Revealing the Diversity and Complexity behind Long-Term Income Inequality in Latin America: 1920–2011

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This paper analyzes and documents a new long-term income inequality series for Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela based on dynamic social tables with four occupational groups. This enables the calculation of comparable Overall (four groups) and Labor Ginis (three groups) with their between- and within-group components. The main findings are the absence of a unique inequality pattern over time; country outcomes characterized by trajectory diversity and level divergence during industrialization and by commonality and convergence post-1980; the occurrence of inequality-leveling episodes with different timing and length; and significant changes in trends, but also evidence indicating persistence. The income-inequality dataset is included as supplementary material.

The study of income inequality in Latin America after c.1870 can be divided into three epochs defined by particular growth and development strategies: the First Globalization and commodity-export-led growth (1870–1919); the transition decade of the 1920s and state-led protected industrialization (SLPI) (1920–1979); and a new episode of integration into the global economy and export-led growth (XLG) (post-1980). A common thread across the epochs is the debate about the relative importance of persistence and change in shaping countries' inequality, in other words, between high and stable levels versus fluctuations and changing trajectories. One view stresses the legacy of colonial institutions via high

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land concentration and delayed access to education and political rights (Engerman and Sokoloff 2000; De Ferranti et al. 2004). Whereas, the other view centers on the role played by strategies and economic and social transformations (Williamson 2010; Arroyo Abad and Astorga 2017).

A common institutional past and largely shared strategies and structural transformations have given currency to the widely-held assumption that Latin America is homogeneous in terms of its inequality. But is country commonality in outcomes supported by the evidence? Finding an answer has proved elusive because of limited data comparability as well as the reduced coverage of countries prior to c.1980. Although the start of the period of XLG coincides with the implementation of increasingly comparable official household budget surveys (HBS) covering a large majority of countries, the underestimation of income at the top of the distribution (in particular property income) is a data deficiency common to all three epochs.

This paper contributes to our understanding of the evolution of income inequality in Latin America by offering yearly pre-fisc Ginis from 1920 to 2011 in Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela (LA6). The methodology used guarantees the comparability of inequality outcomes over time and across countries, informing about commonality and diversity in levels and changes. The estimation work largely relies on wage data, but also makes allowances for property income to construct a set of measures based on dynamic social tables with four occupational groups defined by their level of skills. The top group (employers, managers, and professionals) concentrates property income, whereas labor income dominates occupations in the lower three groups (e.g., clerks, masons, and laborers). Importantly, this breakdown facilitates the measurement of the income share of high earners and, more generally, reveals patterns at different layers of the occupational structure.

In addition to the homogeneity issue, I address three more specific questions in light of new evidence: Are the SLPI and the XLG epochs also different in terms of their inequality outcomes? Were there lasting leveling episodes comparable to those experienced by the United States and the United Kingdom in the middle decades of the last century? Is there evidence of persistence in country trajectories?[1]

[1] This paper builds on Astorga (2017b) covering 1900–2011 in the LA6 and Arroyo Abad and Astorga (2017) covering 1860–2011, with Brazil excluded before 1900. Although the methodology and motivation of the inquiry remain the same, there is a more comprehensive and accurate estimation of income inequality post-1920 by including within-group inequality and by using Household Income rather than National Income to capture total income. Also, it uses a revised wage dataset (Astorga 2023) and includes full documentation of the estimation work. A related work (Astorga 2024a) offers income shares of the top 10 percent, middle 50 percent, and bottom 40 percent of the labor force.

During the period under analysis, Latin America underwent profound structural, demographic, and institutional transformations with significant distributional implications, which are the focus of attention in the main inequality narratives.[2] The general picture of the region around 1920 was one of largely rural societies, poorly educated, with an incipient development of manufacturing, with economies relatively open to international trade and dependent on the export of a handful of raw materials,[3] and low rates of population growth as well as low participation rates. In response to the external shocks brought about by the Great Depression and WWII, many countries in the region underwent major economic adjustments and revised their growth strategies, favoring the promotion of domestic manufacturing. This spearheaded an explicit strategy of import-substituting industrialization led by the state that dominated economic policy until the 1970s. This was accompanied by rapid urbanization and internal migration,[4] institutional changes in the labor market (e.g., official minimum wage, collective bargaining, and unionization) and fiscal policy (direct taxation), mass education, high population growth, and economic modernization and diversification.

As the structural change got underway and labor moved from low to higher productivity sectors, it was expected—according to the Kuznets-Lewis logic—that the urban labor force would improve their educational levels and skills, while the fall in the rural workforce and the modernization of agriculture would bid up their wages. However, there is a well-known twist to this process in Latin America. Industrialization stagnated in the final quarter of the last century, and workforce growth swelled the urban informal sector, creating the conditions for worsening inequality (Thorp 1998). The middle decades also witnessed the surge of authoritarian rule, with important implications for inequality. For instance, the right-wing military regimes in Argentina (1976–1983), Brazil (1964–1985), and Chile (1973–1990) effectively undermined or banned trade unions, increased flexibility in the labor market, and restricted minimum wages as part of their reform agenda (Morley 2000).

[2] Structural change (Kuznets 1955; Lewis 1954), institutional and political changes (Piketty 2014), the ins-and-outs of the global economy (Heckscher-Ohlin model), and education and technology (Tinbergen 1975).

[3] Although, during the 1920s, customs duties were introduced to promote incipient industries in the larger economies, tariffs were primarily intended to raise revenue (Coatsworth and Williamson 2002).

[4] Argentina and Chile already had significant urban populations by 1920; Brazil, Colombia, Mexico, and Venezuela had to wait until the 1940s and early 1950s for the turning point in urbanization. By 1980, 75 percent of the LA6 population lived in cities, compared to only 20 percent in 1920 (Astorga, Bergés, and FitzGerald 2005).

The SLPI epoch was followed by the 1982 Debt Crisis and the introduction of neoliberal reforms in the 1980s (mid-1970s in Chile) and the 1990s. This brought about a shift from relatively closed, state-dominated economies to ones more open and market-oriented. It was thought that, consistent with standard trade theory, more competition from imports and a rise in low-skill exports would help to reduce income inequality. But, in practice, trade liberalization primarily encouraged the expansion of relatively skill-intensive export activities, which, in the context of skills shortages, pushed up premiums (Stallings and Peres 2000) and translated into rising inequality up to the end of the century (Székely and Sámano 2012). In addition, the delayed impact of the demographic transition on the labor market, together with increased female participation rates (Camou and Maubrigades 2017), boosted the supply of unskilled workers and undermined their wages. The effects of these underlying trends were compounded by a wave of deregulation and privatizations that shifted formal employment to an already large informal sector, exacerbating inequality.

The new century ushered in the China-led commodity boom (2003–2013) that supported employment creation and higher wages, particularly for unskilled workers (De la Torre, Messina, and Pienknagura 2012). The boom eluded Mexico, where exports were mostly manufactures to the United States. Also, governments across the region—predominantly left-wing—implemented more progressive social spending, adopted educational reforms, and favored pro-labor policies (Roberts 2012). The result was a largely shared fall in income inequality across the region, as reported by HBS. However, by the end of the 2010s, inequality levels remained relatively high, both compared to historical values and to other global regions (Amarante and Colacce 2018).

What Inequality Regional Pattern to Expect between 1920 and 2011?

There are two contrasting answers. De Ferranti et al. (2004), adopting the institutionalist view, suggest that Latin America already had very high levels of inequality by 1920 and that the scant evidence available indicates persistence during the rest of the century despite social and economic transformations. This is also consistent with country commonality. By contrast, Frankema (2009) proposes a different pattern. First, a rising trend from 1870 until the Great War with more open economies and an institutional context favoring landlords and capital owners. Then there was a trend reversal during the interwar years and a fall in inequality until the mid-1970s to early 1980s, supported by the prominent role of the

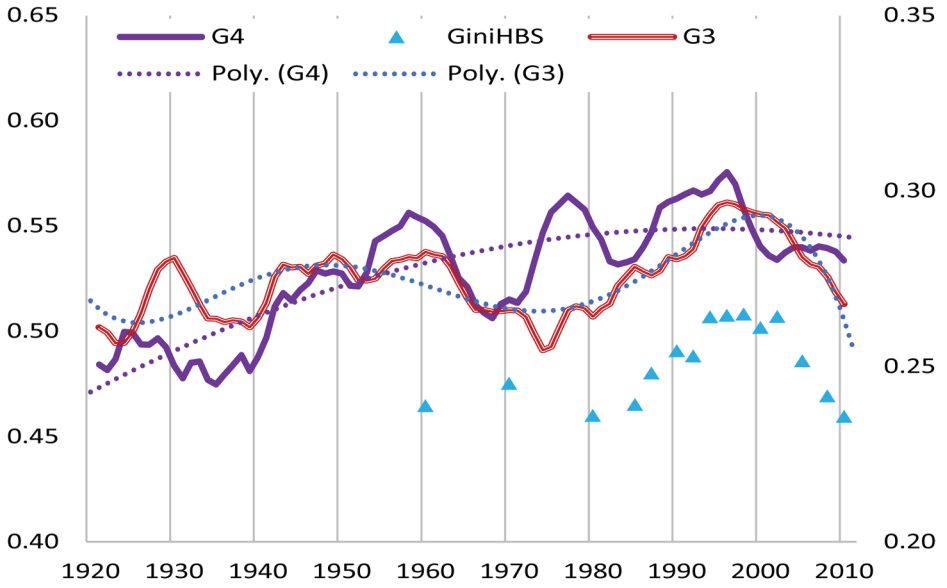

FIGURE 1
AVERAGE INEQUALITY TRAJECTORIES IN THE LA6

Notes: *G4* and *G3* are three-year moving simple averages; *G3* is plotted on the right axis. *GiniHBS* = Ginis based on HBS.
Source: See Figure 5.

state and income policies tailored to urban workers. This was followed by a marked widening of inequality driven by skill-biased technological change, in conjunction with the erosion of labor market institutions and increased global competition. Graphically, this conjecture results in a sinusoidal wave with an inequality peak in the 1920s and a trough around 1980. A similar pattern is proposed by FitzGerald (2008) and Ocampo (2013).

Do the data conform to the predictions? To answer this, I rely on my two main inequality measures: the "Overall Gini" (*G4*), which is based on a categorization of all workers into four occupational groups, and the narrower "Labor Gini" (*G3*), which focuses on the lower three wage-based groups. Figure 1 shows the average LA6 trajectories of both Ginis with their respective polynomial trendlines to capture secular trends, together with the standard Gini coefficient based on HBS. Significant differences between my Ginis, in both levels and trajectories, are explained by the determinant role played by the top group's income share in shaping the inequality outcome.

This aggregate evidence shows there is no simple answer. Generally, fluctuations prevail over constancy. The *G3* trajectory is broadly consistent

with Frankema's conjecture post-1920 and, after 1970, it aligns with the evolution of inequality according to the HBS, which largely excludes top incomes—hence its lower level relative to *G4*. However, the more encompassing *G4* shows a rising secular trend since 1920 (amid significant fluctuations), leveling off in the 1990s. Thus, conformity to the predicted inequality pattern largely depends on the exclusion of high-earners' income. But, how well do average trajectories represent country stories? To address this question, I present the disaggregated evidence by country and discuss commonality and diversity in the section Inequality Evidence, after the explanation of the methodology. Next, I summarize the main findings of the paper.

The study of the occupational Ginis reveals that altogether, despite common historical roots and structural and institutional similarities, there is no uniform inequality pattern, either across countries or within the occupational structure. The picture that emerges is one of inequality stories that are not the same for the whole region.

Trajectories of the Overall and the Labor Ginis tend to differ, making conclusions largely contingent on the measure used. The two developmental epochs are distinctive in terms of their inequality outcomes, with contrasting patterns in both *G4* and *G3*: while XLG is dominated by commonality, SLPI is characterized by diversity with a number of leveling episodes of different timing and extension. But, unlike the United States and the United Kingdom, the region did not experience widespread and sustained inequality leveling between the 1940s to the 1970s.

Moreover, throughout the period of analysis, there is evidence of both persistence and change. This indicates the combined impact of lingering effects of exclusionary institutions and sizable inequality fluctuations arising from differences in terms of factor endowments, integration in the world economy, and institutional adaptations. But country diversity is also evident when testing for persistence.

The analysis of this paper is based on three methodology innovations. First, I calculate the income accruing to the top group as a residual after deducting the estimated income of the lower wage-based groups from total income. This makes it possible to capture property income during a period where tax micro data, when available, are of limited use because of widespread tax evasion and avoidance. Secondly, I use a Normal distribution—supported by the outcome of normality tests—to estimate within-group inequality in each of the lower three groups. And, thirdly, I adopt a procedure to calculate inequality within the top group using, when possible, estimated income shares of the top quantiles (e.g., 1 and 5 percent) under the assumption of a Pareto distribution. The last two

innovations enable me to estimate the within-inequality component of occupational groups with distributional patterns that are fitted by different probability functions.

MAIN EMPIRICAL STRANDS IN THE LITERATURE

Broadly speaking, the empirical literature on income inequality in Latin America can be divided into four strands. The first, social tables, is the most comprehensive approach to measuring income inequality in periods where household income surveys and tax records are limited. This method combines detailed data from benchmark years from population censuses with income data from other sources (Milanovic, Lindert, and Williamson 2010; Allen 2019). There are also dynamic social tables, where annual income data (usually wages) fill the gap between benchmark years. There have been important efforts to construct social tables in the last two decades or so. For instance, Castañeda and Bengtsson (2020) on Mexico, and, on the dynamic variety, Gómez León (2021) on Brazil, Rodríguez Weber (2014) on Chile, Rodríguez Weber (2017—based on Londoño (1995)) on Colombia, and Bértola (2005) on Uruguay. These works offer valuable insights, primarily on inequality levels at benchmark years and, depending on the case, on trends. Also, they pay special attention to the inclusion of property income where the data allows. However, they are of limited comparability across countries, either because of differences in methodology and/or temporal span, and, therefore, cannot offer a regional perspective on inequality.

A second strand puts more emphasis on a multi-country scope, with the main evidence coming from labor income and wages in particular. For instance, Frankema (2010) offers labor income shares in Argentina, Brazil, and Mexico during the twentieth century, as does Astorga (2017a) on those three countries plus Chile, Colombia, and Venezuela from 1900 to 2011. Elsewhere, Frankema (2012) examines long-run industrial wage inequality in Argentina, Brazil, and Chile and concludes that aggregate inequality indicators reveal little about the changing determinants of inequality, when the latter affect such indicators in opposite directions. And, therefore, it is necessary to include partial inequality metrics (e.g., wage inequality and skill premiums) to help isolate the contributions of changing economic circumstances or political-institutional reforms. This finding is of particular relevance to my work.

The third empirical strand relies on HBS to calculate personal or household income inequality since the 1980s. One important advantage of this strand is that it offers comparable inequality metrics across

countries based on perfectly-sorted incomes over the whole distribution. However, one well-known limitation of the surveys is the underestimation of top incomes, particularly non-labor income (Székely and Hilgert 1999). There are earlier estimates for a handful of countries, but they are sparse in time and not fully comparable across countries or across time (see Oscar Altimir estimates in Thorp (1998, Statistical Appendix)). Prados de la Escosura (2007) quantified income inequality trends by complementing HBS Ginis with ratios of per-capita GDP to unskilled wages—or Williamson ratios—in seven countries since the second half of the nineteenth century. But his series are of limited use to capture inequality developments post-1920. Also, work by Gazeley et al. (2018) on historical HBS in Latin America 1913–1970, combines official and non-official sources. They found a modest average increase in inequality in the region from the 1930s to the 1960s, but with the warning that the measured rise is due mainly to changes in survey methods and data coverage. More recently, Alvaredo et al. (2024) conducted a comprehensive review of income inequality from the mid-1940s to 2020, largely relying on HBS. Although the evidence until the 1970s is too fragmentary and difficult to compare, they found a clear pattern of rising inequality in most countries prior to the 1990s and falling inequality between the early 2000s and the mid-2010s.

These shortcomings lead us to the fourth strand, based on tax records. In recent decades, they have been used to correct the underestimation of top incomes in budget surveys and to produce more comprehensive income Ginis (Medeiros, Souza, and Castro (2015) in Brazil and Alvaredo and Londoño Vélez (2013) in Colombia). Tax records also allow the tracking of top incomes during periods without HBS (Alvaredo (2010) in Argentina and Flores et al. (2019) in Chile). However, problems of tax evasion and avoidance, together with methodological breaks and long spells without data, limit the use of this approach to shed light on income concentration at the top and, especially, on inequality over the whole distribution over the long term.[5]

This paper belongs to the strand of dynamic social tables. Because the aim is to cover as many countries as possible over a long period of time, the number of groups is reduced to four. The main reason I cannot include more groups is the need for additional continuous wage series reflecting a distinct skill level (e.g., professionals). In constructing the data, I benefited greatly from single-country social tables, in particular

[5] Jiménez, Sabaini, and Podestá (2010) estimate average income tax evasion c.2005 equivalent to 4.6 percent of GDP in seven Latin American countries, including Argentina, Chile, and Mexico. See Alvaredo (2010) for concerns about the use of historical tax data in Argentina.

Rodríguez Weber (2014, 2017) and Castañeda and Bengtsson (2020), and from wage data used in Frankema's work. Equally, I draw from the contributions of the tax-records strand, which made it possible to estimate the income inequality of my top occupational group. See Online Appendix 3 (OA3).

From a long-term, regional perspective, it would be ideal to have comparable, detailed, dynamic social tables, that include a sufficient number of countries. In addition, such social tables should, first, contemplate a large number of groups so defined as to minimize income overlaps (approaching the perfectly-sorted quantiles of the HBS strand) and, secondly, use administrative records of high earners´ income as in the tax-records strand. But, in practice, expanding coverage and extending the time span of the analysis come at the expense of country coverage and the number of groups. This is the price to pay to guarantee comparability and a methodologically-consistent estimation of the income of high earners.

DYNAMIC SOCIAL TABLES

The starting point is the construction of dynamic social tables for four occupational groups following the methodology in FitzGerald (2008). For each country, the economically active population (EAP) is divided into Group 1 (employers, managers, and professionals), Group 2 (technicians and administrators—white-collar workers), Group 3 (semi-skilled blue-collar workers and other urban workers in low productivity sectors such as retailing and transport), and Group 4 (urban and rural unskilled, including domestic servants). These groups are themselves an aggregation of the categories used in Economic Commission for Latin America and the Caribbean (ECLAC)'s Social Panorama (2000). To ensure consistency with the total EAP series, the labor force in Group 3 is calculated as a residual. The shares of the groups change over time in response to developments in skill formation, demography, and living standards. This is a departure from standard Ginis, calculated with fixed quantiles of the labor force. The distribution of income per occupational group in a given year is defined as:

$$\sum_{i=1}^{4} e_i r_i = 1, \tag{1}$$

where e_i is the EAP share of group i, r_i is the ratio of the mean income of group i to the mean income for the EAP as a whole (income per person engaged), and $e_i r_i$ equals the income share of each group (s_i).

The measure of income per person engaged reflects, where possible, the Household Income concept of the national accounts. I am choosing

this aggregate rather than National Income to avoid an overestimation of the income share of Group 1 that would result if items such as the net surplus of the public sector and indirect and corporate taxes were included.[6] Although, since the 1980s, there has been enough data to account for net taxes, this was not so in previous years. Nevertheless, there was limited redistribution via direct transfers in the region during most of the twentieth century (Goñi, López, and Serven 2011), and the analysis of the series pre-fisc or post-fisc should lead to similar conclusions. Also, I omit the distributive impact of social spending, which has risen throughout the region since around 1950, exhibiting high volatility and following the swings in economic activity (Arroyo Abad and Lindert 2017).

The income share of Group 1 (s_1) is calculated as a residual by subtracting those of the other three groups:

$$s_1 = e_1 r_1 = \left\{1 - \sum_{i=2}^{4} e_i r_i\right\}. \tag{2}$$

The top share is likely to capture most of the property income (dividends, rents, and interest payments) for all the economically active population, together with the labor income of employers, managers, and professionals.[7] Because of the way it is calculated, s_1 may be subject to a significant margin of error. However, when data are available, its trends are broadly consistent with those of the income share of the Gross Operating Surplus of the national accounts and with calculations of top income shares based on tax records. See Figure OA4.1 in Online Appendix 4 (OA4). Natural resource rents—particularly important in Chile and Venezuela—are included to the extent that they are reflected in household income, but not when they are used to finance publicly provided services. The complement of the top group share ($1 - s_1$) offers a lower-bound estimate of the labor income share.

To estimate the mean income and the income shares of the remaining three occupational groups, I rely on representative wage series (w_2, w_3, w_4) assembled to reflect differences in skills (Astorga 2017a, 2023).[8] Because of the use of different sources in the calculations, it is necessary to

[6] However, the main conclusions of the paper are robust to the change in the income concept. While *G4*s have higher levels under National Income, trajectories tend to coincide. See Figure OA1.2 in Online Appendix 1 (OA1).

[7] The long-term evidence in developed economies shows that property income tends to be concentrated in the top 10 percent of the distribution (Piketty 2014). And, almost certainly, this is also true in Latin America owing to a historically high concentration of assets (Frankema 2009).

[8] Given the nature of the data, I am implicitly assuming that individuals only receive income from single sources.

conciliate total income with the wage bill of the three lower occupational categories. See Online Appendix 1 (OA1). Also, there is a potential bias when estimating income ratios by dividing the wage series by the income per person engaged. The former reflects the income of those employed, whereas the latter takes into account the unemployed and underemployed. Thus, at times of high employment losses, my series would underestimate r_1 and, in turn, inequality. This bias can be especially relevant in the early years of the Great Depression or during country-specific economic crises (e.g., Chile in 1981–1983 and Argentina in the early 2000s). To minimize the potential impact of this bias, I adjust upward my series of income per person engaged using available unemployment rates (OA1.2).

There are two additional issues worth mentioning. First, income estimates should make allowances for the subsistence economy. However, there is little systematic evidence of its size (particularly relevant in the early decades of the twentieth century), which could be used to make an adjustment (Berg 1970). When adults in the subsistence sector are included in the census, I am assigning them an income equal to the unskilled wage. To the extent that the measured total income underestimates the subsistence economy, my estimates are biased against inequality because it would reduce the actual size of Group 1's income. Secondly, to deal with mixed income, based on the findings of Amarante, Abeles, and Vega (2014), I assume that earnings of the self-employed in the lower three occupational groups are largely made up of labor income, and that they can be approximated by the corresponding representative wage in each group.

Table 1 summarizes the EAP shares and relative income ratios in selected years. See outcomes by lustrums in OA1. Differences among the countries' shares are largely driven by variations in the urbanization process, the timing of industrialization, and improvements in education.

By 1920, gross enrollment rates in primary schooling ranged from 78.3 percent in Argentina, 70.3 percent in Chile, and 62.5 percent in Colombia to 38.5 percent in Mexico and 29.4 percent in Brazil (no data for Venezuela), and it was only by 1980 that all six countries reached full enrollment rates (Frankema 2009, p. 366). Over time, particularly post-1950, there was significant occupational mobility. While the EAP shares of Groups 1 and 2 expanded in Argentina and Chile, the main occupational upgrading in Brazil, Colombia, Mexico, and Venezuela occurred across the bottom groups. In general, the $r_1 s$ started to decline from the 1940s onward, reflecting higher e_1s in line with better access to secondary and tertiary education and a rapid rise in average income per worker in the 1960s and 1970s. Meanwhile, the $r_4 s$ had a steady decline starting

TABLE 1
EAP SHARES AND RELATIVE INCOME RATIOS, SELECTED YEARS

	Argentina							Brazil							Chile						
	e_1	e_3	e_4	r_1	r_2	r_3	r_4	e_1	e_3	e_4	r_1	r_2	r_3	r_4	e_1	e_3	e_4	r_1	r_2	r_3	r_4
1920	4.3	44.9	35.2	*11.2*	*0.8*	*0.59*	*0.38*	3.9	19.2	69.0	*8.7*	*1.6*	*1.03*	*0.49*	5.1	46.1	41.9	*9.0*	*1.3*	*0.70*	*0.41*
1940	4.6	43.4	33.6	*9.3*	*0.9*	*0.64*	*0.41*	3.9	23.9	64.5	*11.9*	*1.1*	*0.69*	*0.45*	5.5	46.2	40.9	*6.8*	*1.0*	*0.84*	*0.42*
1950	5.1	51.9	25.5	*7.0*	*1.1*	*0.68*	*0.41*	3.9	26.4	60.4	*11.2*	*1.3*	*0.64*	*0.45*	5.6	48.2	37.7	*7.0*	*1.3*	*0.71*	*0.40*
1960	6.2	54.5	21.2	*8.2*	*0.8*	*0.53*	*0.30*	4.1	29.9	55.5	*11.7*	*1.4*	*0.64*	*0.32*	7.5	51.2	32.5	*5.1*	*1.2*	*0.78*	*0.38*
1980	8.3	53.0	17.3	*6.5*	*0.7*	*0.51*	*0.19*	6.5	38.0	43.7	*8.3*	*1.0*	*0.61*	*0.26*	9.6	51.8	22.7	*5.2*	*0.8*	*0.62*	*0.19*
2000	12.1	47.6	15.1	*4.3*	*0.9*	*0.46*	*0.26*	8.0	46.7	31.9	*5.4*	*1.3*	*0.68*	*0.24*	13.7	47.3	22.0	*4.2*	*0.8*	*0.52*	*0.21*
	Colombia							Mexico							Venezuela						
1920	5.4	28.9	60.7	*6.4*	*1.5*	*1.11*	*0.41*	3.5	21.0	70.8	*9.8*	*1.5*	*1.14*	*0.49*	4.0	29.7	60.0	*8.5*	*1.6*	*1.02*	*0.43*
1940	6.5	27.3	56.9	*8.1*	*1.2*	*0.92*	*0.33*	2.9	25.5	66.0	*7.8*	*1.9*	*1.22*	*0.54*	3.6	38.5	50.3	*7.3*	*1.5*	*1.03*	*0.44*
1950	7.6	30.2	52.0	*8.2*	*1.2*	*0.82*	*0.33*	2.9	26.7	63.9	*15.2*	*1.5*	*0.89*	*0.34*	5.0	43.1	43.2	*7.5*	*1.2*	*0.90*	*0.32*
1960	7.9	29.9	48.9	*6.7*	*1.3*	*0.78*	*0.31*	4.0	32.6	55.3	*11.1*	*1.3*	*0.80*	*0.34*	5.0	46.0	37.8	*8.4*	*1.1*	*0.67*	*0.33*
1980	8.2	37.8	39.8	*6.0*	*1.0*	*0.69*	*0.35*	7.2	40.8	40.5	*5.2*	*1.1*	*0.78*	*0.44*	10.3	48.0	24.3	*5.3*	*1.0*	*0.44*	*0.28*
2000	9.1	40.9	36.0	*5.4*	*0.9*	*0.61*	*0.31*	9.5	43.9	32.4	*5.1*	*1.2*	*0.56*	*0.28*	11.4	47.4	23.7	*4.1*	*1.1*	*0.59*	*0.33*

Notes: e_i stands for the share of EAP of group i. All e_is are percentages (%) and three-year averages; $e_2 = 1 - e_1 - e_3 - e_4$, and r_i stands for the ratio of the mean income of group i to the mean income of the whole labor force. All r_is are three-year averages, except Mexico in c.1920, which excludes 1919.
Source: See the text.

TABLE 2
ACRONYMS FOR THE OCCUPATIONAL GINIS

G4: Overall Gini -*four groups*	*G3*: Labor Gini -*three lower groups*	Gg_1: Gini coefficient of Group 1
G4B: between-group Gini	*G3B*: between-group Gini	Gg_2: Gini coefficient of Group 2
G4W: within-group Gini	*G3W*: within-group Gini	Gg_3: Gini coefficient of Group 3
G4 = G4B + G4W	*G3 = G3B + G3W*	Gg_4: Gini coefficient of Group 4

Source: See the text.

between 1930 and 1940. This is the result of unskilled wages lagging behind the total average income despite recording real gains during SLPI (Astorga 2017a).

Occupational Ginis

With information provided by the shares of the EAP and the relative income ratios, I calculate various Gini coefficients to measure income inequality across the occupational structure. See Astorga (2024b). I pay special attention to the Overall Gini (*G4*) and the Labor Gini (*G3*). Having these Ginis is of interest because the dominant forces affecting labor and property income are different. The former is driven by demand and supply conditions in the labor market (and, in turn, influenced by technology and skill formation), as well as by labor-market institutions and policies, whereas property income is primarily driven by factors such as savings and investment decisions, the rate of return to wealth, and inheritance laws.

Here I introduce a total of ten Ginis. A detailed account of their calculation is included in the Appendix. Table 2 spells out the acronyms of each measure. The Overall Gini is separated into the between-group Gini (*G4B*) and the within-group Gini (*G4W*). *G4B* is the inequality that would result if everyone in each of the four groups received the mean income of the corresponding group.[9] *G4W* is the weighted sum of the income inequality of each of the four groups, treating them as separate populations, namely, Gg_1, Gg_2, Gg_3, and Gg_4. Whereas the calculation of Gg_1 assumes a Pareto distribution, it uses a Normal distribution for the other three Ginis.

The Labor Gini is calculated by adding up the between-group Gini (*G3B*) and the within-group Gini (*G3W*). The former is the inequality that would result if everyone in a given group received the mean income for that group, whereas the latter is the weighted sum of the Gini coefficient

[9] See the underlying Lorenz curves for selected years in OA4 (Figure OA4.2).

each wage group would have if it were a separate population (Gg_2, Gg_3, Gg_4).

The decomposition of *G3* sheds light on the contributions to inequality of wage skill premiums, which are largely captured in *G3B*, and of wage compression within skills-homogeneous groups, reflected in *G3W*. In turn, such a distinction can inform us about the potential role played by key drivers. While skill-biased technological change is a main factor behind increases in premiums, within-group wage dispersion is likely to reflect the effect of labor-market policies such as minimum wages.[10]

WITHIN-GROUP INEQUALITY

This section describes the estimation of income dispersion (which is needed for calculating *G4W* and *G3W*), deals with the issue of income overlap, and summarizes robustness checks.

Wage Dispersion

I assembled a new series of wage dispersion measured by the coefficient of variation (*cv*) with a sufficient number of benchmark observations over 1920–2011 to capture underlying trends in within-group income inequality for the lower three occupational groups. Here, I present a summary of this task; see Online Appendix 2 (OA2) for full details. For Group 4, I calculated wage dispersion across low-skilled occupations using data from various official publications and social tables. Accounting for the urban-rural divide is a key issue for this group, as I am covering a period where the region underwent a rapid process of internal migration. Where data allow, I included a representative sample of unskilled wages in both rural and urban activities in benchmark years.

To gauge income dispersion in Group 3 and Group 2, I largely relied on industrial censuses and surveys for blue-collar and white-collar workers in manufacturing according to the International Standard Industrial Classification (ISIC), with a breakdown by divisions (two digits).[11] Ideally, the coverage should include other sectors such as construction and commerce. However, manufacturing is the only sector with enough data across all six countries over the period of analysis. Importantly, its data separate blue- and white-collar workers, which is crucial for

[10] In Brazil during 1940–1980, the official minimum wage was key in determining unskilled wages and influencing pay for clerical and blue-collar workers, while the remuneration of white-collar workers responded to their relative scarcity and profit rates (Camargo 1984, p. 45).

[11] Pre-1980s data usually refer to ISIC Rev. 1 with up to 20 industries, and to ISIC Rev. 2 with up to 28 industries thereafter.

constructing comparable and consistently defined proxy series for these two occupational groups. Therefore, I assumed that changes in wage dispersion in both categories offer a reasonable proxy for those in income inequality within the middle groups, particularly in a period dominated by industrialization.[12]

However, the matching of the corresponding skill level is an issue that needs attention. The blue-collar category includes a proportion of unskilled workers, especially in industries such as food and textiles, that should belong to Group 4 and some relatively skilled workers that would be better placed in Group 2. Meanwhile, the white-collar category includes salaries of managers and professionals, which belong to Group 1, as well as some relatively low-skilled clerks that would be better placed in Group 3. Thus, in both cases, the direct use of wage dispersion in blue- and white-collar categories would lead to an overestimation of the level of income inequality in Groups 3 and 2.

To address this problem, a downward adjustment to wage dispersion is needed. Fortunately, there are some data to guide such an adjustment. Shipley (1977) had blue-collar workers in ten manufacturing industries in Argentina during the 1920s, separating unskilled and semi-skilled workers. On average, the dispersion without the unskilled is about 0.87 of the whole blue-collar category. A similar calculation for the period 1986–1991 with Argentina's wage data in manufacturing gives a ratio close to 0.80 (ILO YLS 1996). Regarding the adjustment to the white-collar category, industrial censuses in Mexico in 1935, 1940, and 1945 (DGE 1953) present income data separating directors and managers from other white-collar employees. On average, the dispersion in salaries without the directors and managers is about 0.80 of the whole white collar. Based on these calculations, I downscaled blue- and white-collar wage dispersion by 0.85 (adj_{bc}) and 0.80 (adj_{wc}), respectively, over the whole period. Wage dispersion for unskilled workers (cv_{unsk}) is left unadjusted, as there is no skill mismatch.

Inequality within the Occupational Groups

The dispersion for the lower three groups is derived from the adjusted coefficients of variation of the series of white- and blue-collar wages, and the original one for unskilled wages is as follows: $cv_2=adj_{wc}cv_{wc}$; $cv_3=adj_{bc}cv_{bc}$; $cv_4=cv_{unsk}$. These *cvs* are then used to calculate standard

[12] Although this is likely to bias inequality upward in years of limited industrial development, the comparative evidence presented in Figure 5 indicates that such an assumption results in occupational Ginis, the trajectories of which are broadly consistent with alternative Ginis.

deviations compatible with the representative wages of Groups 2, 3, and 4 obtained in the first stage.[13] This information is then used to simulate a Pen's income parade (Pen 1971) per group and year, assuming a given income distribution function (Modalsli 2015). It is well known that the entire income distribution is well fitted by a Lognormal distribution with a Pareto upper tail. However, it is a moot point whether this is also true for different groups within a given population. To clarify this empirical issue, I performed normality tests on a representative sample of the wage data for my three lower occupational groups from industrial and occupational surveys in benchmark years. Table OA4.1 in OA4 summarizes the results. Four tests are applied, of which the Shapiro-Wilk test tends to have the better power in samples fewer than 100 observations (Yap and Sim 2011). In most cases, the null hypothesis of normality cannot be rejected. The evidence for the more limited unskilled wage data is also dominated by normality, though here there are more rejections of the null hypothesis. Equally, when performing these tests on a selection of perfectly-sorted quantiles in the HBS percentile distributions excluding zero incomes, normality tends to reflect well the income distribution of those quantiles that exclude the top 10 percentiles.

Income Overlap and Robustness

I use the definition of "well-apportioned" groups to examine the extent to which the four occupational groups offer an appropriate EAP breakdown that minimizes the potential for income overlap. For a group to have a separate identity, the income differences within the group should be less than the differences across the groups, and the weighted sum of within-group Ginis should not be larger than the between-group Gini (Modalsli 2015; Milanovic, Lindert, and Williamson 2010). Under this definition, my four occupational groups are well-apportioned, and this should translate into limited income overlaps between groups.

Table OA4.2 includes a summary of income values at different points of the distribution of Groups 4, 3, and 2 in five benchmark years between 1920 and 2000 to inform about the extent of income overlap. They are calculated based on the so-called three-sigma rule of thumb (or 68–95–99.7 rule).[14] The overlap between Groups 4 and 3 is limited and largely affects the EAP above $+1\sigma_4$ and below $-1\sigma_3$, involving the upper end

[13] That is, $\sigma_i = cv_i * w_i$; i=2 to 4, where w_i is the group i representative wage.

[14] This rule states that, for a normally distributed variable, 68 percent of all values lie within one standard deviation of the mean ($u \pm \sigma$), 95 percent within two standard deviations ($u \pm 2\sigma$), and 99.7 percent within three standard deviations of the mean ($u \pm 3\sigma$).

and lower end of both groups' income distributions. The overlap is most significant for values above $+1\sigma_3$ and below $-1\sigma_2$. By contrast, although it is not possible to apply the three-sigma rule to the top group, large mean-income ratios between Group 2 and Group 1 in all six countries (column "u_1/u_2") mean that the overlap is likely to be minimal.[15]

I performed robustness checks to gauge the impact that different assumptions about income overlap have on the levels and trajectories of *G3* and *G3W*—the metrics where the effect is most significant. Figure OA4.3 shows for each country my preferred series accompanied by lower- and upper-bound series. The lower-bound estimates are obtained by reducing the standard deviation of Groups 3 and 2 by 20 percent uniformly over the period. This downward adjustment produces near-perfectly sorted groups (results not shown). The upper-bound values are obtained by assuming that wage dispersion in the two middle groups matches that of the unadjusted blue- and white-collar workers. As expected, lower dispersion in both groups reduces inequality levels over the period, especially in *G3W*, and vice versa. In general, the confidence intervals in *G3W* widen over time as the relative sizes of Groups 2 and 3 increase (e.g., in Brazil and Mexico). But, overall, they translate into much narrower margins in *G3*, where trajectories are largely unaffected.

Regarding income inequality in the top group, what would be the impact on *G4W* and, more importantly, on *G4* of any misrepresentation of "true income inequality"? To answer this, I perform a sensitivity analysis, assuming upper- and lower bounds of ± 20 percent of Gg_1 from the baseline. This exercise shows that the impact on *G4* is minor, though more significant in *G4W* toward the final decades (Chile). Such an outcome is to be expected (Alvaredo 2011) because, although the top group's inequality is the largest of all four groups, its contribution to *G4* is relatively low owing to its reduced share of the economically active population. OA3 provides further details.

THE INEQUALITY EVIDENCE

This section offers a detailed presentation of the results and addresses the central questions of the paper. I begin by examining the countries' performance according to the Overall Gini, the Labor Gini, and its within-group component. This adds nuance to the study of diversity and commonality over the two epochs. Next, my aggregate Ginis are compared with alternative income Ginis based on social tables and HBS

[15] In support of this claim, detailed social tables in Mexico in 1930 and 1940 show equivalent income ratios of 13 and 6.3, respectively (Castañeda and Bengtsson 2020).

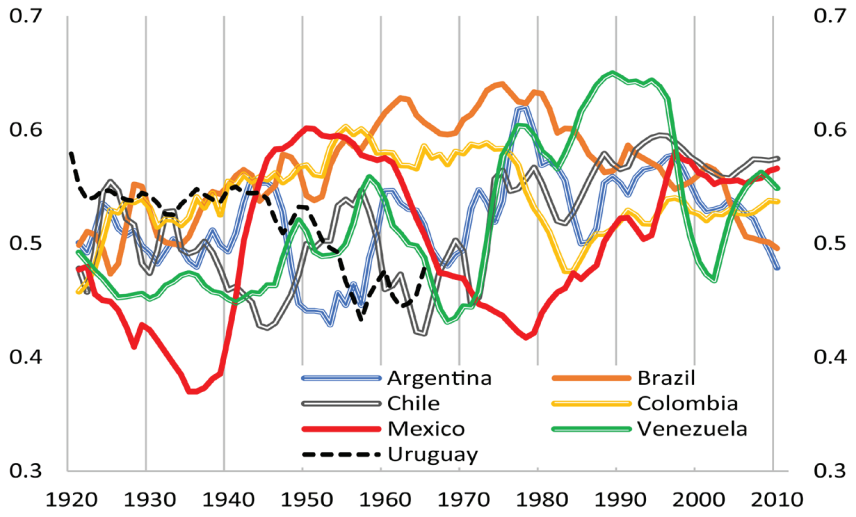

FIGURE 2
OVERALL GINIS BY COUNTRIES IN THE LA6 AND URUGUAY

Notes: All series are three-year moving averages except Uruguay (Bértola 2005).
Source: See the text.

to check for consistency and assess their plausibility. Also, I highlight country-specific episodes likely to have influenced inequality trajectories, particularly before 1980. The section ends with a discussion on inequality levels and evidence of persistence.

Inequality across the Occupational Structure and Epochs

Examining developments at different layers of the occupational structure is of interest for at least two reasons. First, the comparison between *G4* and *G3* sheds light on the differentiating distributional effect of the top group. Owing to a large average income gap between the top group and the lower three wage-based groups, changes in *G4* are driven by developments in the income share of the high earners. This means that inequality dynamics in *G3* could well be overlooked if the analysis were centered on *G4*. Indeed, correlations between both measures in Table OA4.3 show that for the whole period, they are relatively low (higher in Brazil and Mexico) and positive (except in Venezuela). Secondly, the decomposition of *G3* into between- and within-group components reveals dynamics in *G3W* that are largely omitted in the aggregate outcome, which is driven by changes in *G3B* (Appendix Figure A.1).

Are the SLPI and the XLG epochs also distinctive in terms of their inequality outcomes? Figure 2 shows the *G4* in the LA6 plus a largely

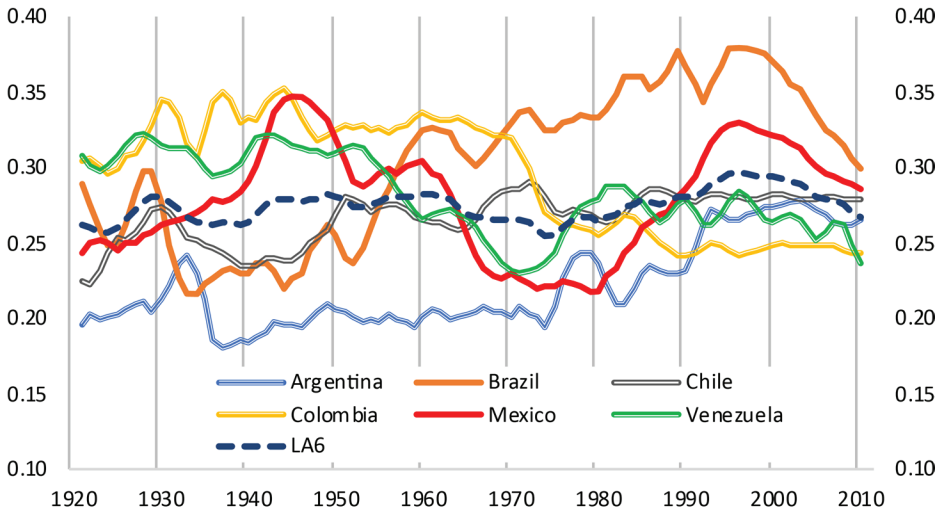

FIGURE 3
LABOR GINIS BY COUNTRY

Notes: All series are three-year moving averages.
Source: See the text.

comparable Gini of Uruguay up to 1966, thus widening the country's coverage during most of SLPI. While XLG is dominated by the commonality of rising inequality in the 1980s, a leveling off in the 1990s, and a fall in the 2000s, SLPI is marked by diversity. Regarding inequality levels, there is a move toward convergence during XLG and increased divergence during protected industrialization.

Figure 3 shows country trajectories in *G3*. As in *G4*, there is a contrast between the dominance of trend commonality in XLG and mixed inequality trajectories during SLPI. In the last two decades of the last century, inequality rose in Argentina, Brazil, Chile, Colombia (only up to 1985 and, modestly, in the 1990s), and Mexico. Venezuela is an exception. And all six countries shared falling trends and converging levels in the 2000s. On the contrary, trend diversity was the norm during the core years of industrialization. For instance, rising inequality between the mid-1940s to c.1980 in Brazil, a prolonged episode of narrowing inequality from the early-1960s to c.1980 in Mexico, and roughly constant inequality at a relatively low level from 1950 to the mid-1970s in Argentina. Also, there is divergence in levels, particularly after 1940. Such contrasting outcomes reflect, among other factors, different timings of structural change, advances in education, development of manufacturing, and variations in the intensity of import substitution. Whereas, by the 1980s, countries were structurally more alike and largely adopted the policies of the Washington Consensus.

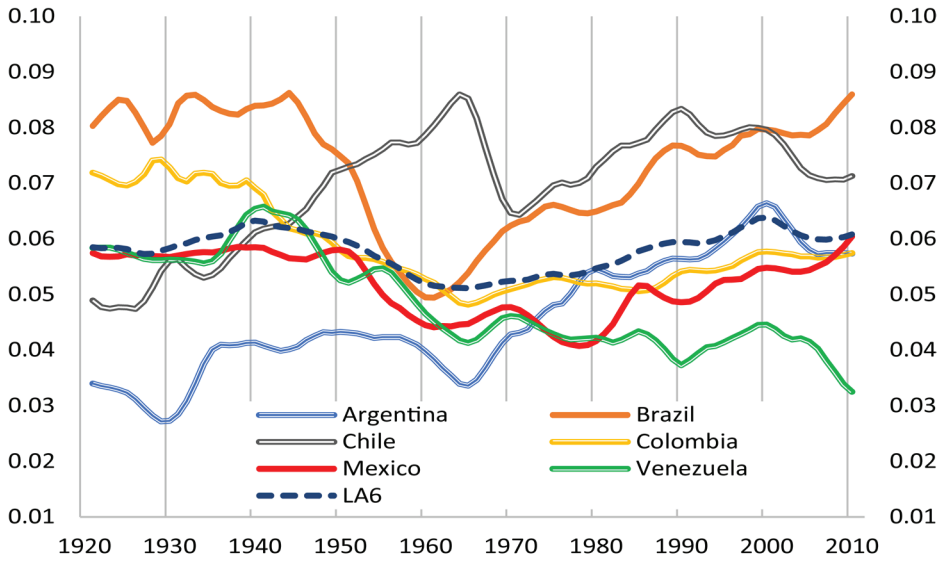

FIGURE 4
G3Ws BY COUNTRY

Notes: All series are three-year moving averages.
Source: See the text.

Figure 4 shows the trajectories of *G3W*. As in *G4* and *G3*, the 1980s and 1990s are characterized by rising trajectories and a change of direction in the 2000s. However, according to this measure of wage dispersion, the central decades of protected industrialization are dominated by commonality in narrowing trends. They are particularly prolonged in Mexico and Venezuela, extending from c.1950 to the end of the 1970s and also significant in Argentina from 1950 to the end of the 1960s, Brazil between the mid-1940s to early-1960s, and Colombia from c.1940 to the mid-1960s.

Generally, a contraction in the wage structure is consistent with a substantial growth in unionization and increases in the minimum wage. Chile is an exception, with rising *G3W* from the mid-1930s to the mid-1960s, and again in the 1970s after a sudden fall in the second half of the 1960s. This pattern is driven by rising dispersion in blue-collar wages that outweighed an opposite trend in unskilled wages from the mid-1950s to the mid-1970s (Figure OA3.4).

Were there leveling episodes?[16] The answer depends on the inequality measure used and on the definition of a "leveling episode." The "Great

[16] Using a mix of metrics, Rodríguez Weber (2018) identifies periods of "small leveling" of income inequality during industrialization, particularly when structural change was accompanied by pro-labor institutions (e.g., Chile and Uruguay).

TABLE 3
LEVELING EPISODES IN THE LA6

	G4		G3	
	Period	Leveling (%)	Period	Leveling (%)
Argentina	*1943–53*	–20.7	*1953–74*	10[1]
Brazil	—	—	1996–2011	–22.5
Chile	*1955–65*	–27.3	*1930–39*	–16.2
Colombia	*1973–84*	–19.7	*1969–79*	–20.0
Mexico	*1920–36*	–20.3		
	1960–78	–27.7	*1956–75*	–24.3
Venezuela	*1958–68*	–27.3	*1953–73*	–25.4

Notes: "Leveling" refers to start-to-end falls in the Gini in the "Period."
[1] Type II episode. Calculations based on three-year moving average series.
Source: See the text.

Leveling" (Lindert and Williamson 2016) in the United States and the United Kingdom offers a benchmark for my definition. In the United States, there was a 20 percent fall in the Gini coefficient between 1929 and 1945, followed by about 30 years of low and stable inequality; while in the United Kingdom there was a fall of 17 percent between 1935 and c.1949, with inequality staying at a low level for a similar number of years (Atkinson 2015, figures 1.1 and 1.2). In both cases, the implementation of neoliberal policies in the late 1970s marked a turnaround in inequality.

For the LA6, I distinguish two types of leveling episodes: "type I," defined as a period of narrowing inequality that lasted at least 10 years with a start-to-end fall of 15 percent or higher; and "type II," a period of 10 years or longer of relatively low inequality where the episode's average Gini was at least 10 percent below the average for the whole period. Table 3 shows results for *G4* and *G3*.[17] Most of the leveling episodes occurred during SLPI, and many were interrupted by steep reversals in the 1970s. Mexico offers the only case with a coinciding leveling episode in both Ginis in 1960–1975, and Argentina 1953–1975 has the only type II episode. A somewhat surprising outcome is that, despite the prevalence of narrowing inequality in the 2000s, there are only two episodes, according to my definition. Therefore, if we are looking for shared leveling episodes, they are found during the industrialization years. Although in the LA6 there were inequality falls of a similar magnitude (or higher) as in the United States and the United Kingdom, the consolidation of the lower level of inequality was missing. Leveling there was, but it fell short of being "Great."

[17] Bértola´s Gini of Uruguay (Figure 2) offers another leveling episode with an 18.4 percent fall between 1950 and 1965 (though with a rebound in 1960).

Comparisons with Alternative Ginis

In Figure 5, my *G4s* and *G3*s are compared with social-table Ginis for Brazil, Chile, Colombia, and Mexico, together with all-incomes HBS Ginis for the six countries in the more recent decades (*GiniHBS* in the charts). Also, it shows adjusted Ginis with corrections for underestimation of high-earners' income for Argentina, Brazil, and Chile. One would expect to find consistency, on the one hand, between trends in *G4s*, social-table Ginis, and adjusted Ginis as all three measures capture property income; and, on the other, between changes in *G3s* and HBS Ginis as both, despite being constructed differently,[18] are based on labor income, which should provide a common ground for co-movements.

Generally, there is trend consistency between the Overall Ginis and the social-table Ginis, especially in Chile and Colombia over 1920–1972 and 1937–1993, respectively. And in the later decades, *G4s* are in tune with the adjusted Ginis in Brazil and Chile. Moreover, *G3s*' movements tend to match those of *GiniHBS*, particularly in Argentina, Colombia, and Mexico, and, in all countries, during the 2000s.[19]

In what follows, I provide a more detailed account—though partial for extension's sake—of the inequality outcome in each of the countries. I highlight particular episodes or periods and summarize explanations based on the actions of fundamental forces and policies given in the literature.

In Argentina, there is still debate about what happened to inequality in the 1920s, though a decline is considered the most likely outcome (Gerchunoff 2016). My evidence shows a moderate fall in *G4* with reinforcing moves in *G4B* and *G4W* (Appendix Figure A.1), which supports the view of an equalizing trend during this decade. However, *G3* displays a rising trajectory with opposite moves in *G3B* (rising) and *G3W* (falling), indicating that the inequality pattern is contingent on the metric used. The relatively low and stable level of *G3* since the end of the 1940s agrees with consensus. Wage regulation became part of government policy during Perón's administration (1946–1955) and remained in place until the mid-1970s.

Protected industrialization enabled the system of wage setting to avoid foreign market pressures and to keep the labor share of income comparatively high (Frankema 2010). Inequality jumped in 1976/77 as

[18] For instance, changing vs. fixed EAP shares; non-perfectly-sorted vs. perfectly-sorted data; the use of records at work vs. surveys at home.

[19] Though my Ginis exclude the impact of policies such as conditional cash transfers, the inequality fall in the region during the 2000s was driven by the strong growth of low-skilled wages (Azevedo, Inchauste, and Sanfelice 2013)—which is accounted for in my *G3*s.

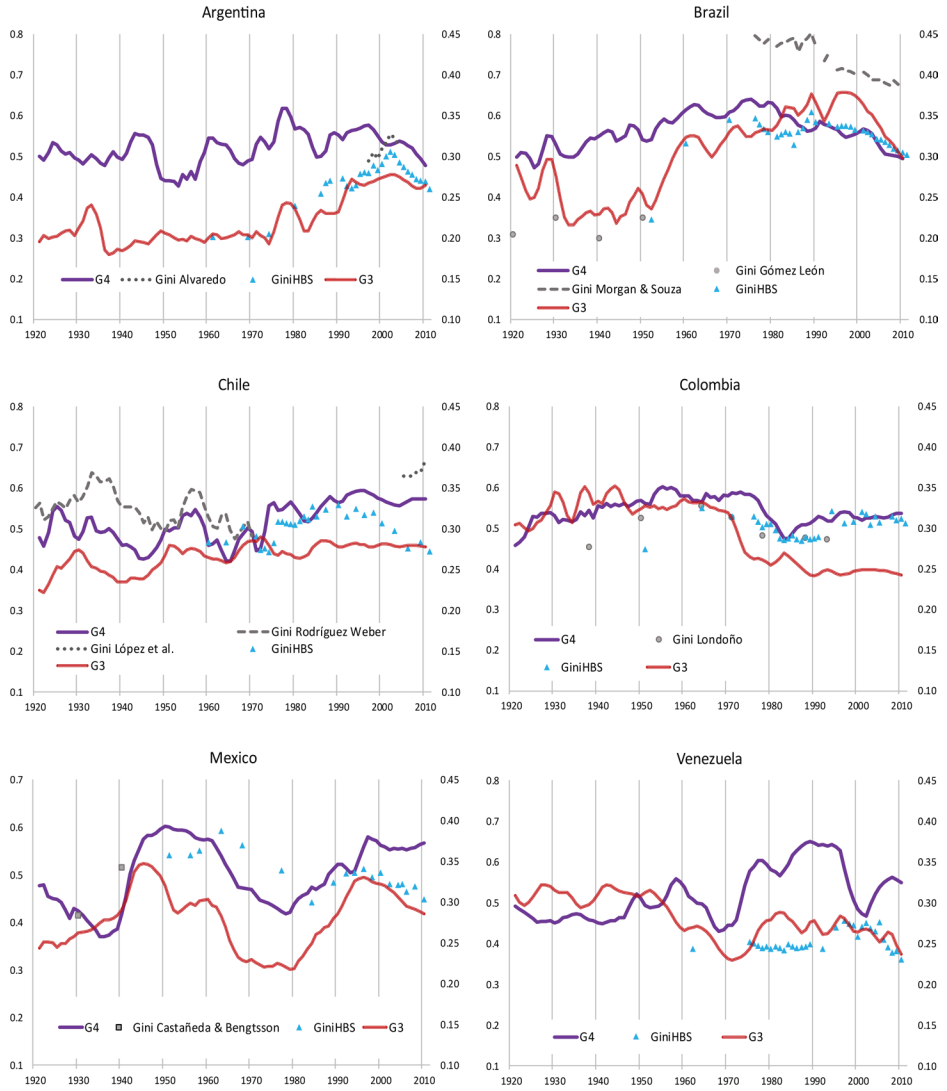

FIGURE 5
OVERALL AND LABOR GINIS WITH ALTERNATIVE GINIS

Notes: All *G4*s and *G3*s (plotted on the right axes) are three-year moving averages.
Sources: Levels for *GiniHBS* are set using Ginis of equivalized income without zeros from CEDLAS in Argentina 1974–2011, Brazil 1981–2011, Chile 1987–2011, Colombia 2001–2011, Mexico 1989–2010, and Venezuela 1989–2006. The series move backward with changes of other HBS Ginis as follows: Argentina, Altimir's compilation in Thorp (1998, Stat. App.) to 1961; Brazil, (Souza 2018) to 1976, Altimir to the early 1960s; Chile, Rodriguez Weber (2014) to 1971, Altimir to 1960; Colombia, ECLAC per-capita Gini to 1991, DANE (13 main cities) to 1976, Altimir to early 1950s; Mexico, Székely (2005) to 1951; Venezuela, Baptista (1997) per-capita Gini to 1962, and extended to 2010 with per-capita Ginis from ECLAC.

the government imposed a freeze on wages in an attempt to halt hyperinflation. Regarding *G4*, there are significant increases in the 1940s and from the late 1950s to the mid-1960s, driven by a higher income share of the top group.[20] Two underlying likely reasons behind the first boost were a policy of wage contention during WWII and favorable commodity prices after 1944 (MOxLAD) benefiting landowners. The second boost is associated with the 1959 stabilization plan and an economic crisis in 1962/63, which hit labor income disproportionately (Lindenboim, Graña, and Kennedy 2005).

In Brazil, it is possible to make a comparison with social-table Gini benchmarks in 1930, 1935, 1940, and 1950 from Gómez León (2021). Although her levels are lower, the trends broadly match those in *G4*. A second comparison is made with the Gini of Morgan and Souza (2019), which combines tax and HBS data from 1976 to 2010, with both measures displaying a downward secular trend. The years between 1945 and 1974 are the golden age of protected industrialization in the country, with GDP growing at an average annual rate of 7.6 percent and at 10.7 percent between 1968 and 1974 (IBGE 2003). This was supported by sustained capital accumulation that, in the context of firms with market power operating under protection, was likely to favor profits and high-earners' income in general.

The steady increase in inequality captured in *G4* and *G3* has been given three broadly complementary explanations: skill-biased technological change amid a poor education effort boosting skill premiums (Langoni 1973); labor policies that curved the power of trade unions and weakened wage regulations (Frankema 2012); and a systematic under-indexation of wages in periods of high inflation (e.g., 1959–1966), particularly affecting the minimum wage (Bacha and Taylor 1978; Souza 2018).

In Chile, matching trajectories in my Overall Gini and Rodríguez Weber's social-table Ginis is of no surprise because his work is my main source for wage data for this country. Importantly, this also shows that the use of only four "well-apportioned" occupational categories can do a good job at capturing the evolution of income inequality estimated with a much greater level of disaggregation. Inequality rose during most of the 1950s as the government imposed a freeze on wages to fight accelerated inflation. It peaked toward the end of the decade and then fell to the mid-1960s. The change in direction reflects a distributive policy agenda led by an agrarian reform, the promotion of unionization, and a recovery in the minimum wage (Rodríguez Weber 2014).

[20] These are broadly in tune with movements in the share of Gross Operating Surplus and, in the 1940s, with changes in the income share of the top 1 percent (Figure OA4.1).

Following the 1973 military coup, *G4* saw a step change and remained at a higher secular level afterward, only being interrupted during the 1981–1983 economic crisis. A contraction in real wages, and particularly among the unskilled, was instrumental in boosting high earners' income share. And the implementation of neoliberal policies under the Pinochet regime consolidated conditions for higher inequality. However, *GiniHBS* (based on surveys in the Greater Santiago in the 1970s) jumped in 1975 and remained at a higher level during the rest of the century. In the 2000s, this Gini shows a fall coinciding with the start of the commodity boom in 2002. But once the surveys' data are corrected by the underestimation of high-earners' income (López, Figueroa, and Gutiérrez 2013), the corrected Gini shows a rising trend between 2005 and 2010, as in my *G4*.

In Colombia, Londoño (1995, 1997) provides income Ginis in seven benchmark years between 1938 and 1993 using a combination of national accounts, employment data, and HBS. His Ginis show a rise in inequality from 1938 to 1964 and a change in direction in the 1970s. The upward trend has been attributed to a combined effect of large surpluses of labor, modernization of agriculture, rural violence, and land concentration. Conditions started to change later in the 1960s, with a marked inequality decline in the early 1970s driven by the expansion of education in the 1950s together with a reduced surplus of labor in rural areas, which translated into lower skill premiums in the cities (Ocampo and Tovar 2000). The rapid fall in inequality during the 1970s, particularly in *G3*, was also supported by strong growth in real unskilled wages (Astorga 2017a).

In Mexico, the social-table Ginis of Castañeda and Bengtsson (2020) show a significant rise in inequality between 1930 and 1940, an outcome that is also present in *G4* and, particularly, in *G3*. But what happened in between those benchmarks and during the crucial post-Revolution 1920s? There is a contrast between a rise in *G3* driven by an increase in wage premiums and a decline in *G4* in line with a shrink in the top group's income share reflecting drastic changes in institutions and policies (e.g., agrarian reform, introduction of minimum wages), as well as the destruction of productive assets during the 1910s. Then, inequality rose in the 1940s and reached a plateau in the early 1950s. This has been associated with the surge of business opportunities created by the war effort in the United States amid subdued wages in Mexico, boosting income at the top (Felix 1977). The 1960s and 1970s show a long spell of narrowing inequality, consistent with favorable minimum wages and high unionization rates (Márquez Padilla 1981).

Finally, in Venezuela, scant wage data prior to 1936 mean that my estimates for those years should be taken with caution. According to

Valecillos (2007, p. 103), the general picture of the labor market was one dominated by roughly constant wages and a stable wage structure up to the mid-1930s. Then, labor and property income started to rise gradually, driven by the rapidly growing importance of the buoyant oil industry. The upward trend in *G4* during 1936–1959 reflects a rapid process of urbanization, with surplus labor creating downward pressure on unskilled urban wages. Also, strong public spending on infrastructure projects favored income concentration.

The 1960s and early 1970s show an improvement in income distribution consistent with an easing of the labor surplus, further increases in urban wages, and rapid expansion of the middle class (Valecillos 2007). The rise in *G4* from the early 1970s to the mid-1990s is driven by a drastic fall in the income ratio of the bottom group (Table OA1.2). Also, a sustained fall in physical capital accumulation boosted returns to capital (Rodríguez 2000). Meanwhile, *G3* declined steadily amid a sustained fall in real wages, especially for relatively skilled workers (Astorga 2017a). The sudden fall in *G4* in the early 2000s coincides with a general strike and the interruption of oil production in 2002/03, resulting in a severe contraction in total income, which affected Group 1's income more than proportionally.

On Levels and Persistence

So far, I have focused the discussion on trajectories, but the occupational Ginis also informs on inequality levels. My *G3s* are bound to be lower than those calculated from household surveys for various reasons, such as the exclusion from the former of labor income for professionals and managers. Equally, *G3*s' levels are necessarily lower than *G4*s', because of the addition of the top group in the latter. Over the whole period, the LA6 single average of the Overall Gini is 0.55, compared to 0.27 of the Labor Gini. And *G4s'* levels tend to be more stable than *G3s*', with a simple LA6 average of the coefficient of variation of 2.2 percent compared to 4.6 percent of *G3*. Greater fluctuations in the latter suggest that the inequality dynamics of structural change and shifts in labor-market policies are likely to have had a stronger distributive impact on the income of the lower three groups. Although the inclusion of Group 1 tends to dampen inequality fluctuations, *G4* also exhibits significant movements in the short to medium term, indicating the action of forces related to commodity cycles (Rodríguez Weber 2023) or internal political changes.

Is there any evidence of persistence in country trajectories? To examine the extent of persistence over the long term, it would be necessary to look

at inequality across generations originating from factors such as inheritance and education (Piketty 2000). But this would require the analysis of micro data, which is beyond the scope of this paper. Also, tracing the lingering effects of colonial institutions calls for coverage of the nineteenth century. That said, the concept of stationarity enables a rigorous assessment of persistence and stability in my Overall and Labor Ginis over the 1920–2011 period. A time series is stationary if its statistical properties, such as the mean and the variance, do not change over time. One important implication is that stationary series exhibit mean reversion: after a one-time shock, the series tends to revert to its constant mean. By contrast, non-stationary series are time-dependent, and their behavior tends to exhibit trend shifts or follow a random walk over time. My working hypothesis is that reversion of inequality to the long-term mean can be taken as a necessary condition for persistence.

The Phillips-Perron unit-root test (*P-P test*) is commonly used in the literature to check for stationarity in time series (Phillips and Perron 1988). After performing the *P-P test,* the following series proved to be stationary: *G4* (1 percent) in Argentina*; G4* (1 percent) and *G3* (10 percent) in Chile; *G4* (1 percent) in Colombia.[21] In Argentina and Colombia, adding Group 1's income to a non-stationary *G3* makes *G4* stationary. One possible interpretation of this result is that an effective concentration of power at the top paved the way for the high earners' relative success in either defending or increasing their share of the countries' income. In Brazil, Mexico, and Venezuela, the null hypothesis cannot be rejected. The reasons for such contrasting outcomes across the LA6 need further research.

CONCLUSIONS

This paper makes a contribution to multi-country studies, particularly during the industrialization years, by examining income inequality in Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela during the period 1920–2011 using a new dataset. These six countries have accounted for over 80 percent of the region's population and GDP since 1920, and, thus, their inequality performance provides a regional perspective, though it does not capture the rich variety of a wider country's coverage.

The analysis of the evidence stresses the importance of distinguishing between the inequality outcome of the whole labor force and that originating in wage-based occupational groups, with LA6 aggregates showing

[21] In brackets are the significance level according to the test statistic $Z(t)$. Null hypothesis (H0): random walk without drift. All tests were performed on variables at level, with a constant term (no trend).

significant differences in the trajectories of the Overall and Labor Ginis. Shifts in secular trends in the latter are broadly consistent with Frankema's conjecture and match the evolution of Ginis based on HBS since 1970. However, regional averages hide significant country disparities, and, therefore, generalizations need to be taken with caution.

Given the limited availability—and comparability—of household surveys prior to the 1980s and the difficulties of using tax records, this work offers unique comparable evidence informing about income inequality in the region over the long term. The methodology and data sources both have their limitations, particularly the lack of direct estimates of property income, the inevitable relatively narrow sectoral scope for wage dispersion, and a reduced, though well-apportioned, number of occupational groups. Also, during the estimation work, it was necessary to make numerous assumptions of varying quality with the potential to introduce biases. Thus, it cannot be ruled out that changes in some of them could alter the reported outcomes. However, inequality trajectories are robust to the use of alternative assumptions on income overlap between the wage-based groups, the extent of Group 1's income inequality, and changes in the income concept.

By extending the coverage up to 2011, this dataset spans the epoch of state-led protected industrialization, where the evidence comes primarily from social tables, and the decades of export-led growth, where the prevailing data sources are HBS. Moreover, by facilitating comparisons with a variety of metrics, it can shed light on the extent to which a common inequality story can be told regardless of the metric used. Such comparisons also allow for checking the plausibility of my series. Country trajectories in *G4* roughly match those of alternative social-table Ginis, and movements in my *G3* tend to be consistent with those in household surveys.

The answers to the central questions of this paper are as follows. First, my analysis reveals that overall, despite similarities in colonial institutions and the process of economic development, a significant degree of country diversity in trajectories in both *G4* and *G3* questions the validity of the general assumption that Latin America is homogeneous in its inequality.

Secondly, the epochs of SLPI and XLG differ in their inequality outcomes. The latter is dominated by commonality in trajectories and convergence in levels in *G4* and *G3*; the former by trend diversity and level divergence, reinforcing findings in Arroyo Abad and Astorga (2017). Such contrasting outcomes point to differences in the timing of structural change, disparities in advances in education, and the demographic transition during SLPI; and in the case of XLG, to more similar economies in terms of their structure, urbanization rates, and education levels, together with the adoption of the neoliberal policies of the Washington Consensus. However, when looking

at within-group inequality in the wage-based groups, coinciding trends dominate but in opposite directions across epochs: falling during SLPI and rising in XLG. This reflects a shift in labor policy from a greater role for wage-setting regulations and unionization rates to the promotion of labor flexibility, deregulation, and weaker unions.

Thirdly, there were a number of lasting episodes of inequality leveling, particularly during SLPI, extending the findings of Rodriguez Weber (2018) but with the advantage of using comparable series. However, those favorable dynamics fell short of matching the "Great Leveling" that occurred in the middle decades of the last century in the United States and the United Kingdom—and, more generally, in Northern Europe. The underlying reasons behind such episodes are to be found in the combined action of fundamentals and policy changes—both pre-distribution and redistribution types. Regarding the latter, whereas in the United States and the United Kingdom, higher marginal taxes at the top and progressive redistribution were instrumental in reducing inequality, LA6 governments primarily relied on pro-labor (pre-distribution) measures. In particular, the official minimum wage was an effective tool to raise the relative income of the unskilled, though it was also used as an instrument to fight accelerating inflation, which widened inequality. But, in general, there was a lack of an effective and higher taxation on high earners and limited efforts in setting up progressive income taxation in the LA6.

Lastly, although a comprehensive analysis of persistence should look at micro inequality data across generations and cover the nineteenth century, evidence of a reversion of income inequality to its long-term mean offers a test for a necessary condition for persistence. I found mean reversion only in the *G4* series in Argentina and Colombia and in the *G4* and *G3* in Chile. The reasons for such contrasting outcomes across the LA6 need further research.

Still, there is more work to do in terms of identifying the drivers behind inequality trajectories and finding out why countries that are similar in so many respects have so much inequality diversity. One obvious place to look for answers is country specificities (e.g., dominant export commodities, hyperinflation bouts, and political regimes), which could account for notable differences in trajectories.

A second option is to explore the possibility that, despite diversity in aggregate inequality outcomes, there is, nonetheless, a degree of common ground in the action of fundamentals behind them. One interpretation of the evidence is that it reflects the combined action of drivers with different timings (e.g., urbanization and demographic transition), opposite directions in their likely inequality impact (labor-market policies), and varied

intensity. Also, swings in the terms of trade have the potential to affect the income of both high earners and unskilled workers alike. To disentangle the actions and contributions of underlying drivers, a regression analysis is required. Moving from revealing diversity and complexity to accounting for them is the next step in this research.

Despite the largely shared narrowing inequality of the 2000s, at the start of the 2020s, high concentrations of income and wealth still remain a salient feature of Latin America. The study of the past shows that pro-labor policies and income transfers targeting the poor were effective in reducing income inequality. But the end of the commodity boom exposed the vulnerability of over-reliance on external sources to pay for redistribution programs. While the severe setback of the COVID-19 pandemic to human development in the region urgently requires a substantial step up in spending on health and education, both call for a broader tax base and higher tax collection. One obvious option is to raise the tax contribution of high-earners to fund spending benefiting primarily those at the bottom of the distribution. But the question is, as always, *who will tie the bell on the cat*? At the end of 2022, Colombia's government approved a tax reform bill, the main measure of which is a progressive wealth tax. Although success is by no means guaranteed, it is a welcome move in the right direction that could be an example for others.

Appendix: Calculation of Occupational Ginis

This section describes in detail the construction of the Overall Ginis (including all four groups) and the Labor Ginis (lower three groups). Both measures are decomposed into their between-group and within-group components.

Overall Ginis

$$G4 = G4B + G4W, \tag{1}$$

where *G4B* stands for between-group inequality and *G4W* for within-group inequality.[22]

G4B is the inequality that would result if everyone in a given group received the mean income for that group. They are calculated from the groups' relative income ratios and their corresponding EAP shares in a given year:

$$G4B = \sum_{i=2}^{4} \sum_{j=1}^{i-1} e_j e_i \, | \, r_j - r_i \, | \, . \tag{2}$$

[22] Owing to the lack of micro data, I do not adopt the traditional decomposition approach (Lambert and Aronson 1993), which includes a term for residual inequality reflecting any income overlaps between groups. Therefore, *G4* is a gross measure rather than the Gini that would result if the population were perfectly sorted by income (Modalsli 2015).

G4W is the weighted sum of the Gini coefficient each group would have if it were a separate population (Gg_i):

$$G4W = e_1 s_1 Gg_1 + \sum_{i=2}^{4} e_i s_i Gg_i. \quad (3)$$

The contributions to *G4W* of Group 1 and the three lower groups are presented separately because the estimation method is different. To measure within-group inequality in the later the corresponding income ratios are estimated with the use of a Normal distribution with each group's EAPs divided into 25 quantiles (N=25).[23] The respective Ginis for a given year are calculated as:

$$Gg_i = \sum_{j=2}^{N} \sum_{k=1}^{j-1} e_j e_k \,|\, r_j - r_k \,|; \;\; i = 2 \text{ to } 4. \quad (4)$$

The calculation of Gg_1 is based on the income shares accruing to the top quantiles of the distribution estimated from tax records for Argentina (since 1932), Brazil (1926), Chile (1962), and Colombia (1993). Under the assumption that the income distribution at the top follows a Pareto form, Fiscal Ginis for the top 1 percent, 5 percent, and 10 percent are assembled following Alvaredo (2011). Additional series for the top 3 percent and the top 7.5 percent are obtained as a simple average of the adjacent Fiscal Ginis. The final step is to calculate Gg_1 for each country by matching in each year between 1920–2011 the EAP shares of the top occupational group (e_1) with the appropriate Fiscal Gini out of the five options ranging from the top 1 percent to the top 10 percent. For instance, for the interval 4 percent $\leq e_1 <$ 6.5 percent, Gg_1 is matched with the corresponding Fiscal Gini of the top 5 percent. I use different procedures for Mexico and Venezuela. See OA3 for full details.

Labor Ginis

The Ginis for the three lower groups are calculated as:

$$G3 = G3B + G3W, \quad (5)$$

where *G3B* stands for between-group inequality and *G3W* for within-group inequality:

$$G3B = \sum_{i=3}^{4} \sum_{j=2}^{i-1} e'_j e'_i \,|\, r'_j - r'_i \,|, \quad (6)$$

where e'_i is the EAP share of group i out of the total for the three lower groups, and r'_i is the ratio of the mean income of group i to the mean income of the three lower groups. In practice, these ratios are calculated as w_i/w, i=2 to 4, where w stands for the average wage using e'_is as weights.

G3W is the weighted sum of the Gini coefficient each group would have if it were a separate population:

$$G3W = \sum_{i=2}^{4} e'_i s'_i Gg_i, \text{ with } s'_i = e'_i r'_i. \quad (7)$$

[23] Calculations are done in Excel with the NORMINV function with three parameters: the cumulative EAP share with increments of 4 percentage points (=1/25*100), and the mean income and standard deviation of each group in a given year. The *Gg*s are robust to changes in N (e.g., N=20; N=30).

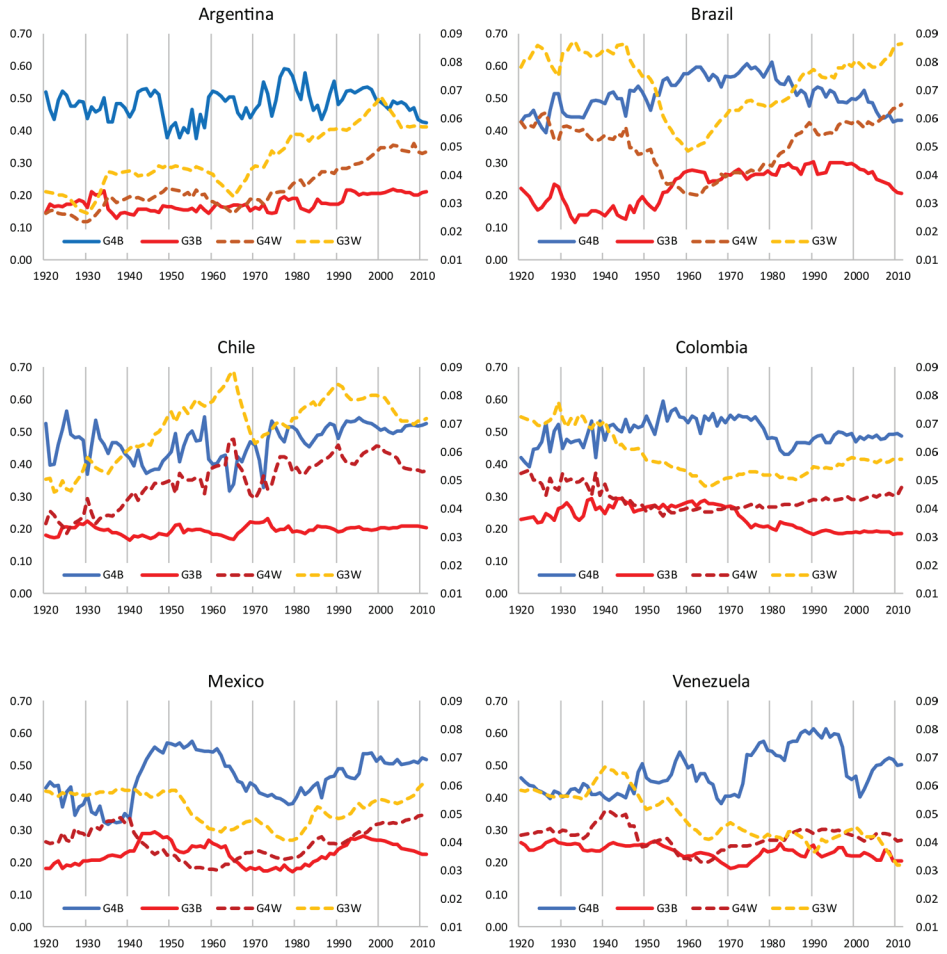

FIGURE A.1
BETWEEN- AND WITHIN-GROUP OCCUPATIONAL GINIS BY COUNTRY
Note: *G4W* and *G3W* are plotted on the right axes.
Source: See the text.

Finally, a comment on the history of this research is in order. In the first stage, I assembled wage series for the three lower categories and estimated the mean income of Group 1 as a residual. With this information, I calculated *G4B* and *G3B*, which were the focus of previous publications. At that time, there was insufficient data to consistently inform on within-group inequality for the whole period. But much-improved online availability of historical wage statistics, together with new contributions from the tax-records strand, have enabled me to undertake this second stage. Data demands were also significantly reduced by starting the estimation in 1920 rather than in 1900, as in the first stage.

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