rents and lower wages, thus producing *more* inequality, not less. Furthermore, this effect should have been all the more powerful in pre-industrial societies where land and labor drove inequality not, as in modern societies, human capital and financial wealth. It seems likely that this conventional effect is being offset in the ancient economy data by two forces. First, densely populated agrarian societies also had lower per capita income, so this may have been working against the conventional force. Second, more densely populated agrarian societies must have had higher relative food prices than thinly settled or frontier societies, so that nominal subsistence had to be much higher to purchase the more expensive foodstuffs, lowering measured inequality and the extraction rate. This force must have been most powerful during the two millennia before the middle of the 19th century since a world market for grains did not yet exist and thus local conditions dictated the relative price of food (Latham and Neal 1983; Studer 2008). This second offset has important implications for comparing inequality in the labor-scarce and resource-abundant Americas with the labor-abundant and resource-scarce

Europe, and between the densely populated highlands in Mexico and the Andes relative to resource-abundant Southern Cone. [6]

The stylized picture that emerges is this: Inequality follows contours that are consistent with the Kuznets Curve, a pre-industrial secular rise to a peak, followed by a fall during modern economic growth. It follows that most of the pre-industrial Third World had probably reached very high levels of inequality by the early 19th century before what is called the first global trade boom. However, the extraction ratio tended to fall as income increased, which, of course, invited a European colonist to plunder where the potential surplus was big, but where the local elite had a relaxed extraction rate.

Has Latin America Always Been More Unequal?

Has Latin America always been more unequal than other parts of the world, as implied by Stanley Engerman and Kenneth Sokoloff (1997; 2012; Engerman, Haber and Sokoloff 2000)? Engerman and Sokoloff offered a hypothesis to account for Latin American growth underachievement during the two centuries following its independence. Their thesis begins with the plausible assertion that high levels of income inequality, and thus of political power, favor rich landlords and rent-seekers, and thus the development of institutions which are compatible with rent-seeking but incompatible with economic

[6] Rarely do even modern inequality studies assess the impact of different class-specific cost-of-living trends on *real* inequality trends. We know this mattered hugely in early modern Europe (Hoffman *et al.* 2002) and in North America from 1650 to 1913 (Lindert and Williamson 2014). We need to know whether it has also mattered at any time in Latin America since 1491. When Latin America underwent her commodity export boom during the *belle époque*, did the rise in food export prices in the Southern Cone serve to raise *real* inequality even more than *nominal* inequality? Did it have the opposite effect in Mexico, which imported cheap corn from the United States? And what about 20th century Latin American food exporters when their terms of trade collapsed 1915-1940? This ancient issue is alive and well in debates about Latin American inequality trends during the commodity boom and bust since the 1990s (World Bank 2014).

growth. Their thesis argues further that high levels of Latin American inequality have their roots in the natural resource endowments present when Iberia conquered and colonized the region five centuries ago. Exploitation of the native population and of imported African slaves, as well as their subsequent dis-enfranchisement, reinforced the development of institutions incompatible with growth. Engerman and Sokoloff had no difficulty collecting evidence which confirmed dis-enfranchisement, lack of suffrage, regressive taxation, and unequal schooling in 19th century Latin America compared with the United States. But what about comparisons with the rest of the world, and what about inequality?[7] Oddly enough, neither the Engerman-Sokoloff team nor its critics have confronted the thesis with inequality evidence from the United States or the economic leaders in northwest Europe at comparable early industrial stages.

Table 2 presents inequality information for pre-industrial northwest Europe (prior to 1800) and for pre-industrial Latin America (prior to 1880). For the former, we have observations from 1788 France, 1561 and 1732 Holland, and 1688, 1759 and 1801 England-Wales. For the latter, we have Nueva España 1790 and Mexico 1844 taken as an average, Chile 1865, Brazil 1872 and Peru 1876. Engerman and Sokoloff coined their hypothesis in terms of actual inequality. According to that criterion, their thesis must be soundly rejected. That is, the (population weighted) average Latin American Gini (48.1) was considerably *lower* than that of northwest Europe (52.9), not higher.[8] Furthermore,

[7] John Coatsworth argues that the Engerman-Sokoloff thesis has not held up well to scrutiny: "what little quantitative evidence there is does not suggest that ownership of land, or other assets for that matter, was more concentrated in Latin America than in the United States" (Coatsworth 2008: Table 2, 553). However, Coatsworth's survey of the land and wealth distribution estimates for Latin America (Coatsworth 2008: 553, and Table 2`) reveals that the first Latin America observations are for the province of Buenos Aires in 1820 and 1838, and for Rio de Janeiro in 1830. He is not able to report any colonial observations. See also Johnson and Frank (2006) and Gelman and Santilli (2006).

[8] If pre-industrial Mexican inequality is described best by the 1844 observation in Table 3, then this conclusion can be made even stronger.

the comparative inequality implications emerging for these social tables have been confirmed recently by Rafael Dobado Gonzáles and Hector Garcia (2009: Figure 18) using an inequality proxy – real GDP per capita relative to the unskilled grain wage. According to their data, Mexico, Bolivia and Colombia all had less inequality in 1820 than did the Netherlands, the United Kingdom and France, or even Portugal and Spain.

It is not true that pre-industrial Latin America was more unequal than pre-industrial northwest Europe. Nor were incomes more unequal in Latin America than the United States. In 1860, and just before the Civil War, the Gini measuring United States income inequality among all household (including slaves) was 0.51, while the Gini among all free households was 0.47 (Lindert and Williamson 2014: Table 5-6). In 1870, and after a massive redistribution of southern incomes induced by slave emancipation, the Gini for all households was still 0.51 (e. g. the inequality rise up North matched the fall down South: Lindert and Williamson 2014: Table 6-4). Thus, if inequality encouraged rent-seeking and discouraged growth in Latin America, it must have done it even more so in northwest Europe, where the industrial revolution first started, and the United States where (with a lag) it led the world! Since we know that high inequality was consistent with industrial revolutions in northwest Europe and the United States, it is unclear why it should have been inconsistent with them in Latin America.[9]

[9] True, Latin America was poorer than northwest Europe and the United States, and poorer societies have a smaller surplus for the elite to extract. Thus, *maximum feasible inequality* was considerably lower and *extraction rate* were considerably higher in Latin America than in, for example, northwest Europe (0.80 vs 0.68, Table 2). While measured inequality does not support the Engerman-Sokoloff thesis, the extraction rate does. The Engerman-Sokoloff team, their followers, *and* their critics all need to decide which of these inequality indicators matters for their hypothesis and why. To the extent that political power determines the extraction ratio, then Daron Acemoglu and James Robinson (2006) may be quite right in stressing political inequality rather than just economic inequality.

Reconstructing Latin American Inequality 1491-1870

Initial Conditions: What Was Latin American Inequality Like in 1491?

Table 3 and Figure 3 use the Gini regression equation (1) in Table 2, and estimates of the dependent variables, to predict income Ginis for Latin America in 1491 before the Iberian conquest, shortly after the conquest (call it 1492), 1600, 1700, 1790, 1820 and 1870. Table 3 also predicts Ginis for Mexico in 1820 and 1870. In addition, the table reports predictions for the five Latin American cases where we also have actual inequality estimates: i.e. Nueva España 1790, Mexico 1844, Brazil 1872, Chile 1865 and Peru 1876. While the correlation between actual and predicted inequality for those five cases is hardly perfect, it is positive and significant (R^2=0.42), a comforting result. Table 3 implies that the Gini coefficient in Latin America prior to the arrival of the Iberians was 22.5, the lowest inequality in the MLW pre-industrial sample, and Aztec archeological evidence would seem to confirm it.[10] For comparison, China in 1880 had a Gini of 24.5, very close to pre-conquest Latin America. Thus, Table 3 implies that pre-conquest Latin America had modest levels of inequality much like all the other poor pre-industrial societies in our sample which had escaped being colonized.

Extracting the Surplus: What Was the Colonial Impact Like after 1492?

Given what we know about ancient pre-industrial economies the world around, and assuming that Iberian colonists were no better or worse at extracting surplus than

[10] Michael Smith (1992: Table 12.8, p. 359) reports measures of inequality for rural Aztec society about the time of the Iberian conquest. These are based on housing remains, and for what Smith calls "architectural inequality." For two sites, each sampled from the early and late Cuauhnahuac period, the average Gini is 13.1, well below our estimate of 22.5 reported in the text.

were the other colonizers in the ancient inequality sample (England, Holland, and the Ottoman Turks), the answer to this section's question is quite straight forward. Colonies had higher Gini coefficients by 12-13 percentage points (Table 2), so the Latin American Gini coefficient might have drifted up from 22.5 in 1491 to something like 35 in the post-1492 decades. Perhaps it was a bit lower or a bit higher, but we predict that inequality must have jumped up by about half during the first decades after the Iberian conquest.

Not only did the Iberian elite replace the indigenous elite, but, if they were anything like the English, the Dutch and the Turks, the Iberians must have been able (or willing) to raise the extraction rate in their favor by a lot.

The Likely Impact of the 16th Century Demographic Disaster

As is well known, European disease caused immense demographic damage to the indigenous population over the century following Columbus's first voyage, due to soaring mortality rates. Massimo Livi-Bacci thinks it shrank by more than 90 percent by the early 17th century (Livi Bacci 2006), and the recent surveys by Carlos Assadourian (2006) and Linda Newson (2006) agree. Angus Maddison thinks the shrinking was a bit smaller, and Table 3 uses Maddison to take the lower bound. The Atlantic slave trade tried to substitute African slaves for decimated indigenous populations but their addition was far smaller than the subtraction caused by European disease (except for the Caribbean and Brazilian coast; Newson 2006: 152, Assadourian 2006: 276). Furthermore, the African slaves arrived in significant numbers only after a long lag, and few were transported to the once densely populated highlands where three-quarters of the indigenous population lived in 1492 (Newson 2006: Table 5.1), but rather to the sugar-

rich tropics. The demographic collapse destroyed indigenous political and institutional structures, and facilitated religious and cultural assimilation. The demographic disaster also contributed to higher land-labor ratios, higher GDP per capita, higher wage-rental ratios (w/r), and lower inequality.[11] Assuming that only land and labor mattered in the early colonial economy, that technology was unchanged, and that there was constant returns to scale, then it follows that the elasticity relating the wage-rental to the land-labor ratio was unity.[12] Population density fell by 51 percent between 1500 and 1600 (from 1.60 to 0.78 persons per square kilometer)[13], implying that the land-labor ratio rose about 103 percent (from 0.63 to 1.28 square kilometers per person) [14]. If population fell by Livi-Bacci's 90 percent estimate (from an index of 100 to 10), then the land-labor ratio rose by a factor of ten (from an index of 10 to 100),[15] Furthermore, if labor's share was about 0.5, then GDP per capita would have increased by about 52 percent over the century.

This analysis makes two assumptions that historians would challenge vigorously. First, we have assumed perfect competition in factor markets, which, of course, is completely inconsistent with the fact that Iberian colonists introduced coercive and

[11] Bates, Coatsworth and Williamson (2007: 919-20). Note the demographic parallel with Alwyn Young's argument that today's HIV-AIDS raises the incomes of those Africans who survive the disease (Young 2005).

[12] This, and what immediately follows, is based on the conventional sources-of-growth production function $Y=AR^{\alpha}L^{\beta}$, where $\alpha+\beta=1$, Y = GDP, R = land and L = labor.

[13] Salvucci (2010) thinks the fall in density was even bigger, 85 percent, but we are taking a lower bound estimate here.

[14] Greater economic complexity would diminish the size of the demographic disaster effects estimated here, but not the direction. For example, if land supply was very elastic (as it probably was in the Americas) then the impact on the land-labor ratio would be diminished. To take another example, while the assumption of constant technology across the 16th century is analytically convenient, technological transfer from Europe and mining development must have increased *A* in the formal output and output per worker expression in the text. This point is expanded below.

[15] The cultivatable land area of Latin America was 10.966 million km^2 between 1500 and 1800. Livi-Bacci's 50 million pre-conquest population implies a population density of 4.56. His 3-4 (say 3.5) million estimate for c1700 implies a density of 0.31, a spectacular fall of population density over the 16th century.

repressive devices so that labor's greater scarcity was not fully rewarded: slavery, *haciendas*, *mita*, *encomienda*, and other institutions were used to push the wage below labor's marginal product (Assadourian 2006: 293-314; Coatsworth 2008). Indeed, had

> "the Spaniards … been constrained to bid for [their] services, one would have expected the real rewards to the indigenous population to have soared. There is nothing mysterious about this: it is called supply and demand. And supply and demand was clearly on the side of the Indians … " (Salvucci 2010).

As Richard Salvucci notes, the logical response of the Spaniards

> "would have been to attempt to defeat it. Or to put it in the terms that Evsey Domar had raised, you could not have free labor, free land, and a nonworking landlord class simultaneously. One of them had to disappear. And we all know which one did." (Salvucci 2010).

Salvucci relies heavily on Shane Hunt (1972) who in an impressive and unpublished paper almost four decades old, described the evolution of the colonial institutions that extracted this surplus. While Hunt's Domar-like analysis shows how these coercive institutions kept the wage down during the 16th century demographic disaster, his economic analysis shows clearly that *hacienda* profitability and implicit rents must have fallen, raising the implicit wage-rent ratio.

Still, the demographically-induced rise in the wage-rental ratio must have been considerably less than 100 percent. But even if it was only 25 percent, it implies pronounced downward pressure on inequality across the 16th century. Furthermore, it seems likely that land concentration also diminished as labor got scarcer (and the *munifundios* per family got bigger and/or land use per *hacienda* got smaller), so there are

other reasons to believe that exogenous demographic trends put strong downward pressure on inequality across the 16th century. On the other hand, improved productivity in mining as well as any general improvement in economy-wide productivity might have pushed inequality in the opposite direction.

The second assumption which historians might well challenge is that the available land stock remained unchanged in response to the demographic collapse. Since the pre-Iberian empires had developed intensive agriculture with irrigation and other infra-structure, and since that infra-structure decayed in the absence of a large collective labor input to maintain it (Assadourian 2006: 278-93), the *effective* stock of land may have diminished, implying a smaller rise in the land-labor ratio. On the other hand, the stock of animals soared across the 16th century, easily offsetting any fall in the land stock.[16]

What was the net effect of the demographic disaster on income distribution? Until future research can test what seems to be a plausible working hypothesis of increased labor scarcity,[17] Table 3 uses it to predict that, after the first decades of colonization, there was very little additional change in inequality up to 1600.

Rising Colonial Inequality to Its Peak

Over the two centuries between 1600 and 1790, a number of fundamentals were at work in Latin America which would have served to raise inequality and extraction rates. First, populations partially recovered their 16th century losses. Population rose from 8.6 million in 1600 to 12.5 million in 1790. Thus, population density increased from about

[16] The per annum growth rates of livestock 1560-1620 are truly impressive with cattle 3.9-4.3 percent and sheep and goats 2.3-4 percent, let alone beasts of burden, like donkeys, mules and horses (Assadourian 2006: 300).

[17] Some time ago, Borah and Cook (1953: 39) offered some evidence that real wages of unskilled workers rose across the 16th century.

0.78 to 1.14, and land-labor ratios fell by about 31 percent. Second, GDP per capita rose from 438 to 650, or almost by half, and urbanization rose from 9 to 14.2 percent, or by more than half. These forces imply that the Gini might have risen from 36.2 to 57.6, which in turn suggests that inequality reached its peak in the late colonial decades just prior to independence.

Revolution, Independence and Lost Decades

While revolution, independence and the 'lost decades' that followed up to about 1870 (Bates, Coatsworth and Williamson 2007) were very complicated times, and while there must have been many forces at work influencing inequality, the ancient inequality regression predicts that the Gini probably dropped from 57.6 in 1790 to 46.4 in 1870. The biggest force contributing to the fall was, of course, independence and de-colonization since the five 'lost decades' between the 1820s and the 1870 yielded very little GDP per capita growth[18] or urbanization. Mexico repeats the Latin American (predicted) trends, its Gini falling from 57.7 to 44 between 1790 and 1870, and the biggest fall by far between 1790 and 1820, from 57.7 to 47.8. Ongoing research by Amilcar Challu confirms a significant fall in Mexican inequality: he estimates a Gini of 51.3 for 1844 Querétaro,[19] which implies that most of the fall between 1790 and 1870 had taken place by the early 1840s.

[18] Debate over Angus Maddison's data is intense, but some adopt his more positive view of Latin American growth 1820-1870. See, for example, Leandro Prados de la Escosura (2007, 2009). However, even Prados' more rosy view of post-independence is consistent with very poor growth performance (Prados 2007: Table 1.4): between 1820 and 1850, the two biggest republics, Brazil and Mexico, grew at 0 and 0.1 percent per annum, respectively; in the 1850s, the figures were -0.1 and -1.3. Lost decades indeed!

[19] In personal correspondence, Challu has described Querétaro as quite representative. For example, Challu estimates per capita income in mid-century at about 43 pesos, which is within the range of GDP per capita estimates for Mexico offered by Richard Salvucci (1997) and John Coastworth (2003, 2005).

Leticia Arroyo Abad (2008: Figure 1) uses data on wage rates and land rents to infer 19th century trends in inequality. When her rent-wage ratios for Argentina, Mexico, and Venezuela are weighted by 1850 populations, the resulting rent-wage ratio falls by 11 percent between 1820 and 1850, and for Mexico alone the fall is 12 percent. Furthermore, the Arroyo Abad Mexican rent-wage ratio trends and the Mexican Gini coefficients coming from the social tables in Table 3 are closely reproduced by the Amilcar Challu rent-wage series for central Mexico 1780-1869. Challu's inequality index rises by 38 percent from the 1780s to the 1800s, falls by 29 percent from the 1800s to the 1820s, and then continues a slow downward drift during the 'lost decades' up to the 1860s. To summarize, the Arroyo Abad index falls by 4 percent per decade between 1820 and 1850, the Challu index falls by 5.2 percent per decade between 1820 and 1869, and our Gini in Table 3 falls by almost 2 percent per decade between 1820 and 1870.

Creating Modern Inequality: The *Belle Époque* Commodity Boom

Latin America faced a rising terms of trade throughout the late 19th century, as commodity prices boomed, driving up land and mineral rents relative to wages. This happened everywhere around the commodity-exporting periphery (Williamson 2002, 2008, 2011), but it was especially dramatic in Latin America partly because the region was able to expand its export sectors so effectively, thus to become very large shares in GDP (Williamson 2011: Table 4.1). Since land and mineral resources were held by those at the top, inequality rose as well. Not too long ago, the only data we had to judge the magnitude of these inequality trends were proxies, like the land rent to unskilled wage

ratio or the GDP per worker to unskilled wage ratio (Williamson 1999, 2002). Thus, when the rent-wage ratios for Argentina, Mexico, Uruguay and Venezuela (Arroyo Abad 2008: Figure 1) are weighted by 1890 populations, the Latin American average rises 7.9 percent per decade 1850-1870 and 6.3 percent per decade 1870-1900, for a total increase of 37 percent after 1850. Thus, this rent-wage proxy implies a big inequality surge over the second half of the century. We also have the more comprehensive *belle époque* inequality evidence for the Southern Cone summarized in Table 4. It comes from two sources: first, Ginis calculated from new evidence collected by Luis Bértola and his collaborators (2009), and second, what Leandro Prados de la Escosura (2007) calls his backward projected Pseudo-Ginis (Table 5). They tell the same tale: inequality rose steeply over the *belle époque*. True, the Latin American weighted average reported in Table 5 refers only to four republics and all in the Southern Cone – Argentina, Brazil, Chile and Uruguay. Thus, the average misses the heavily populated Mexican and Andean republics. However, a proxy for Mexican inequality trends – the ratio of income per worker relative to the unskilled wage -- rose by about 2.8 times between the early 1880s and 1920 (Prados de la Escosura 2007: Figure 12.1b), suggesting that over the *Porfiriato* decades Mexico followed the Southern Cone by recording a steep rise in inequality. Brazil underwent a less spectacular increase between the early 1880s and the mid-1920s, and Table 5 reports an actual decline in the Psuedo-Gini from 1870 to 1913. But we must remember that these years include Brazilian slave emancipation (1888) and thus a powerful (exogenous) leveling force. Note also that the income per capita to unskilled wage ratio rose by about 45 percent over the *belle époque* (Prados de la Escosura 2007: Figure 12.1b). Furthermore, the Arroyo Abad rent-wage inequality proxy for Mexico

increased by 27 percent between 1870 and 1900. Assuming that Mexican inequality rose more like the Prados Pseudo-Ginis for all of Latin America than the Bértola Ginis for the Southern Cone, it follows that Latin American inequality probably rose by something like 30 percent over the *belle époque*. Applying that increase to the 1870 Latin American Gini coefficient in Table 3 would imply that it rose from 46.4 to 60.3, making the Gini in the 1920s the highest inequality that Latin America had recorded since 1491, even higher than the 1790 colonial peak.

Any modern analyst who believes that inequality has been always been high in Latin America should take note. After a lull over the four or five decades following independence, inequality in Latin America was no different than Western Europe and the United States. It only became different afterwards. If we are looking for the historical sources of high Latin American inequality, they will not be found with the Iberian imperialists. .

Revisionist Hypotheses about Latin American Inequality 1491-1913

Figure 3 plots Latin American inequality trends from 1491 onwards. While the evidence used to construct those trends may seem crude, it points to several revisionist interpretations of, or hypotheses about, four centuries of Latin American inequality up to the 1920s.

First, it is simply not true that Latin America has always been unequal. It cannot be stressed enough that this is a *comparative* statement. Only by comparisons with other times and places can statements about Latin American inequality offer any useful

meaning. While comparisons with the United States are not uncommon in the recent literature, comparisons with the European (colonial) leaders or with other parts of the poor periphery are rarely, if ever, made. When such comparisons *are* made, income inequality in pre-industrial Latin America (pre-1880) is found to have been *lower* than pre-industrial northwest Europe (pre-1800) and the early industrializing United States (1860), not higher. If it is thought that inequality encouraged rent-seeking, suppressed private property rights, retarded the development of 'good' institutions, and thus discouraged growth in Latin America, it must have done it even more so in northwest Europe where the industrial revolution first started and in the United States where it assumed, with a lag, world industrial leadership!

Second, it appears that pre-conquest Latin America had one of the lowest, if not *the* lowest, level of inequality anywhere in the poor periphery. It also appears that Latin American inequality remained one of the lowest anywhere around the world until the start of the 17th century. It can hardly be said that initial endowments and Iberian colonization made Latin America more unequal than other places.

Third, Latin America was poorer than northwest Europe, and poorer societies have smaller surpluses for the elite to extract. Thus, while inequality was lower, what this paper and Milanovic *et al.* (2011) call *extraction rates* (how much of the available surplus was actually extracted by the elite) were considerably higher in Latin America than in northwest Europe. Whether measured inequality or extraction rates are the best indicators of pro-rent-seeking and anti-growth institutions is an issue that needs to be resolved since they offer very different inferences regarding Latin American growth

underachievement. Presumably, *political* inequality had an important influence on the size of the extraction rate.

Fourth, Latin American inequality from pre-conquest to the 1920s exhibited immense variance: indeed, Latin America exhibited more inequality variance between 1491 and 1929 (Ginis ranging from 22.5 to 60.3) than one can find between Latin America, Europe, and East Asia today (51, 34, 38, respectively: López and Perry 2008: 2-3). By replacing less rapacious indigenous elite with more rapacious European elite, the Iberian conquest appears to have raised, initially, inequality by about half. Yet, the 16th century saw very little further rise in inequality, most probably because the demographic disaster produced labor scarcity and thus a powerful downward offset to all other inequality-increasing institutional forces. It looks like colonial Latin American inequality reached its peak just prior to independence (1790 Gini 57.6: Table 3). About half of that huge colonial rise up to 1790 was then eroded by three decades of war and independence, followed by five post-independence 'lost decades' of economic stagnation. Thus, inequality in Latin America was not much different in 1870 (Gini 46.4: Table 3) than it was for all pre-industrial societies for which we can get the data (Gini 44.3), while it was higher in the United States (Gini 0.51: Lindert and Williamson 2014).

Fifth, commodity booms during the *belle époque* pushed Latin American inequality up to historic highs. Other commodity exporters underwent similar inequality-enhancing booms over that half century (Williamson 2002; 2006, 2011), but it appears that Latin America had one of the biggest inequality booms.

Latin America Misses the 20th Century Great Leveling

After *belle époque* inequality forces had done their work, was income inequality higher in Latin America in 1913 than it was in Europe and the United States? Apparently not. While Table 6 documents a rise in Latin American inequality up to 1913, it appears to have converged on the leaders. Table 6 reports an average Latin American Gini of 0.44 between 1913 and 1929 while the figure for the United States was 0.49 in 1929. Figure 4 plots of top 1% shares and they suggest that Australia, Canada, Japan, New Zealand, and the United Kingdom were about the same as the US or higher. In short, Latin America had joined the rich country inequality club by World War I, and it certainly had not yet become the world's most unequal region.

What is very clear is that Latin American inequality rose during the anti-global episode between the 1920s and the 1970s, while it fell everywhere else. Table 5 (see also Frankema 2009: Figure 6.4a) reports that the Psuedo-Gini rose by 54 percent between 1913/29 and 1970 (39.7 to 54.3). The figure is an average for six countries that supply the evidence (the four Southern Cone plus Mexico and Venezuela) which accounted for 72 percent of the region's 1950 population.[20] Labor shares were stable or fell (Frankema 2009: Figures 6.4a-c), and other evidence is consistent with stable or rising inequality trends (Williamson 1999: Figure 11; Frankema 2009: Figure 6.4a).[21] The most recent evidence comes from the research of Pablo Astorga, which documents stable or rising inequality across Latin America between World War 1 and the 1970s (Astorga 2014: Table 4 and Figure 1). .

[20] The top income shares for Argentina do not conform to this pattern. Facundo Alvaredo (2010) documents a decline in the top income share in Argentina after 1940. Still, he has no data for the years 1913-1935, and the income share of the top rises steeply up to 1940 before the fall to the 1970s.
[21] Uruguay appears to have been an exception to the Latin American rule (Bértola 2005).

The Latin American inequality rise from World War 1 to the 1970s offers a striking contrast with the industrialized world which underwent a Great Egalitarian Leveling across those decades (Williamson and Lindert 1980: 53-62; Lindert and Williamson 2014: Chapter 8; Atkinson and Piketty 2008; Atkinson *et al.* 2011). Figure 4 plots the magnitude of this Great Leveling for the United States, the United Kingdom, and nine other OECD countries (see Atkinson *et al.* 2011, in Figure 4, for even more).

The inequality history that made Latin America today's most unequal region is not what happened during the three centuries of colonialism, or the half century of early Republican independence, or even the *belle époque* commodity boom. The history that mattered is the anti-globalization epoch from 1913 to 1970. Latin America did not share the ubiquitous Great Egalitarian Leveling, but rather continued the *belle époque* rise.

It's Latin America's 20th century inequality history which is unique, not its colonial history, nor its early republican experience, nor its *belle époque*. So, why did Latin America miss the Great 20th Century Egalitarian Leveling?

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Table 1 Regression Results for the Gini Coefficient

	1	2	3
GDP per capita	360.5***	366.7***	360.2***
	(0.001)	(0.001)	(0.002)
GDP per capita squared	-25.0***	-25.5***	-25.0***
	(0.002)	(0.002)	(0.003)
Urbanization rate	0.349*	0.354*	0.353*
	(0.08)	(0.08)	(0.093)
Population density	-0.105***	-0.100***	-0.107*
	(0.001)	(0.003)	(0.053)
Number of groups	-0.009	-0.009	-0.010
	(0.16)	(0.19)	(0.18)
Colony (0-1)	12.63***	12.93***	12.41***
	(0.001)	(0.001)	(0.002)
Foreigner (0-1)	-9.59	-9.97	-9.26
	(0.25)	(0.25)	(0.29)
Asia (0-1)		-1.28	
		(0.69)	
Tax survey (0-1)	-4.86	-4.85	-4.85
	(0.57)	(0.24)	(0.28)
Constant	-1246***	-1266***	-1245***
	(0.001)	(0.001)	(0.002)
Number observations	28	28	26
Adjusted R squared	0.75	0.73	0.73

Notes: GDP per capita is in natural logs. Coefficients significant at 10, 5 and 1 percent level denoted by respectively three, two and one asterisks, p values between brackets.
Source: Background working paper (2007: Table 3) to Milanovic *et al.* (2011).

Table 2 Inequality in Pre-Industrial Latin America and Western Europe Compared

Country	Year	Source of Income Data	Population	Urbanization Ratio (%)	Ratio Peasant To Mean Income	Actual Gini	Maximum Feasible Gini	Extraction Ratio
Brazil	1872	occupational census	10,167	16.2	0.67	43.3	58.3	0.743
Chile	1865	occupational census	1,702	29	0.28	54.0	76.8	0.829
Nueva España	1790	social tables	4,500	9.1	0.24	63.5	60.5	1.052
Peru	1856	social tables	2,469	15		35.5	54.0	0.657
Latin America			18,838					
Unweighted average				17.3	0.40	49.1	62.4	0.787
Weighted average				15.5	0.51	48.1	59.9	0.803
England	1688	social tables	5,700	13	0.21	45.0	78.8	0.571
England	1759	social tables	6,463	16	0.37	45.9	82.9	0.554
England	1801	social tables	9,053	30	0.34	51.5	85.0	0.606
France	1788	social tables	27,970	12	0.27	55.9	73.5	0.761
Holland	1561	tax census dwelling rents	983	45		56.0	73.4	0.766
Holland	1732	tax census dwelling rents	2,023	39		61.1	85.2	0.717
Western Europe			52,192					
Unweighted average				25.8	0.30	52.6	79.8	0.659
Weighted average				17.4	0.29	52.9	77.7	0.681

Source: Milanovic *et al.* (2011) with Chile 1865 revised from benchmark underlying Bértola and Rodríquez (2009: Graph 4, p. 11).

Table 3 Data used for the Gini Predictions and the Ginis

		GDP per capita (1990 US$)	Urbanization Rate (%)	Colony Dummy	Density (person/km2)	Gini Coefficients Actual	Predicted
Latin America							
	1491	416	11.0	0	1.60		22.5
	1492	416	11.0	1	1.60		35.1
	1600	438	9.0	1	0.78		36.2
	1700	530	12.5	1	1.10		48.5
	1790	650	14.2	1	1.14		57.6
	1820	691	13.9	0	1.97		47.0
	1870	676	15.0	0	3.68		46.4
Mexico	1790	710	9.1	1	4.96	63.5	57.7
	1820	759	8.9	0	5.38		47.8
	1844	718	9.2	0	6.41	51.0	46.1
	1870	674	9.6	0	7.41		44.0
Brazil	1872	721	16.2	0	1.20	43.3	48.9
Chile	1865	1083	29.0	0	2.23	54.0	72.3
Peru	1876	653	15.0	0	1.92	42.2	45.4

Source and Notes:
Actual Gini: Milanovic *et al.* (2011: Table 1) and Table 2.
Predicted Gini: Data above inserted in to estimated regression, col. 1, Table 1.

Table 4. Southern Cone Inequality Trends 1870-1920s

	Argentina		Brazil		Chile		Uruguay		Latin America	
	Gini	P-Gini	Gini	P-Gini	Gini	P-Gini	Gini	P-Gini	Gini	P-Gini
1870	52.2	39.1	53.4	32.9	59.4	41.3	48.1	29.6	53.7	34.8
1920s	57.4	49.3	59.7	47.2	64.1	49.2	56.2	36.6	59.6	47.5
% change	10.0	26.1	11.8	43.5	7.9	19.1	16.8	23.6	11.0	36.5

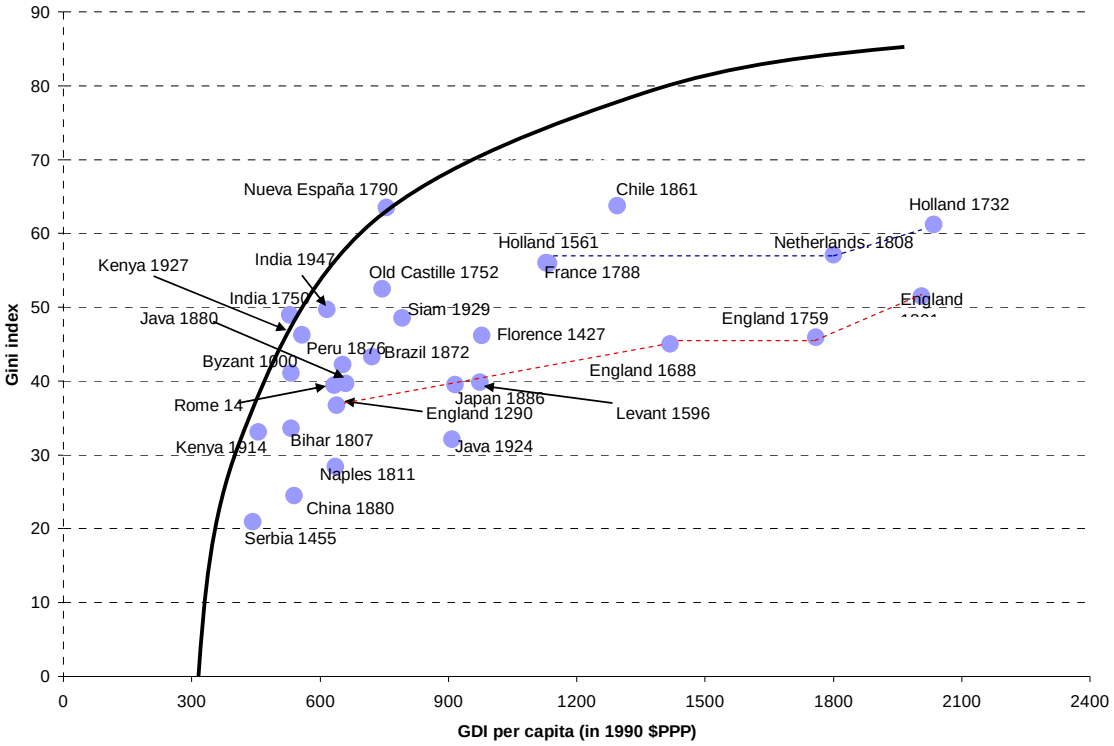
Sources: Ginis for 1870 and 1920 from Bértola *et al.* (2009. Pseudo-Ginis for 1870 and 1929, from Prados (2007: Table 12.1).
Notes: The Latin America weighted Gini averages use 1900 population as weights. The P-Gini is a Pseudo-Gini derived from backward projection. See Prados de la Escosura (2007: Table 12.2).

Table 5. Income Inequality in Latin America 1870-1970, based on Psuedo-Ginis

	1870	1913	1929	1913-29 average	1970
Argentina	39.1	61.8	49.3	55.6	41.2
Brazil	32.9	29.5	47.2	38.4	57.1
Chile	41.3	65.5	49.2	57.4	47.4
Colombia		46.8	40.2	43.5	57.3
Mexico		27.8	24.3	26.1	57.9
Uruguay	29.6	45.9	36.6	41.3	37
Venezuela					46.2
Latin American 4	34.8	40.5	47.5	44.0	53.1
Latin American 6		37.7	41.6		54.3

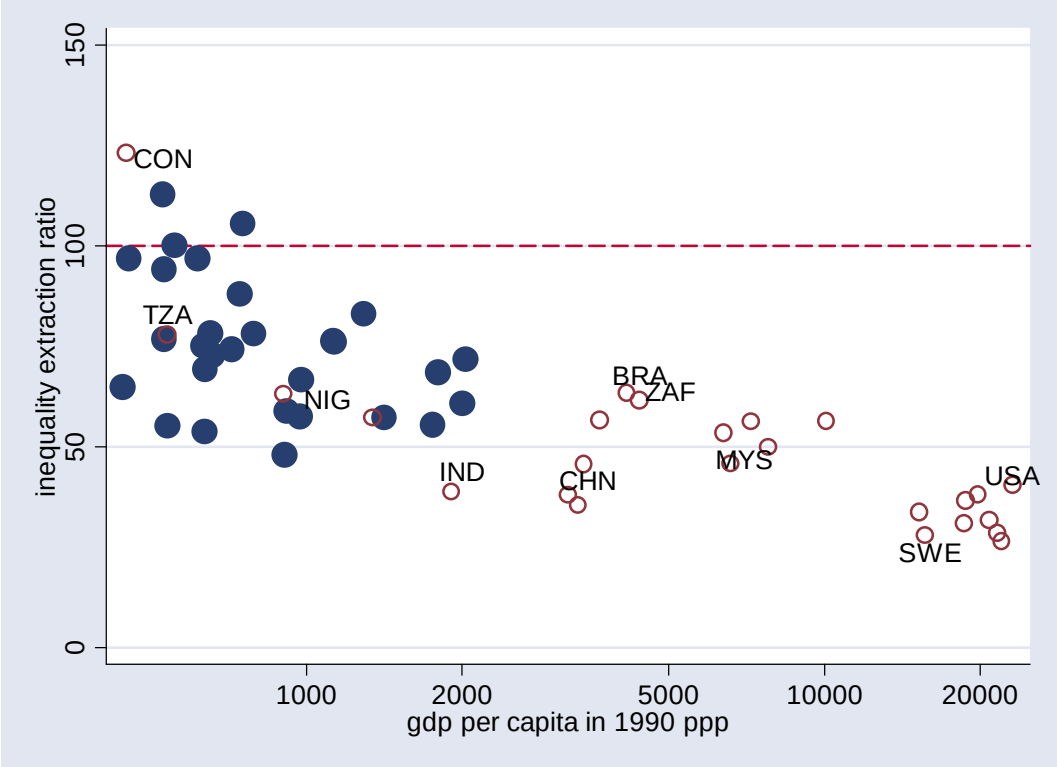
Source: Prados de la Escosura (2007): Table 12.1, pp. 296-7.

Figure 1 Ancient Inequalities: Estimated Gini Coefficients, and the Inequality Possibility Frontiers



Note: The solid line IPF is constructed on the assumption that s=$PPP 300. See text.
Source: Milanovic *et al.* (2011: Figure 2).

Figure 2
Inequality Extraction Ratio for the Ancient Society Sample and their Counterpart Modern Societies



Note: Modern societies are drawn with hollow circles. Horizontal axis in logs. Inequality extraction ratio shown in percentages.
Source: Milanovic *et al.* (2011: Figure 4).

Figure 3. Likely Inequality Trends in Latin America 1491-1929

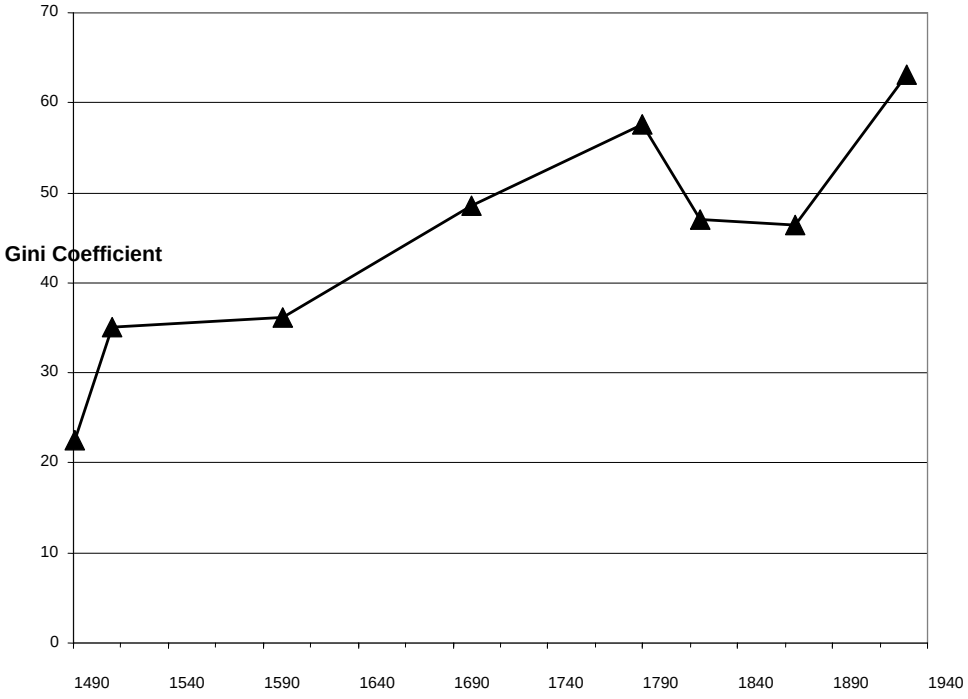
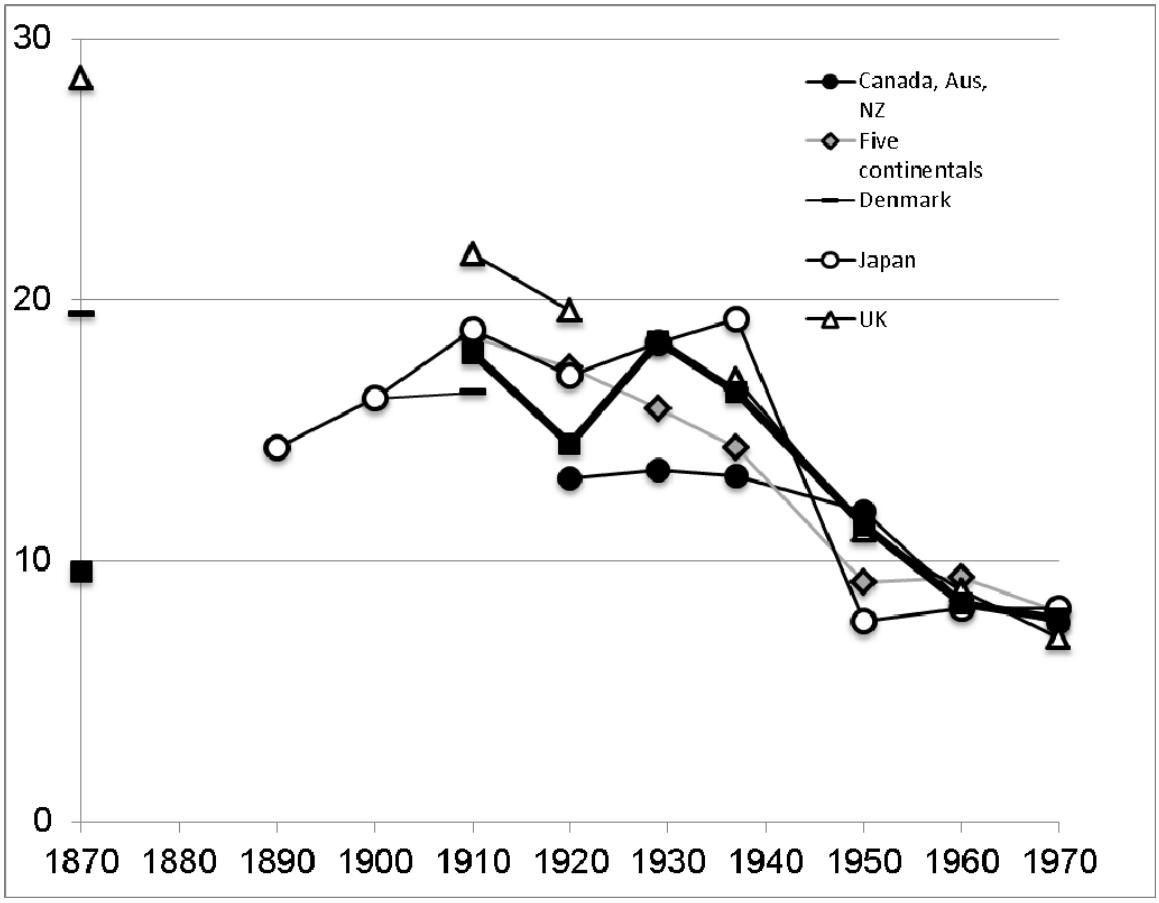


Figure 4.
National Income Shares Received by the Top 1%: US, UK and Nine Others



Source: Lindert and Williamson (2014: Figure 8-1).