

3 **Latin American earnings inequality in the long run**

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5 Received: 11 May 2016 / Accepted: 10 October 2016
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7 **Abstract** This paper traces between-group earnings inequality for six Latin
8 American countries over two centuries based on wage and income series compiled
9 from a large array of primary and secondary sources. We find that inequality varied
10 substantially by country and by period, questioning the notion that constant secular
11 inequality persistence is largely dominated by colonial legacies. There is a broader
12 inequality trajectory over the long run in the form of an “m” pattern with peaks
13 around 1880 and the 1990s and a trough around 1920/1930s. Export-led growth
14 does not necessarily imply a rise in inequality, while the import-substitution
15 industrialisation efforts did not translate into a more egalitarian distribution of
16 income. More notably, Latin America’s experience does not exhibit the great
17 inequality levelling as seen in the North Atlantic economies from the 1930s to the
18 1970s.

19
20 **Keywords** Economic history · Economic development · Income inequality ·
21 Latin America

A1 We are grateful to Peter Lindert and Jeffrey Williamson for comments, and to Marcelo de Paiva Abreu,
A2 Florencia Aráoz, Ame Bergés, Eduardo M. Cuesta, Raymundo Campos Vázquez, Amílcar Challú, José
A3 Díaz, Ewout Frankema, Aurora Gómez Galvarriato, María Gómez León, Michael Huberman, María
A4 López Uribe, Gerardo Lucas, Oscar Nupia, Mario Matus, Brian McBeth, Marco Palacios, Eustáquio
A5 Reis, Javier Rodríguez Weber, Carmen A. Romero, Héctor Valecillos, Henry Willebald, and Alan
A6 Wittrup for kindly providing wage data and ideas.

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23 **JEL Classification** N36 · O15 · O54 · J31

24

26 **1 Introduction**

27 Latin America has always been tagged as “different” due to its unusually high
 28 inequality and, more recently, for its remarkable path towards more equality (López
 29 Calva and Lustig 2010; Gasparini et al. 2011). From an historical perspective, two
 30 views dominate the discussion of Latin America inequality. Led by Engerman and
 31 Sokoloff (1997) and Acemoglu et al. (2001), one view claims that the persistence of
 32 extractive institutions resulted in lower economic development outcomes and high
 33 inequality in the region since colonial times. In contrast, Williamson (2010), Arroyo
 34 Abad (2013a), and Astorga (2015a, 2016) argue that inequality was far from
 35 constant in the region, especially since the nineteenth century, highlighting the role
 36 of factor endowments, institutional changes, and the integration in world markets.

37 This paper presents a new set of consistent long-term estimates of pre-fisc
 38 earnings¹ and wage inequality for up to six Latin American countries: Argentina,
 39 Brazil, Chile, Colombia, Mexico, and Venezuela (hereafter “LA-6”).² It is the first
 40 attempt to provide series spanning two centuries using a consistent methodology.
 41 We find that during these two centuries, inequality fluctuated considerably by
 42 country and by period. This finding challenges the long-held view that colonial
 43 legacies largely dominated the evolution of inequality. Searching for a common
 44 trajectory, Latin America displayed, on average, an “m” pattern with peaks in the
 45 1880s and the 1980s/1990s. While the changes were sizable during the nineteenth
 46 century, the following century offers a much more volatile trajectory. Unlike many
 47 developed countries, the region did not experience a sustained levelling of
 48 inequality in the 1940s to the 1970s. The sizable changes in inequality reflect the
 49 diversity in these economies in terms of factor endowments, integration in the world
 50 economy, and institutional adaptations resulting from changing domestic and
 51 international conditions.

52 The net impact of these factors on inequality is ambiguous and needs empirical
 53 investigation. For instance, the standard Heckscher–Ohlin model predicts that
 54 opening to trade in resource-abundant economies with concentrated resource
 55 ownership will worsen inequality, whereas the combination of advances in
 56 education and technology has the potential to move inequality either way.
 57 According to the Kuznets–Lewis process, industrialisation initially worsens and
 58 subsequently improves inequality as the labour force reallocates from agriculture to
 59 industry. And more integrated and wage-based labour markets should reduce
 60 earnings disparities.

61 Recent multi-country scholarship has focused on long-term inequality in the
 62 region. Williamson (1999, 2002) teased out developments in inequality by

1FL01 ¹ Although our measures largely rely on wage data to estimate inequality, we also make allowances for
 1FL02 non-labour income, especially during the twentieth century.

2FL01 ² These countries have accounted for about three-quarters of the population over the last two centuries
 2FL02 and thus are representative of the inequality in the region as a whole.

63 calculating ratios of GDP per capita to unskilled wages in the pre-WW2 period for a
 64 set of periphery countries (including Argentina, Brazil, Colombia, Cuba, Mexico,
 65 and Uruguay). Based on Williamson (2002) and household-survey Ginis, Prados de
 66 la Escosura (2007) constructed pseudo Ginis over the last century for Argentina,
 67 Brazil, Chile, Colombia, and Uruguay. Bértola et al. (2010) estimated Gini
 68 benchmarks for Brazil, Chile, and Uruguay around 1870 and 1920. Frankema
 69 (2010, 2012) studied the patterns of labour income shares in Argentina, Brazil, and
 70 Mexico during the twentieth century, and examined long-run industrial wage
 71 inequality in Argentina, Brazil, and Chile. Willebald (2011, 2015) looked at
 72 agrarian inequality in benchmark years for Argentina, Chile, and Uruguay. At a
 73 country level, Bértola (2005) for Uruguay (1870–2000) and Rodríguez Weber
 74 (2014) for Chile (1850–2009) offer valuable contributions. However, these studies
 75 only provide a partial picture of long-term trends and concentrate on selected
 76 countries or on labour income.

77 Some of these limitations are addressed by FitzGerald (2008) who computes a
 78 consistent set of yearly earnings Ginis based on four occupational groups with
 79 changing shares in the labour force in Argentina, Brazil, Chile, Colombia, and
 80 Mexico. However, one important shortcoming of these Ginis is that they rely on
 81 sectoral series of output per economically active person to estimate earnings levels.
 82 This implies well-functioning markets which is a strong assumption for a
 83 developing region, particularly before the first half of the last century. In this
 84 paper, we adopt FitzGerald's approach but calculate earnings Ginis using a newly
 85 assembled wage dataset compiled from a large array of primary and secondary
 86 sources.³ These data are supplemented with land rents to wage ratios—mostly until
 87 the early twentieth century. We look at inequality trajectories using the periodi-
 88 sation traditionally used in Latin American economic history (e.g., Bulmer-Thomas
 89 2013; Hofman 2000).⁴

90 2 Methodology

91 To capture developments in inequality, we calculate historical between-group Gini
 92 coefficients based on estimates of earnings for four occupational groups, as in
 93 FitzGerald (2008).⁵ For each country the economically active population (EAP) is
 94 divided into four groups: Group 1 (employers, managers, and professionals), Group
 95 2 (technicians and administrators), Group 3 (semi-skilled blue collars workers, other

3FL01 ³ Because the focus of this paper is inequality, we do not discuss real wage performance.

4FL01 ⁴ The periods are as follows: post-independence and the first globalisation wave (1830s–1910s); the state-
 4FL02 led industrialisation period (ISI) under protection (1920s–1970s); and the second wave of export-led
 4FL03 growth that started with a move towards trade liberalisation and market-friendly reforms—in some
 4FL04 countries starting in the 1970s (1970s–2010).

5FL01 ⁵ This method is akin to the construction of dynamic social tables (combining benchmark years from
 5FL02 census data with annual data on income from other sources) used for Uruguay (Bértola 2005), Chile
 5FL03 (Rodríguez Weber 2014), and pre-industrial societies (Milanovic et al. 2010; Lindert and Williamson
 5FL04 1982).



96 urban workers in relatively low-productivity sectors such as retailing and transport,
 97 and artisans), and Group 4 (rural workers and personal services—including
 98 domestic servants—plus unskilled urban workers, and street vendors). To ensure
 99 consistency with the overall EAP series, the labour force in Group 3 is calculated as
 100 a residual.

101 The small number of groups reflects data limitations during most of the period
 102 covered, especially on income. In Group 1 owners of capital and landlords are
 103 included with managers and professionals. This group is dominated by non-wage
 104 income, including property income along with compensation for highly skilled and
 105 managerial labour. Group 2 includes a mix of manual and clerical workers with
 106 comparable years of formal education. Group 3 lumps together urban informal
 107 workers with precarious incomes and skilled artisans with relatively secure
 108 employment. Finally, Group 4 comprises unskilled rural workers and workers in
 109 personal services largely in urban areas.

110 Income inequality across the four groups captures differences in education and
 111 skills, and in property ownership. The main factors likely to affect earnings
 112 differences within our groups are geography and job dispersion (also reflecting
 113 gender and race/ethnic discrimination). Spatial income dispersion within countries
 114 was particularly important before the middle decades of the twentieth century when
 115 labour markets were not well integrated, allowing for inter-regional differences in
 116 earnings for equivalent jobs. This is likely to be a key factor contributing to high
 117 within-group inequality at a country level, but with a limited effect on between-
 118 group inequality, to the extent that wage differentials were similar across regions.⁶
 119 Changes in gender pay rates are likely to have played a major role only late in the
 120 twentieth century, when female labour force participation accelerated in the LA-6
 121 and Latin America in general (Camou and Maubrigades 2016). By contrast, the
 122 contribution of race discrimination to within-group inequality probably remained
 123 stable during most of the period, boosting earnings dispersion for relatively
 124 unskilled occupations (our Group 4).⁷ Since data constraints prevent our estimating
 125 within-group inequality, this paper therefore deals primarily with earnings
 126 dispersion between occupational groups.

127 2.1 Historical between-group Ginis

128 To measure earnings inequality we calculate a between-group Gini coefficient
 129 (*GiniB*) as follows:

6FL01 ⁶ For instance, our estimations using data on rural wages in a sample of 15 states in Brazil (IBGE, 1924)
 6FL02 show that whilst the regional dispersion (measured by the coefficient of variation) of wages for unskilled
 6FL03 rural labourers dropped from 0.81 in 1911 to 0.40 in 1921, and that for carpenters from 0.57 to 0.37, the
 6FL04 regional dispersion in the wage gap of the two occupations (reflecting between-group regional dispersion)
 6FL05 only moved from 0.31 in 1911 to 0.37 in 1921.

7FL01 ⁷ According to Brazilian census data, the proportion of the black population that completed primary
 7FL02 school was below 5% in 1940, 1950 and 1960, rising to 10% in 1980 and above 30% by 2000. In
 7FL03 addition, black workers were predominately in low skills occupations in agriculture (Bucciferro 2016).

$$GiniB = \sum_{i=2}^4 \sum_{j=1}^{i-1} e_i e_j |r_i - r_j| \quad (1)$$

131 where e_i is the EAP share of group i and r_i is the ratio of the mean income of group i
 132 to that for the EAP as a whole (i.e., income per person engaged). The income share
 133 of each group (s_i) is obtained as $r_i \times e_i$. Note that the EAP shares change over time
 134 as they are based on the size of occupational groups not on fixed percentages of the
 135 labour force. Therefore, this is a departure from a more standard Gini calculated
 136 with quartiles.⁸ Another aspect to bear in mind is that our income estimates exclude
 137 net taxes and the impact of social spending and do not account for differences in
 138 dependency ratios by income group. Thus, the definition of our Gini does not match
 139 the more familiar household income Gini, which is usually based on disposable
 140 income or household extended income.

141 Ideally, between-group inequality estimates should make allowances for the
 142 subsistence economy.⁹ However, there is little systematic and consistent evidence of
 143 the size of the subsistence economy (particularly important in the nineteenth century
 144 and early decades of the twentieth century), which could be used to make an
 145 adjustment (Berg 1970). To the extent that the population in the subsistence sector is
 146 included in the population census, we are assigning them an income equal to the
 147 unskilled wage. Also difficult to obtain for most of the period are differences in
 148 employment levels across occupational groups. Our income calculation in each
 149 category assumes full-time pay rates and that unemployment was affecting all
 150 categories equally.

151 For the nineteenth century we calculate a wage Gini, $GiniB4w$ from (1) using
 152 available wage data for the four categories in five countries (Argentina, Chile,
 153 Colombia, Mexico, and Venezuela, or “LA-5”). The mean income for each
 154 category is calculated as a simple average of wage series. The outcome of this
 155 measure of wage inequality is largely driven by developments in the wage structure
 156 (i.e., wage compression or expansion) in the shorter to medium term. For the top
 157 group, our main limitation is lack of information on property income. For this
 158 century, however, we can complement the analysis of $GiniB4w$ with available
 159 estimates for the ratio of the land rental rate to the average wage (rent–wage ratio)
 160 for Argentina, Chile, Mexico, and Venezuela (see “Appendix” for sources). This
 161 measure of relative factor prices suggests movements in the income ratios between
 162 landowners and wage earners. A rise (decline) in the ratio points to a disequalising
 163 (equalising) change in income inequality. To the extent that both the $GiniB4w$ and
 164 the rent–wage ratio show reinforcing trends, the former may be a reasonable proxy
 165 for a more comprehensive between-group Gini including property income.

8FL01 ⁸ It is likely that most of the potential differences between our occupational Gini and a hypothetical Gini
 8FL02 based on quartiles over the whole distribution will cancel out. To illustrate the point, suppose that Group 4
 8FL03 accounts for 50% of the EAP, Group 2 for 25%, Group 3 for 15%, and Group 1 for 10%. Compared with a
 8FL04 quartiles Gini, our Gini is based on a less convex Lorenz curve for the first half of the distribution
 8FL05 (resulting in lower inequality), a similar curve for the third 25%, and a more convex Lorenz curve for the
 8FL06 upper section of the distribution (resulting in higher inequality).

9FL01 ⁹ A non-monetary economy that relies on hunting, gathering, and agriculture to provide for basic needs.



166 For the twentieth century the greater availability of better-quality estimates of
 167 overall national income, particularly with national accounts since the 1940s, makes
 168 it possible to include a gross estimation of property income. We also add Brazil into
 169 the analysis. The earnings Gini coefficients post 1900 (*GiniB4*) are obtained using
 170 (1), but now the income share for Group 1 (s_1) is calculated as a residual by
 171 subtracting the income shares for the other three groups. This is then divided by the
 172 corresponding proportion of the EAP to yield Group 1's relative income level:

$$r_1 = s_1/e_1 = \left\{ 1 - \sum_{i=2}^4 e_i r_i \right\} / e_1; \text{ with } \sum_{i=1}^4 e_i r_i = 1 \quad (2)$$

174 The income of the residual Group 1 is likely to capture property income for all the
 175 EAP and natural resource rents, together with earnings from highly paid workers.¹⁰
 176 Its complement can also be a proxy for the labour income share. Calculated as a
 177 residual, the income for the top group may be subject to a significant margin of error.
 178 However, this method is likely to generate better estimates in Latin America than
 179 calculations based on tax data (famously unreliable for gauging income at the top, if
 180 available at all) and on household surveys (which are only available for the later
 181 decades and tend to miss information on top earners).¹¹ To estimate mean earnings of
 182 the remaining three occupational groups, we rely, as in calculations for the nineteenth
 183 century, on wage series assembled to reflect differences in skills.¹²

184 There is a potential bias when estimating earnings of the top group according to
 185 (2). Since the average wage is taken as a proxy for average earnings of the three
 186 lower income groups (without discriminating between the employed and the
 187 unemployed in each group's EAP), at times of high unemployment, our series will
 188 overestimate r_2 , r_3 , r_4 and underestimate r_1 (as this is calculated as a residual) and
 189 thus underestimate inequality.¹³ This problem can be especially relevant during the
 190

10FL01 ¹⁰ The long-term evidence in developed economies (Piketty 2014) shows that income from property
 10FL02 tends to be concentrated in the top group, which means that our understatement of property income of the
 10FL03 middle and bottom groups is small.

11FL01 ¹¹ Alvaredo (2010) calculates the top 1% income share for Argentina (1932–1972 and 2002) using tax
 11FL02 data. Rodríguez Weber (2015) offers an estimation of the top 1% income for Chile (1913–1973) based on
 11FL03 dynamic social tables. In both cases, secular patterns are roughly in line with those shown by our s_1 for
 11FL04 both countries. Astorga (2015a) offers evidence showing that, in general, our estimates for the mean
 11FL05 income of Group 1 in the first half of the 20th century are consistent with data available on top earners;
 11FL06 and that our calculated s_1 is also broadly consistent with available official estimates of property income
 11FL07 shares for the second half of that century.

12FL01 ¹² We are not accounting for fringe payments. According to the ILO's October Inquiry, in Chile
 12FL02 (1953–59) they represented, on average, about 16% of total earnings for construction workers and in
 12FL03 Venezuela about 20% in 1981. The evidence available for the 1950s and 1960s indicates that fringe
 12FL04 benefits only have a limited effect on skill differentials (Berg 1968).

13FL01 ¹³ Suppose total income = 200; EAP = 100 with full employment; so that average income per person
 13FL02 engaged = 2. The mean incomes are: Group 1 = 9; Group 2 = 3; Group 3 = 1.5; Group 4 = 0.4. The
 13FL03 EAP shares are: $e_1 = 0.1$, $e_2 = 0.2$, $e_3 = 0.2$, $e_4 = 0.5$. Based on these data, $r_1 = 4.5 (=9/2)$, $r_2 = 1.5$,
 13FL04 $r_3 = 0.75$, $r_4 = 0.2$; and *GiniB4* according to (1) = 0.565. Now suppose overall unemployment of 5%
 13FL05 (affecting all groups equally); no data on Group 1's mean income; and no change in the mean income of
 13FL06 the remaining three groups. The new income per person engaged is 1.9 (=190/100). In this case, $r_2 = 1.58$
 13FL07 (=3/1.9), $r_3 = 0.79$, $r_4 = 0.21$. Then calculate $r_1 = 4.21$ as a residual using (2). The Gini now falls to
 13FL08 0.547, when it should not.



191 early years of the Great Depression or during the outbreak of the Debt Crisis in the
 192 1980s. In order to minimise the potential impact of this bias, we calculate deviations
 193 of the unemployment rate (when available) from an assumed long-term rate (as a
 194 proxy for the natural rate of unemployment) and then adjust our overall income per
 195 person engaged series accordingly. In this way, overall income per person engaged
 196 is adjusted upwards during period of unusually high unemployment (minimising a
 197 potential underestimation of Group 1's income) and vice versa at times of unusually
 198 low unemployment.¹⁴

199 2.2 Comparability and comparisons

200 To sum up, to estimate inequality over the two centuries, we construct two between-
 201 group Ginis based on four occupational categories: *GiniB4w* and *GiniB4*. They
 202 differ in the estimation method of the top-group income. The former uses data on
 203 wages for highly skilled professionals, whereas the latter makes allowances for
 204 property income. Therefore, these Ginis are not necessarily comparable in levels,
 205 but they can inform us about trends. In order to have a measure which is defined
 206 consistently across both centuries, we construct using (1) a narrower between-group
 207 Gini, *GiniB3w*, based on the three lower occupational groups dominated by labour
 208 income.

209 Besides, when studying the twentieth century, comparing *GiniB4* and *GiniB3w*
 210 makes it possible to identify the relative contribution of wage inequality to the
 211 outcome of the more encompassing inequality measure provided by *GiniB4*. This is
 212 of interest because forces affecting labour and property income are different. The
 213 former is driven by demand and supply conditions in the labour market, as well as
 214 by institutional factors such as minimum wage legislation or unionisation. Property
 215 income is primarily driven by savings and investment behaviour, inheritance laws,
 216 and the rate of return to wealth.¹⁵ The extent to which *GiniB4* and *GiniB3w* show
 217 similar trends depends on developments in the top income share. For instance,
 218 narrowing wage inequality (reflecting wage compression) and a falling top income
 219 share will result in a narrowing of overall inequality. But if wage inequality and the
 220 top income share move in opposite directions, the inequality trajectory as measured
 221 by *GiniB4* may not match that of wage inequality.

222 Our Ginis offer a clear improvement over more basic measures commonly used
 223 to track historical inequality such as the Williamson ratio and the skilled wage
 224 premium. The former has important limitations to capture a more complex
 225 distributional picture in the region during most of the twentieth century, whereas the
 226 latter leaves aside valuable information about the semi-skilled workers and on
 227 changes in the labour force. Our evidence for the LA-6 in the twentieth century

14FL01 ¹⁴ We perform such an adjustment in all six countries from around 1970 onwards based on official
 14FL02 unemployment rates, and during the 1930s using estimates available for Chile, Mexico, and Venezuela (in
 14FL03 Argentina, Brazil, and Colombia, we apply the same adjustment as in Mexico). Otherwise we assume that
 14FL04 unemployment is at its natural rate. For additional details, see Astorga (2015a).

15FL01 ¹⁵ These structural differences are reflected in a relatively low average correlation between both
 15FL02 measures (0.4) in the LA-6 over the twentieth century. The paired correlations are calculated using a five-
 15FL03 year panel data, so as to minimise distortions caused by interpolation.



228 indicates that changes in the *GiniB3w* are largely in tune with those in the skilled
 229 wage premium (an average paired correlation of 0.77), whereas the link is weaker
 230 with the Williamson ratio (0.60).

231 3 A new history of earnings inequality since 1830

232 Latin America's inequality trajectory since the early nineteenth century is
 233 dominated by volatility and diversity amid important structural and institutional
 234 transformations. Despite the common colonial past, inequality in each economy did
 235 not follow similar secular trends. To study inequality in our sample of countries, we
 236 divide the discussion by three periods loosely defined to capture the transitions into
 237 and out of the global economy: 1830s–1910s, 1920s–1970s, and 1970s–2010.
 238 During the second period, the region moved towards a more modern, urbanised, and
 239 industrially diverse manufacturing and service economy.

240 The explanations for trend diversity and commonality are to be found in the
 241 fundamentals linked to the action of market forces, institutional change, and the
 242 political economy of distribution. Providing a detailed and rigorous account of such
 243 forces and their impact on inequality is beyond the scope of this paper. However, as
 244 we discuss our evidence, we highlight key factors that are likely to have played an
 245 important role in a given epoch.

246 3.1 Post-independence and the first globalisation wave (1830s–1910s)

247 To trace the likely impact of institutional change, commodity market swings,
 248 immigration, and the expansion of the land frontier, we focus on the four-group Gini
 249 (*GiniB4w*) as a measure of wage inequality (*GiniB3w* behaves similarly) and use
 250 land rent–wage ratios to capture the relative performance of the landowning class
 251 relative to the average worker. These ratios are only available for Argentina, Chile,
 252 Mexico, and Venezuela before World War I (see Fig. 1).¹⁶

253 Latin America integrated into the world economy as a supplier of raw materials,
 254 specialising in a handful of commodities.¹⁷ High export concentration magnified
 255 macro and distributional volatility in response to terms of trade fluctuations.¹⁸ This
 256 was also a period of transition to a modern capitalist economy and the development
 257 of a mobile and wage-based labour force (Bértola and Ocampo 2012). Thus, limited
 258 labour mobility and coercion in some cases may have reduced the benefits received

16FL01 ¹⁶ Table 1 in the Appendix also offers average annual rates of growth of terms of trade as well as
 16FL02 weighted-average real wages by country in selected periods.

17FL01 ¹⁷ The main commodities for the countries in our sample were as follows: Argentina (wool, beef, and
 17FL02 wheat), Chile (nitrates and copper), Colombia (coffee and gold), Mexico (silver and copper), and
 17FL03 Venezuela (coffee and cacao). In many cases the two most important commodities represented at least
 17FL04 50% of total exports (Arroyo Abad 2013a; Bulmer-Thomas 2013).

18FL01 ¹⁸ In theory, improved terms of trade should benefit the factor used intensively in the production of the
 18FL02 exportable good (e.g., land), and, assuming concentrated ownership, it should increase inequality. But the
 18FL03 impact on the wage structure is complex depending on the relative skill intensity of the tradable and non-
 18FL04 tradable sectors (Galiani et al. 2010).

259 by unskilled labour from the expansion in foreign demand. To illustrate the impact
 260 of this transition into the world economy, we will examine first the role of foreign
 261 demand followed by the changes in factor endowments.

262 In all the countries, we find booms and busts. Argentina in the 1850s and 1860s
 263 offers an example of the inequality implications of the commodity cycle. With an
 264 unprecedented increase in the international demand of wool, the price of exports
 265 rose by over 50% from 1840 to 1860 (Sábato 1990; Newland 1998). This boom had
 266 disequalising effects as shown by the rise of the land rental to average wage index in
 267 Fig. 1.

268 Venezuela also enjoyed an export boom in this period. With the decimation of
 269 the cacao trees during the independence wars within its territory, coffee gained
 270 ground in the export sector. Especially with a more stable economy after the
 271 Federal War (1859–1863), coffee cultivation expanded towards the Andean region
 272 (Brito Figueroa 1973, 2002; Yarrington 1997). As a result, the rise in terms of
 273 trade in the 1870s drove an increase in the land rental to wage index peaking in
 274 mid-1870s. In Mexico, the terms of trade fell by about 50% in the last decades of
 275 the nineteenth century from its peak in the mid-1880s, and inequality roughly
 276 followed that trend.

277 Changes in the relative scarcity of factor endowments were also linked to the
 278 expansion of the export sector. In particular, migration inflows from Europe were
 279 sizable in Argentina and Uruguay. In Argentina, wage inequality shows a slight
 280 increase until the early 1880s and a significant compression in the 1890s as the
 281 result of the recession induced by the Barings crisis in 1890. The uptick in
 282 migration inflows in the 1880s contributed to the increase of inequality, as
 283 unskilled labour became more abundant relative to land.¹⁹ Inequality experienced
 284 an equalizing trend until the 1890s as the immigrant inflow contributed to all skill
 285 levels.²⁰

286 After the War of the Pacific against Bolivia and Peru (1879–1883), Chile was
 287 able to expand its natural resource frontier to include large deposits of nitrates. This
 288 new pillar of economic activity in Chile attracted unskilled workers. As documented
 289 by Rodríguez Weber (2014), the drop in inequality (see *GiniB4w* and the rent-
 290 unskilled wage ratio²¹ in Fig. 1) during the first global century in Chile reflects a
 291 decline in property income driven by the crisis of the 1870s and the mineral frontier

19FL01 ¹⁹ On average, the net migration during the 1880s was around 2.2% of the total population per year. In
 19FL02 comparison the prior and subsequent decades, the rates were 1.2% and 0.9%, respectively (Departamento
 19FL03 General de Inmigración 1895, 1914). This rise in inequality driven by immigration (measured through the
 19FL04 land rent-wage ratio) is also consistent with the experience of Uruguay as documented by Bértola and
 19FL05 Williamson (2006) and Arroyo Abad (2013a). Arroyo Abad (2013a) estimates that population would have
 19FL06 been 48.2% smaller in 1900 in the absence of migration.

20FL01 ²⁰ While around 40% of the foreigners' occupations were as day workers and agricultural workers, the
 20FL02 rest worked in a wide array of semi-skilled occupations such as masons, smiths and machinists (Comisión
 20FL03 Directiva del Censo 1898). For an analysis on the integration of the Italians and Spaniards in the Buenos
 20FL04 Aires labour market, see Arroyo Abad and Sánchez-Alonso (2015).

21FL01 ²¹ Yet, while all these indicators point to an overall drop of inequality during the period, it appears that
 21FL02 the landowning class enjoyed better income trends than the average wage earner (see rent/average wage
 21FL03 ratio in Fig. 1).



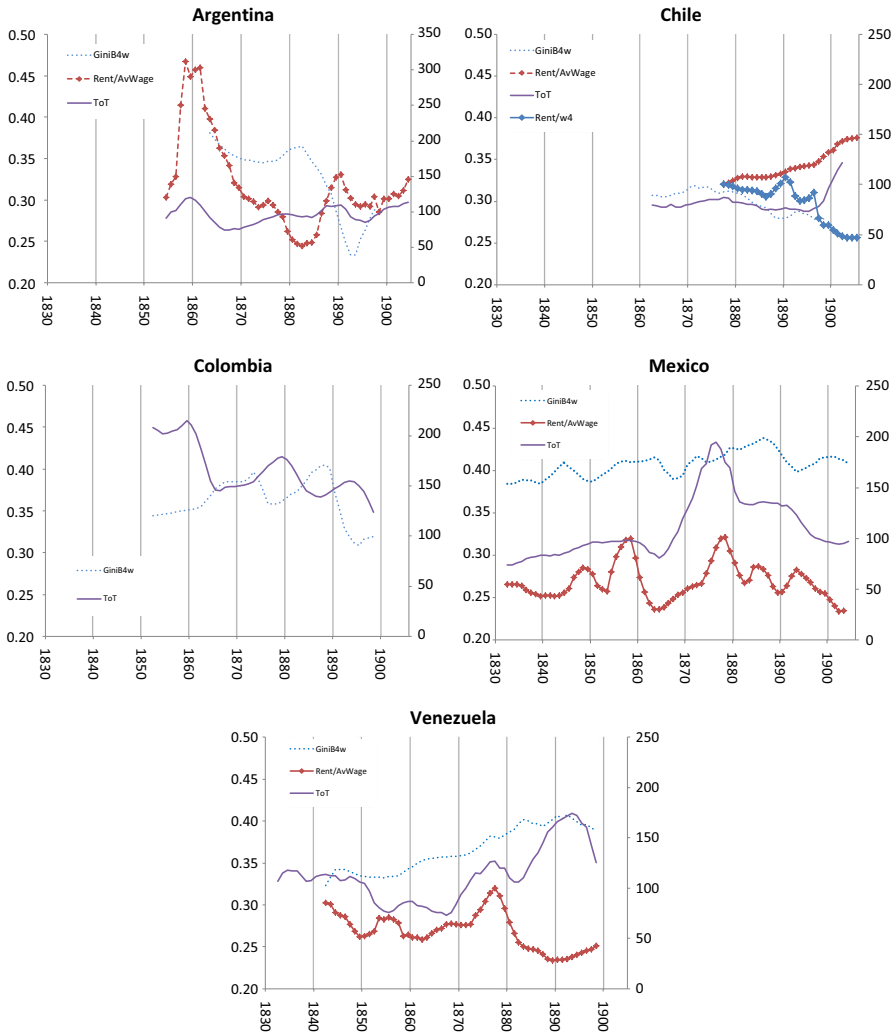


Fig. 1 Wage Gini, land rent–wage ratios, and the Terms of Trade in the nineteenth Century. *Left axis* GiniB4w = inequality among four occupational groups, 5-year centred average. *Right axis* rent/wage ratio = index of (annual land rent per hectare/average wage rate), 1880 = 100 and ToT = terms of trade, 1900 = 100, 5-year centred averages. *Sources* see “Appendix”; GiniB4w for Chile (1862–1900): Rodríguez Weber (2014)

292 expansion. The crisis of 1870s reduced the elite’s relative share given the drop of
 293 the price of gold and wheat during the decade.²²

294 In Colombia, the last decades of the nineteenth century also brought about
 295 modernisation as coffee gained ground and joined gold as the main commodity
 296 exports. This development translated into capital inflow to finance infrastructure. In

22FL01 ²² In addition, educational expansion also changed the relative scarcity of skilled to unskilled labour
 22FL02 (Rodríguez Weber 2014).

297 addition, it also prompted the emergence of a small rural middle class, a departure
 298 from the reigning *latifundia* system. With the expansion of the export sector, a
 299 domestic manufacturing sector also emerged (Sevilla Soler 1992). Until the 1880s,
 300 wage inequality (*GiniB4w*) rose, while the export sector was expanding.

301 Latin American long transition into the world economy presents a heterogeneous
 302 inequality picture deeply intertwined with commodity cycles. In good times,
 303 inequality (as measured by the land rent to wage ratio) increased as in the case of
 304 Argentina in the 1860s and Venezuela in the 1870s. With busts, inequality improved
 305 as exemplified in Mexico in the 1880s. Yet, this integration also prompted changes
 306 in factor endowments such as frontier expansion and mass migration like in
 307 Argentina. In some cases, the expansion of the export sector also promoted
 308 reallocation in the domestic economy leading to a decline in wage inequality such as
 309 in Colombia and in Chile.

310 3.2 Transition and import-substituting industrialisation (1920s–1970s)

311 In response to the external shocks brought about by the World Wars and the Great
 312 Depression, many countries in the region underwent major economic adjustments
 313 and revised their growth strategies. By the 1930s, many economies turned more
 314 protectionist (via tariffs or the use of multiple exchange rates) to promote domestic
 315 manufacturing (Thorp 1998). This move gave way to an explicit strategy of import-
 316 substituting industrialisation led by the state (ISI) that dominated economic policy
 317 from 1940 to 1970. These policies together with rapid urbanisation (particularly in
 318 Brazil, Colombia, Mexico, and Venezuela)²³ had a potentially disequalising impact
 319 as implied by the Kuznets–Lewis process.²⁴

320 As shown in Fig. 2, the interwar years are a turning point from lower to higher
 321 earnings inequality in Brazil, Colombia, Mexico, and Venezuela. In Argentina and
 322 Chile the change in trend occurs later in the 1950s. Developments in the terms of
 323 trade, and the export sector in general, continued to have an important distributional
 324 impact. A shared commodity cycle (a boom in the 1920s and a bust in the 1930s)
 325 offers a good opportunity to examine the degree of commonality in the inequality
 326 responses by countries and measures. The association with wage inequality is
 327 clearer. First, rising trends in all six countries (only in the second half in Colombia)
 328 in the 1920s boom; then, inequality declines during the 1930s bust (Mexico being
 329 the exception)—indicating falling skill premiums.

330 However, trajectories in earnings inequality (*GiniB4*) do not always confirm
 331 those in wage inequality (*GiniB3w*), pointing to a more complex distributional
 332 picture across countries once the contribution of the top-group income share is

23FL01 ²³ The urbanisation rates in the 1920s and the 1970s were, respectively, 38 and 81% in Argentina, 15 and
 23FL02 62% in Brazil, 38 and 79% in Chile, 15 and 61% in Colombia; 15 and 63% in Mexico, 24 and 76% in
 23FL03 Venezuela (Astorga et al. 2005).

24FL01 ²⁴ Although our wage data cannot fully reflect the urban–rural divide, the conditional correlation between
 24FL02 *GiniB3w* and the labour productivity gap between agriculture and manufacturing in the LA-6—after
 24FL03 controlling for other key variables such as terms of trade and factor endowments—is significant and
 24FL04 positive during the period 1935–2011. However, a similar econometric exercise using *GiniB4* lacks
 24FL05 significance (Astorga 2015b).



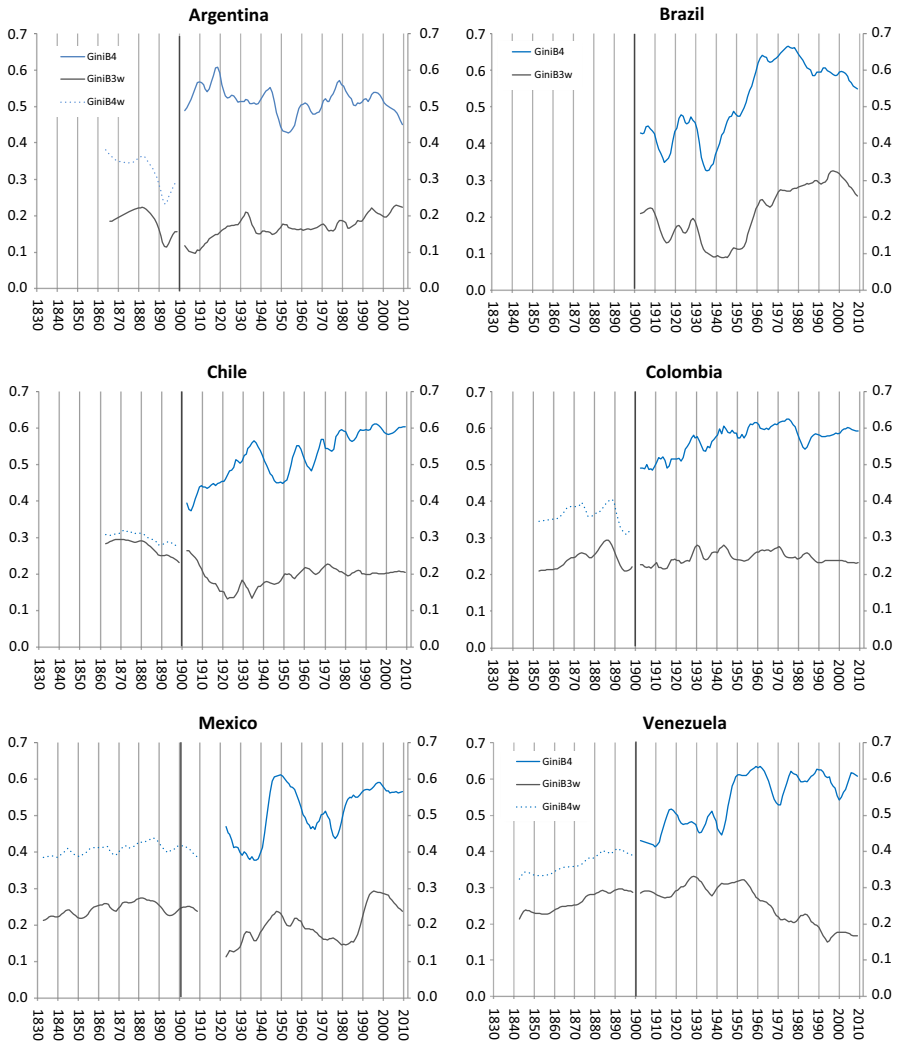


Fig. 2 Earnings inequality in six countries, 1830–2010. (Gini coefficients; 5-year moving averages). Because of data limitations GiniB4 and GiniB3w in Colombia between 1900 and 1905 are set equal to the 1906–1907 average. Series for the twentieth century are a revised version of those in Astorga (2016). Sources see “Appendix”; GiniB4w for Chile (1862–1900): Rodríguez Weber (2014)

333 included.²⁵ Argentina, Venezuela, and Mexico display contrasting trends. In the first
 334 two countries, wage expansion during the 1920s was at least partially offset by
 335 falling top-group income shares (as reflected in a stable or falling *GiniB4*), while
 336 wage compression in the 1930s was accompanied by rising top shares (a stable or
 337 rising *GiniB4*). In post-revolutionary Mexico, earnings inequality narrowed and

25FL01 ²⁵ Although we cannot rule out that some of these differences may reflect estimation shortcomings and
 25FL02 data limitations.

338 wage inequality widened over the two decades.²⁶ In Brazil *GiniB4* and *GiniB3w*
 339 moved broadly in tune, but with important fluctuations.²⁷ First, inequality widened
 340 until late 1920s with a commodity boom boosting property income and skilled
 341 wages; and then it fell in the 1930s. Chile and Colombia display matching rising
 342 trends in the 1920s, but contrasting moves in the 1930s.

343 During ISI, especially in the 1950s and the 1960s, the dominant trend was rising
 344 earnings inequality. It widened in Argentina (after a trough around 1950), Brazil,
 345 Chile, Colombia, and Venezuela (up to the early 1960s) driven by a growing income
 346 share of the top group,²⁸ but narrowed in Mexico²⁹ (in all cases amid a sustained
 347 rise in real wages). Some peaks in earnings inequality are associated with specific
 348 events. In Mexico, the spike around 1950 is linked with the surge of business
 349 opportunities in the country (amid subdued wages) created by the war effort in the
 350 US. The rapid inequality widening in Venezuela in the 1950s likely reflects a
 351 doubling in oil production with a 25% rise in oil prices until 1957 during the Suez
 352 Crisis (Baptista 1997) boosting property income.

353 Trajectories in wage inequality were more diverse: roughly constant in
 354 Argentina; widening in Brazil (after the mid-1940s), Chile and Colombia (post
 355 1950); and narrowing in Mexico and Venezuela (in both cases post 1950). This
 356 diversity is the result of competing forces—associated with structural change and
 357 labour institutions—with mixed distributive results. On the one hand, the
 358 acceleration of urbanisation and industrialisation generated downward pressures
 359 on unskilled wages (of increasingly urban workers), while relative skills scarcity
 360 boosted skill premiums (which translated in a rise in *GiniB3w*).³⁰ On the other
 361 hand, governments and unions supporting wage austerity subdued upward trends
 362 in most countries during the 1940s—especially during the war years (Roxbor-
 363 ough 1984), while the introduction of minimum wage legislation and pro-labour
 364 policies (particularly in Argentina and Mexico) supported rising trends in
 365 unskilled wages and wage compression during the 1950s and 1960s (Méndez
 366 1950).

26FL01 ²⁶ The 1917 Constitution set new minimum wage levels as well as profit sharing. Higher real wages and
 26FL02 higher living standards emerged as priorities for the government after the revolution Bortz (2005).

27FL01 ²⁷ *GiniB4* for Brazil shows a relatively low level until the early 1930s. At this time, according to the 1920
 27FL02 population census, about 80% of the labour force was rural, illiterate, and low skilled (Bértola et al.
 27FL03 2009). Under such circumstances, it is likely that the maximum feasible income Gini was relatively low
 27FL04 reflecting the fact that poorer societies have a smaller surplus for the elite to extract (Milanovic et al.
 27FL05 2010).

28FL01 ²⁸ This could reflect increased profits of firms operating under protection. However, the relationship
 28FL02 between ISI and property income is complex and requires further research. In general, the combination of
 28FL03 industrialisation with a decline in agriculture generated winners (the new industrialists) as well as losers
 28FL04 (the traditional landlords). Also the state became a key economic actor via state-owned enterprises. See
 28FL05 Rodríguez Weber (2015) for the analysis of Chile.

29FL01 ²⁹ Favourable minimum wages policies and high rates of unionisation in Mexico contributed to a long
 29FL02 spell of wage compression in this period (Márquez Padilla 1981).

30FL01 ³⁰ Intra-industry wage inequality also rose in Argentina (from early 1960s), Brazil, and Chile (Frankema
 30FL02 2012) suggesting skill-biased technological change.

367 **3.3 Structural reforms and export-led growth (1970s–2010)**

368 In the last decades of the twentieth century (1970–2000), Latin America imple-
 369 mented neoliberal structural reforms and shifted from relatively closed, state-dom-
 370 inated economies, to ones more open and market oriented. The reforms were expected
 371 to deliver sustained economic growth, raise productivity, generate jobs (especially in
 372 the formal economy), and alleviate poverty. However, in reality, they produced meagre
 373 results in terms of improving living standards. Income inequality rose moderately from
 374 already high levels. This was partly the result of trade liberalisation which encouraged
 375 the expansion of skill-intensive export activities. In a context of relatively short skills
 376 supply, this resulted in widening skill premiums (Stallings and Peres 2000).³¹

377 Our evidence broadly reflects the general story told by the household Ginis.
 378 Rising trends in earnings inequality was the norm, except in Brazil where it stayed
 379 roughly unchanged after peaking around 1980. This was also accompanied by
 380 widening wage inequality particularly in Argentina, Brazil, and Mexico after the
 381 1982 Debt Crisis. The 1970s oil boom resulted in wage compression in Venezuela
 382 and Mexico driven by relative gains for unskilled labour. But this equalising move
 383 proved to be ephemeral in Mexico. And, although it continued in Venezuela in the
 384 following two decades, this time round it was driven by a drastic fall in skilled
 385 wages. This secular decline in wage inequality and in the labour income share in
 386 Venezuela responds to a combination of a sustained fall in physical capital
 387 accumulation and a rise in human capital accumulation. Both factors boosted returns
 388 to capital and reduced the skill premium (Rodríguez 2000).³²

389 Institutional and demographic changes also played their part in explaining the move
 390 towards worsening in inequality. The military regimes in Argentina (1976–1983),
 391 Chile (1973–1990), and Brazil (1963–1980) effectively restricted—or banned—the
 392 action of unions, increased flexibility in the labour market, and reduced the coverage of
 393 the minimum wage as part of the reform agenda (Morley 2000). More generally,
 394 unionisation plummeted across the region averaging only 10.7% of the workforce by
 395 2005 compared to a peak of 23% in the 1970s (Roberts 2012). ECLAC (2015) shows a
 396 5.9% decline in the average real minimum wage for the LA-6 during the 1980s,
 397 followed by a moderate recovery of 1.7% annual increase in the 1990s.

398 The delayed impact on the labour force of high population growth rates in the
 399 1950s and 1960s (Argentina is the exception), together with increasing participa-
 400 tions rates—particularly female rates—also undermined the unskilled wages.³³ The

31FL01 ³¹ In a panel data study, Székely and Sámano (2012) found that greater trade openness was associated
 31FL02 with widening income inequality in the region during the period 1980–2000. They also found that, once
 31FL03 fully implemented, trade liberalisation did not lead to further inequality rises in the first decade of this
 31FL04 century.

32FL01 ³² The average skilled wage (Group 2) in Venezuela fell by an annual rate of –2.4% in the 1980s and
 32FL02 1990s, after rising by 2.1% in the 1970s. The same calculation for the average unskilled wage shows a fall
 32FL03 of –2.1% after a 1.9% rise.

33FL01 ³³ According to our calculations based on official figures, the population in the LA-6 (simple averages)
 33FL02 grew 74% between 1950 and 1970, and 56% between 1970 and 1990. The corresponding growth rates for
 33FL03 the EAP are 64% and 85%. The same calculations for the 1930–1950 period shows a more even process
 33FL04 with population and EAP growth both at 57%. As to female participation rates, there were few changes in
 33FL05 1940–1970, and an explosive growth in participation from 1970 to 2000 (Camou and Maubrigades 2016).

401 effect of these underlying trends in the labour market was compounded by a wave of
 402 deregulation and privatisations that shifted formal employment to an already large
 403 informal sector (PREALC 1990).

404 The inauguration of the twenty-first century brought about a Chinese-driven
 405 commodity boom, which made possible improvements in employment and real
 406 wages—in particular for the unskilled, amid a fall in wage premiums. Governments
 407 across the region—largely of left-wing orientation—implemented more progressive
 408 social spending (which equalising effects are largely missing in our pre-fisc Ginis).
 409 They also engaged in a more active role in the labour market, raising the minimum
 410 wage or taking a more pro-union stance (Gasparini and Lustig 2011). Our inequality
 411 measures fall in Argentina, Brazil and Mexico, an outcome consistent with trends in
 412 labour earnings Ginis calculated from household surveys (World Bank 2012). In
 413 Chile and Colombia, they remain roughly stable and show an erratic behaviour in
 414 Venezuela.

415 3.4 An average inequality trajectory

416 Is it possible to unveil a common inequality pattern for Latin America? To construct
 417 a regional account for inequality, we present four Ginis as simple country averages.
 418 A visual inspection of the averages reveals a secular process resembling an “m”-
 419 shaped curve for 1865–2011 with peaks in the 1880s and 1980s/1990s.³⁴ The trough
 420 is around 1920 for wage inequality (*GiniB3w*), in the 1930s for earnings inequality
 421 (*GiniB4*), and in the 1950s for inequality in the Southern Cone (*GiniB4_SC*).
 422 Broadly speaking, this evidence suggests rising inequality until the 1880s and then a
 423 decline until the 1920s–1930s. Next, rising inequality dominated the industrialisa-
 424 tion period (1940s–1960s) driven by the experience of the late industrialisers
 425 (Brazil, Colombia, and Venezuela). In the Southern Cone, the upward trend
 426 started in the mid-1950s. Inequality reached a plateau in all three Ginis at the time
 427 of the implementation of the structural reforms; then, it narrowed during the first
 428 decade of the twenty-first century.

429 The broad periodisation of inequality implied by the m-shaped schedule invites
 430 different interpretations. A first narrative is related to changes in labour market
 431 institutions. During the second half of the nineteenth century, the labour market
 432 experienced limited integration and selective coercion depending on the relative
 433 scarcity of labour. Later, with more market integration, minimum wage legislation,
 434 and other pro-labour policies, inequality decreased. Starting in the 1970s, more
 435 flexible markets and labour informality drove inequality upwards.³⁵

436 Transitions in and out of the global economy offer a second interpretation. For
 437 the first global century, the evidence is mixed with rising and falling trends of
 438 aggregate inequality with no clear association between the first episode of export-
 439 led growth and inequality. The middle period displayed protection associated with

34FL01 ³⁴ A population-weighted average (where developments in Brazil and Mexico have a larger weight)
 34FL02 produces a similar—though more pronounced—shape but with a peak around 1980.

35FL01 ³⁵ These three periods also match contrasting developments in real wages. The LA-6 real wage grew at
 35FL02 average annual rates of 0.7% in 1870–1915, 2.2% in 1940–1980, and 0.7% in 1980–2011 (see Table 1).



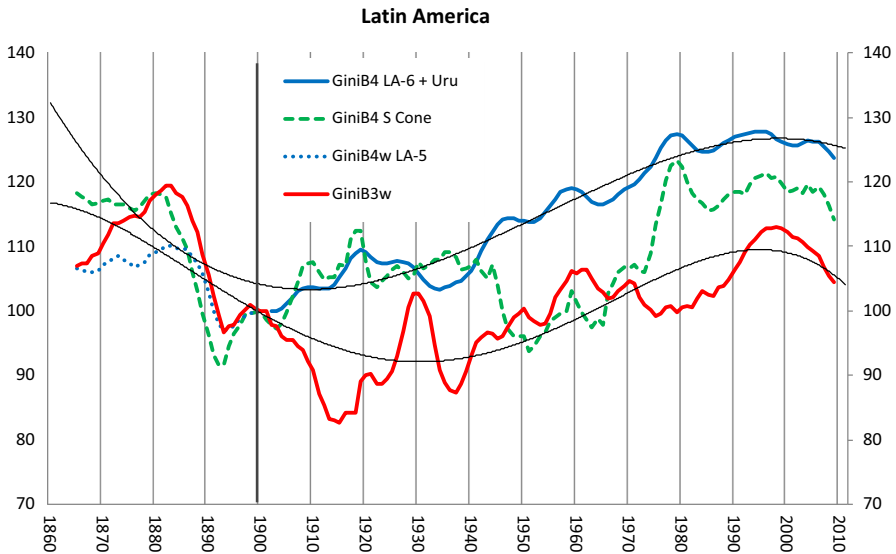


Fig. 3 Multi-country average earnings inequality, 1860s–2010. (indices, 1900 = 100; 5-year moving averages). *Notes* *GiniB4 LA-6 + Uru* is the earnings Gini for LA-6 plus Uruguay; *GiniB4 S Cone* is the earnings Gini for the Southern Cone countries (Argentina, Chile, and Uruguay) from 1900, complemented by the wage *GiniB4w* in 1865–1900; *GiniB4w LA-5* is the wage Gini for LA-5, and *GiniB3w* is the wage Gini for the bottom three categories. The 1911–21 averages exclude Mexico. *Sources* see “Appendix”; Uruguay: Bértola (2005)

440 lower inequality in the Southern Cone, but with widening inequality in the other
 441 countries. These mixed results point at country differences in resource endowments
 442 and in the implementation of the ISI itself (e.g., oil-rich Venezuela with limited
 443 import substitution). The second export-led period is clearly associated with
 444 widening inequality up to the 2000, but with a turnaround during the first decade
 445 of the 21st century.³⁶ Thirdly, the Kuznets–Lewis narrative would predict widening
 446 inequality during the industrialisation decades and levelling off towards the end.
 447 This is broadly consistent with the trajectories of *GiniB4* and *GiniB3w* in Fig. 3,
 448 with less support from the Southern Cone.

449 4 Conclusions

450 This paper offers a long-run view of Latin American inequality based on new
 451 estimates from an extensive array of primary and secondary sources. This is the first
 452 study to estimate earnings inequality for the nineteenth and twentieth centuries for
 453 six Latin American countries using a consistent methodology. The use of between-

36FL01 ³⁶ The lack of a clear link between inequality and the trade cycle does not necessarily invalidate the
 36FL02 Heckscher–Ohlin model as its predictions differ according to the country’s relative abundance of factor
 36FL03 endowments. But, changing inequality trends within a period dominated by either openness or closeness
 36FL04 complicates a simple interpretation based on this model.

454 group inequality Ginis advances our knowledge over other proxies used in previous
455 studies.

456 Our methodology and sources have limitations, and we hope that future research
457 will result in better indicators. Our estimates cannot fully capture income disparities
458 throughout the income distribution, especially within groups and at the top. As a
459 result the estimates can inform about trends but are less useful for level
460 comparisons. With the inclusion of four occupational groups, we offer more
461 nuanced estimates; however, we cannot offer insights on rural–urban inequality.

462 Transitions in and out of the global economy and the interplay of international
463 conditions and adaptations of domestic institutions gave rise to sizable inequality
464 changes in these two centuries. Despite country and period diversity, on average,
465 there is a shared inequality pattern in the long run in the form of an “m” shape with
466 peaks around the 1880s and the 1990s, and a trough in the 1920s–1930s. This
467 secular pattern is robust to a split of the sample between the Southern Cone and the
468 rest, although the trough shifts to the 1950s for the Southern Cone. Heterogeneous
469 experience and volatility question the notion of constant secular inequality
470 persistence largely determined by colonial legacies.

471 The diversity within Latin America shows that export-led growth does not
472 necessarily imply a rise in inequality. During the first globalisation wave, some
473 booms increased inequality but crises decreased inequality as well. These findings
474 challenge previous claims stating that trade openness increased inequality during the
475 first globalisation wave (Bértola and Ocampo 2012; Prados de la Escosura 2007;
476 Williamson 2010). Our findings also reveal a mixed inequality pattern during the ISI
477 decades in line with Bértola and Ocampo (2012)’s insights. A more protectionist
478 approach then did not translate into more equality in all cases. Inequality in
479 Argentina and Chile improved until the 1950s but deteriorated in the rest of the
480 countries. With the exhaustion of the ISI strategy in the 1970s, inequality was on the
481 rise in most countries reaching a plateau in the last decades of the twentieth century
482 amid the implementation of the structural reforms.

483 The emerging chronology suggested by the “m” curve for the LA-6 (plus
484 Uruguay) does not exhibit the great inequality levelling as experienced by the North
485 Atlantic economies from the 1940s to the 1970s (Atkinson 2008; Piketty 2014). In
486 Latin America, the shared reversal of inequality only came in the twenty-first
487 century driven by a natural resource export-led growth, lower skill premiums, and
488 more progressive social policies. However, with the reversal of the commodity
489 cycle this equalising tide may be retreating once again.

490 Appendix

491 Notes on estimation methodology and data sources. Selected data series can
492 be downloaded from the Global Prices and Income History Group website
493 (Tables 1, 2).

Table 1 Terms of trade and real wages in selected periods. Source see "Appendix"

Periods	Terms of trade										Weighted-average real wages ^a					
	Annual average rate of growth										Annual average rate of growth					
	ARG	BRA	CHI	COL	MEX	VEN	LA-6	ARG	BRA	CHI	COL	MEX	VEN	LA-6		
1870–2011	0.9	1.2	1.3	1.3	1.9	3.4	1.7	1.9	1.8	1.5	1.4	1.0	0.8	1.4		
20th century	0.8	1.4	1.2	2.6	2.2	4.7	2.1	1.3	1.9	1.7	1.9	1.3	1.2	1.6		
1870–1915	1.6	0.5	2.3	-0.5	0.8	0.6	0.9	0.8	1.9	-0.5	1.9	0.0	-0.1	0.7		
1870s	2.5	6.1	0.0	2.1	3.7	2.2	2.8	3.0	3.5	-0.1	-1.9	-1.1	-1.2	0.4		
1880s	0.9	1.4	0.1	-1.8	-0.3	6.4	1.1	3.5	2.3	2.9	4.2	0.7	3.6	2.9		
1890s	1.2	-3.7	3.2	-3.7	-2.9	-4.2	-1.7	2.4	-1.4	-0.6	3.8	0.5	-1.5	0.5		
1920s	4.3	4.9	3.3	6.9	5.6	5.5	5.1	6.0	1.4	3.0	4.3	3.8	5.9	4.1		
1930–1979	-0.1	0.9	-0.4	2.0	1.6	6.2	1.7	1.7	2.0	2.5	2.0	2.4	2.7	2.1		
1930s	1.5	-2.1	-4.2	-1.1	-1.0	6.5	-0.1	0.9	1.3	1.8	2.5	2.7	2.9	2.0		
1940–1979	-0.7	1.3	0.7	1.9	2.9	6.4	2.1	1.9	2.3	2.7	1.5	2.3	2.5	2.2		
1980–2011	0.1	1.2	2.9	4.6	3.0	6.4	3.0	0.0	1.8	2.6	1.1	-0.3	-1.2	0.7		
1980s	-2.4	-0.4	0.1	0.7	-2.9	-0.9	-1.0	-0.4	3.2	0.9	0.7	-3.5	-4.2	-0.6		
1990s	1.8	2.8	0.6	3.6	0.4	4.9	2.3	-0.2	-0.9	3.8	0.1	0.6	-0.2	0.5		
2000s	2.9	2.9	7.5	4.7	0.9	10.6	4.9	2.1	2.0	2.2	0.6	1.3	-0.4	1.3		

^a Weighted by the employment shares of groups 2, 3, and 4. LA-6 are simple averages. Wage averages exclude Mexico during the 1910s.

Table 2 Representative occupations by group

Country	Group 1	Group 2	Group 3	Group 4
Argentina	Accountant/ engineer/doctor	Scribe/ administrative clerk/archivist	Carpenter, smith, bricklayer, semi-skilled factory worker	Urban servant and rural day worker
Chile	Accountant/ engineer	Administrative clerk	Construction worker/artisan	Urban servant and rural day worker
Colombia	Accountant/ engineer/doctor	Scribe/ administrative clerk	Mason and carpenter	Urban servant and rural day worker
Mexico	Accountant/ engineer/doctor	Scribe/ administrative clerk	Mason	Urban servant and rural day worker
Venezuela	Accountant/doctor	Scribe/archivist	Carpenter/stoker/lower rank officer	Urban servant and rural day worker

494 **Nineteenth century**

495 • Employment shares

496 In general terms, we used the occupation classification available in census when
 497 available. Each occupation was classified according to ECLAC 9-category list
 498 and then further summarised in 4 groups: Group 1 (employers, managers, and
 499 professionals), Group 2 (technicians and administrators), Group 3 (urban
 500 workers), and Group 4 (rural workers and personal services including low-
 501 skilled urban workers and street vendors) following the methodology by Astorga
 502 (2015). As census data are not available for many Latin American countries
 503 during this period, we used other estimations as detailed below.

504 Argentina: From 1869 to 1900, we used the 1869 and 1895 census with direct
 505 interpolation for the intervening years.

506 Chile: We used the censuses of 1865, 1875, 1895, and 1905 to estimate the
 507 shares.

508 Colombia: Unfortunately for Colombia, there are no data on occupations until
 509 the twentieth century. We used Venezuela's shares.

510 Mexico: We assumed stable shares based on the 1895 Census.

511 Venezuela: The shares are estimated using the social tables by Brito Figueroa
 512 (2002).

513
514 • Population and terms of trade

515 Argentina, Mexico, and Venezuela: Arroyo Abad (2013a).

516 Brazil: IBGE website.

517 Chile: EH ClioLab.

518 Colombia: Meisel and Ramirez (2007).



519
520

- Wages

521 Argentina: Rural wages are for day workers with board from Cortés Conde
522 (1979), Sábato (1990), Cuesta (2012), and Gelman and Santilli (2014) for the
523 provinces of Buenos Aires, Entre Ríos, and Santa Fe. Unskilled urban wages
524 correspond to servants from Barba (1999) and Arroyo Abad (2013a) for
525 Buenos Aires. Semi-skilled data came from an array of sources: Carrasco
526 (1886), Buchanan (1898), Patroni (1897), Cortés Conde (1979), and Barba
527 (1999). Skilled wages were compiled from Dirección General de Estadística
528 (1894), the National Archives (Archivo General de la Nación de Argentina
529 1820–1900), national and provincial budgets, railroad and other public
530 utilities budgets (Congreso de la Nación 1860–1900; Ketzelman and Souza
531 1930; Barba 1999).

532 Brazil: Wages in Rio de Janeiro from Lobo (1978). For unskilled wages, we
533 used series of labourers of a small plot to produce fruit and vegeta-
534 bles (*hortelão*) and porters (*porteros*). For semi-skilled wages are an average
535 wage for masons and carpenters. For skilled workers, we used wages for
536 clecks (*escriuario*)—only available post 1890.

537 Chile: Wages are from Rodríguez Weber (2014) and Matus (2012).

538 Colombia: Wages are from Urrutia and Arrubla (1970) and Meisel and
539 Ramirez (2007). For rural agricultural workers, wages refer to dayworkers as
540 reported in Meisel and Ramirez (2007) and from Acevedo Echeverri et al.
541 (1989). The daily wages are annualized assuming 235 working days per
542 year.³⁸

543 For blue-collar workers we used the category servant or construction worker
544 (*obrero de la construcción*) from Urrutia and Arrubla (1970). For skilled and
545 semi-skilled workers, we compiled data from national budgets (Leyes de los
546 Estados Unidos de Colombia 1830–1900).

547 Mexico: Wages are from the Mexican National Archives (Archivo General de
548 la Nación and Archivo Histórico del Instituto Nacional de Antropología e
549 Historia, Hospitales), the Mexico City Archive (Archivo Histórico del Distrito
550 Federal, Empleados and Beneficencia Pública del Distrito Federal), several
551 national budgets, and Challú and Gomez-Galvarriato (2015). For rural wages,
552 we used a variety of estimates from several sources including Bazant (1975)
553 and Semo (1988), and all estimates include corn rations priced at market
554 value from most of Mexican regions. For late nineteenth century, we used the
555 minimum wage for the agricultural sector (de México 1965).⁴⁰ For high
556 skilled and semi-skilled workers, the data are from the Mexico City National
557 Archives and national budgets (Ministerio de Hacienda y Crédito Público
558 1881–1892; Arrillaga 1830–1900; Cámara de Diputados 1820–1900). These

38FL01 ³⁸ Workers were granted one free day a week, typically Sundays, in addition to the numerous religious
38FL02 holidays celebrated throughout the year (González Pérez 2012). Note that Urrutia and Arrubla (1970)
38FL03 assume 360 working days per year.

40FL01 ⁴⁰ The dataset is part of an ongoing project on Mexican inequality in the long run by L. Arroyo Abad, A.
40FL02 Challú and A. Gómez Galvarriato.

559 budgets provide wages by state in some occupational categories; the data
 560 collected were mainly from state capital cities, covering around 90% of the
 561 population.
 562 Venezuela: Wages for skilled, semi-skilled and urban unskilled occupations
 563 are from the National Archives (*Archivo General de la Nación de Venezuela*).
 564 For rural wages, several sources show that the average monetary wage was 2
 565 *reales* per day. Both urban servants and rural workers received in-kind rations
 566 (Lucas 1991; Yarrington 1997; Cartay 1988). No source indicates with
 567 precision the ration composition; however, a couple of sources provide rough
 568 estimations of around 1.5 *reales* per day in 1830s (Archivo Arzobispal
 569 1830–1900).⁴²
 570 Taking that figure into consideration, we assumed that the rural day workers
 571 and urban servants were provided corn and beans for a household subsistence
 572 based on the basket and prices published by Arroyo Abad (2013b).

- 573
 574 • Price deflators
- 575 Argentina: Consumer Price Index (CPI) published by Ferreres (2005).
 576 Brazil: Wholesale price index from Catão (1992).
 577 Chile: ClioLab (2015) provides a CPI for the reference period.
 578 Colombia: The deflator used is based on Meisel and Ramirez (2007)
 579 Mexico: We used the respectable basket by Challú and Gomez-Galvarriato
 580 (2015).
 581 Venezuela: We combined the CPI for Caracas (Arroyo Abad 2013b) with the
 582 GDP deflator (De Corso 2013).
- 583 • Land Rents: Arroyo Abad (2013a); Chile: Willebald (2015) estimated
 584 benchmarks for 1875, 1885, 1895, and 1907 with interpolation for the
 585 intervening years.

586

587 Twentieth century

588

- 590 • Employment shares: see Astorga (2015a, Annex C).
 591 • Terms of trade: Brazil from IBGE (2015) website, Chile from Díaz et al. (2005).
 592 Otherwise MOXLAD (2015) database.
 593 • Wages

594

595 To assemble comparable and consistent wage series, we first set comparable
 596 wage levels in the core period of 1965–1980 and then proceed to complete the series
 597 back and forth by using rate of growth of a number of wage series from various
 598 sources. To set comparable levels across the LA-6, we do the following:

42FL01 ⁴² For the late colonial period, Lana-Berasain (2014) notes that the cost of subsistence for slaves was 1.25
 42FL02 reales per person per day.



- 599 • For the unskilled workers circa 1970, we relied on comparable series of
 600 agricultural wages for unskilled workers in agriculture and the urban minimum
 601 wage from PREALC (1982) and ECLAC website.
- 602 • For semi-skilled workers, we used the average wage in most cases including
 603 seven occupations (bricklayers and masons, structural iron workers, concrete
 604 workers, carpenters and joiners, painters, plumbers, and electrical fitters) in the
 605 construction industry collected in ILO's (International Labour Organization
 606 1936–1964, 1964–1982) October Enquiry, Part I.
- 607 • For relatively skilled workers, where possible, we used monthly wages for clerks
 608 (an average of bank tellers and accountants) available in ILO's (International
 609 Labour Organization 1936–1964, 1964–1982) October Enquiry, Part II, or
 610 average wages in manufacturing from PREALC (1982) otherwise.
- 611 • Finally, to have comparable wages in a single currency across countries we
 612 calculate PPP\$ values using the PPP exchange rates available for 1970 (ECLA
 613 1978).

614

615 Regarding rate of growth: for Group 2, we use series of manufacturing wages
 616 and, when not available, wages in the public sector for relatively skilled employees
 617 such as mechanics or mid-range officers (e.g., Colombia). For Group 3, we
 618 generally use wage series in the construction sector or in other relatively low-skilled
 619 sectors such as retailing. For Argentina, we use average wages of non-agricultural
 620 sectors (excluding government) pre-1965. Chile pre-1930 uses wages in low-
 621 productivity sectors (food and drinks and textiles). For Mexico, we used the changes
 622 in minimum wages for the early decades. For Group 4, pre-1965, when possible we
 623 compiled wages for unskilled rural and urban workers. In some cases, they are
 624 supplemented with wages for unskilled government employees (e.g., Colombia).
 625 And in the post-1980 period, we use a combination of rural and urban minimum
 626 wages, or relatively low-productivity sectors such as retailing and personal services.
 627 Figure A-5 in Astorga (2015a) shows the real wage series by the three occupational
 628 groups and the estimated income per person engaged series. We use the same
 629 deflator (usually the CPI) for both overall income per person engaged and wages, so
 630 that the inequality measures are equivalent to those calculated from nominal values.
 631 All series are updated up to September 2016. Full details on sources and
 632 methodology will be included in a forthcoming publication. Contact the author for
 633 more details.

- 634 • Price deflators: see sources and notes in Astorga (2012). In Argentina to avoid
 635 the under-reporting of CPI inflation by INDEC (2015) in 2006–11, we use a CPI
 636 index reported by seven provinces compiled by CENDA (2005–2011).

637

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