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Higher Inequality in Latin America: A Collateral Effect of the Pandemic

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Abstract

This study explores the evolution of inequality in Latin America during the COVID-19 pandemic using primary data available from household and employment surveys collected in 2020. Inequality increased on average by 2 percent between 2019 and 2020, twice the average annual growth in the inequality indicator that marked the decade of growing inequality in the 1990s. We obtained heterogeneous results when disaggregating by gender, urban/rural location, and sector of economic activity. Surprisingly, we found that the differences in income by education level declined in most cases. Remittances had a modest effect, while government transfers played a central role in preventing greater disparities in half the countries studied. Our estimations show that the decline in employment levels—due to the economic contraction caused by COVID-19— is associated with increases in income inequality that we project will gradually diminish with the recovery. However, the lost schooling and losses in education attainment due to the pandemic may generate future pressures on inequality once school-age youth enter the labor market.

JEL Codes: D63, I14, I32, I38, O15

Key words: inequality, COVID-19, Latin America, gaps, remittances, transfers.

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Introduction

One of the biggest concerns associated with the economic impact of COVID-19 is that it could greatly affect the most vulnerable population and exacerbate social inequity.[1]

This concern is particularly relevant for Latin America. The region has experienced considerable progress over the past two decades in reducing poverty and inequality and expanding the middle classes—gains threatened by the pandemic.[2] At the same time, levels of discontent with democracy, social tension, and expectations for greater inclusion have been growing, and could be worsened by the crisis.[3]

From the onset of the health emergency, several studies have tried to estimate the possible effects of lockdowns on poverty, the social fabric, and income distribution, using projections based on historical data. López and Ruiz-Arranz (2020), Acevedo et al. (2020a), Castilleja-Vargas (2020), ECLAC (2020), and the World Bank (2021), for example, predict considerable increases in poverty and a contraction of middle class that would practically erase the progress achieved in the previous decade. The World Bank (2021), Lakner et al. (2020), López and Ruiz-Arranz (2020), and ECLAC (2020), for their part, project changes in the Gini coefficient ranging from a possible decline of 3 percent (less inequality in the income distribution) to an increase of 5.6 percent (greater inequality). Lustig et al. (2021) also envisage increases in the same index of up to 2.6 in the countries analyzed.[4]

This study aims to fill a gap in the literature by analyzing the changes in inequality in Latin America using data from employment and household surveys collected in 2020, now available for 10 countries in the region. To attain a uniform perspective, we process the same type of databases starting from 1992. By so doing, we generate results based on primary sources of information gathered by national statistical institutes during the pandemic. This allows us to go beyond the projections and measure the short-term impacts that are materializing.

The next section presents trends on inequality in the region from 1992 until 2020 for countries with available information. Section 3 explores the factors behind the changes on inequality, particularly between 2019 and 2020. Section 4 focuses on the aggregated analysis exploring the

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[1] The topic is relevant within each country but also at a global level because countries with less capacity to respond to the pandemic can suffer greater economic impacts. Deaton (forthcoming) and Ferreira et al. (2021) analyze this aspect.
[2] The favorable trends have been widely documented, notably in World Bank (2013), Lustig et al. (2013), Cord et al. (2017), Cornia (2014), Stampini et al. (2016), Duryea and Robles (2016), Rodríguez Castelán et al. (2016), and, more recently, Busso and Messina (2020), ECLAC (2020), Messina and Silva (2021), and World Bank (2021).
[3] According to data from Latinobarómetro, between 2017 and 2018 support for democracy declined in 14 countries in Latin America, and 71 percent of Latin Americans stated that they are dissatisfied with democracy in their country. Only 32 percent approved of the performance of their current government. According to the same source, in 2018 only 12 percent of the population of the region considered their economic situation to be “good” or “very good.” Furthermore, the share of the population stating that income distribution is “unjust” or “very unjust” increased from 69 percent to 80 percent between 2013 and 2018. Reyes and Gasparini (2017), Kirchner, León, and Gardía de Viedm (2020) and Valle Luna and Scartascini (2020) present an analysis in this regard.
[4] Agrawal et al. (2021) obtain more recent data, although with telephone surveys, that point to increases in income inequality for a set of Latin American countries that includes Argentina, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, and Honduras.

relation between inequality and a series of explanatory variables, as well as a projection for the future. Section 5 discusses the study's main conclusions.

1. Inequality in Latin America between 1992 and 2020

This section presents the trends in inequality between 1992 and 2019 for 16 countries in the region and the changes between 2019 and 2020 observed in the 10 countries for which 2020 data are available.

Description of the Database Combined for this Study

A consistent regional series was constructed based on national household surveys, building on the data previously assembled by Székely and Mendoza (2017).[5] The series presented below is updated to 2019 and, in the countries where data are available, to 2020. Appendix A details the years and surveys used for each country. To construct the inequality indicators, different income sources were considered, including labor income, transfers, remittances, and pensions, as well as capital income. To make the series consistent and the comparisons between countries valid, the geographic and population coverage of each survey was considered. Surveys are nationally representative except for Argentina and Uruguay (see Appendix A).[6]

On average, countries have data for 17 years.[7] Group 1 includes 16 countries: 14 (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, and Uruguay) that have consistent series of household surveys for the 1992–2019 period; as well as 2 (Ecuador and Paraguay) that have data commencing after 1992 (in 1994 and 1995, respectively). In total, 261 Gini coefficients were calculated, as well as income distributions by decile. To obtain the regional averages, the observations were interpolated between the years for which there are surveys available in each country.

Group 2 comprises 10 countries with data extending through 2020, entailing the 1992–2020 period: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay, and Peru. The changes presented in 2020 for 8 of these countries are with respect to 2019, For Chile and Mexico, the comparison is with respect to the most recent information prior to 2020 (2017 and 2018, respectively).

30 Years of Inequality in Latin America

Panel a of Figure 1 presents the trajectory of the average Gini index for Group 1. According to our calculations (which are consistent with studies previously mentioned), the region experienced a pronounced average increase in the Gini index of nearly 10 percent between 1992 and 2002,

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[5] For Panama, the data from 2000 to 2019 were obtained from a previous standardization of data collected by the SEDLAC (Socio-Economic Database for Latin America and Caribbean) by the LAC Equity Lab of the World Bank, while data for previous years were based on household surveys. In the case of Peru, data from 2000 to 2003 are from the SEDLAC by the LAC Equity Lab.

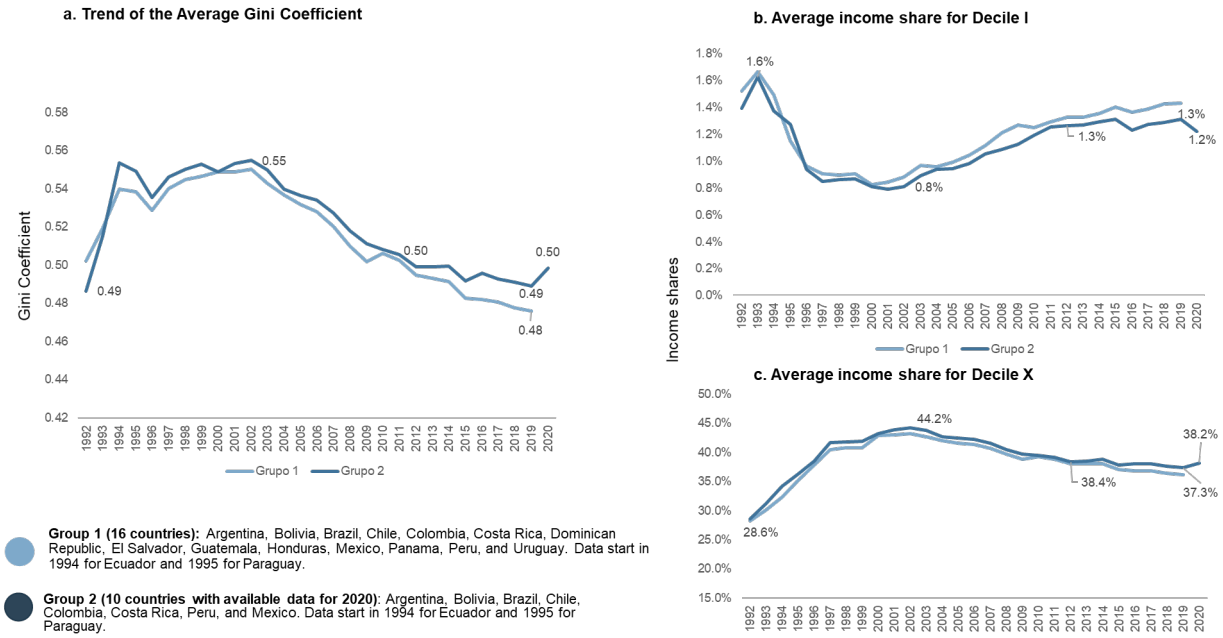
[6] Although the objective of the standardization is to allow for comparability between countries and years, there are cases of under-reporting, under-representation of regions or socioeconomic groups, or other particularities of the survey.

[7] The averages reported in this section are unweighted.

going from a value of 0.49 to 0.55 points.[8] The reduction between 2002 and 2012 practically counteracted previous increases, reducing the value to 0.50. The trend continued downward to reach a value of 0.48 in 2019—with an additional reduction of 4 percent. The year immediately before the COVID-19 pandemic spread, 2019, had the lowest Gini index value (least inequality) in the three decades for which information is included.

Panels b and c illustrate the evolution of the income share of the poorest (Decile I) and wealthiest (Decile X) 10 percent of the income distribution, respectively. Average inequality declined between 2002 and 2019, as the relative income of the poorest population continuously increased, growing from 0.8 percent to 1.3 percent of total income. In contrast, the average share of income concentrated in the upper decile declined considerably from 44.2 percent to 37 percent in the same period. The year 2002 marked a significant break point in the development dynamic of the region. This finding is confirmed by a global study by Gradín and Oppel (2021)—who constructed a database on income inequality indicators since 1980 for 200 countries—and found similar trends in the changes in inequality for the Latin America and Caribbean region.

Figure 1. Evolution of Inequality in Latin America from 1992 to 2020 (country average)



Source: Prepared by the authors based on household surveys and tabulations from the LAC Equity Lab of SEDLAC (see Appendix A).
Note: The groups include countries whose data series is complete, according to household surveys. For the missing years, information was interpolated from the years available.

[8] The study by Londoño and Székely (2000) presents a series that starts in 1980 for a smaller set of countries that shows that the increase in the 1990s is a continuation of the increase in inequality observed between 1980 and 1990.

Figure 2 (panel a) depicts the Gini index for 2000 and 2019. Declines are pronounced for most countries, especially Peru, the Dominican Republic, and Bolivia. The index increased slightly for Colombia and Costa Rica.[9] A similar situation is found at the extremes of the distribution, with a general increase in the share of income concentrated in the poorest decile (except for Argentina) (panel b) and a decline for the wealthiest decile (panel c) in nearly all cases—only Costa Rica shows no change. Table 1 presents the evolution of inequality indicators for different years in recent decades.

Together, the 10 countries from Group 2 account for nearly 80 percent of the population of Latin America. Their trend is similar to that of Group 1 until 2019. The estimates for 2020 reveal a turning point in the evolution of inequality: the value of the Gini index increased 2 percent, twice the average annual growth in the inequality indicator between 1992 and 2002.

If the Gini coefficient had followed its previous five-year trend, Group 2 would have registered a value of 0.48 in 2020. Comparing this hypothetical value with actual data suggests a 2020 Gini value in 2020 3 percent higher than in a counterfactual scenario without the pandemic.

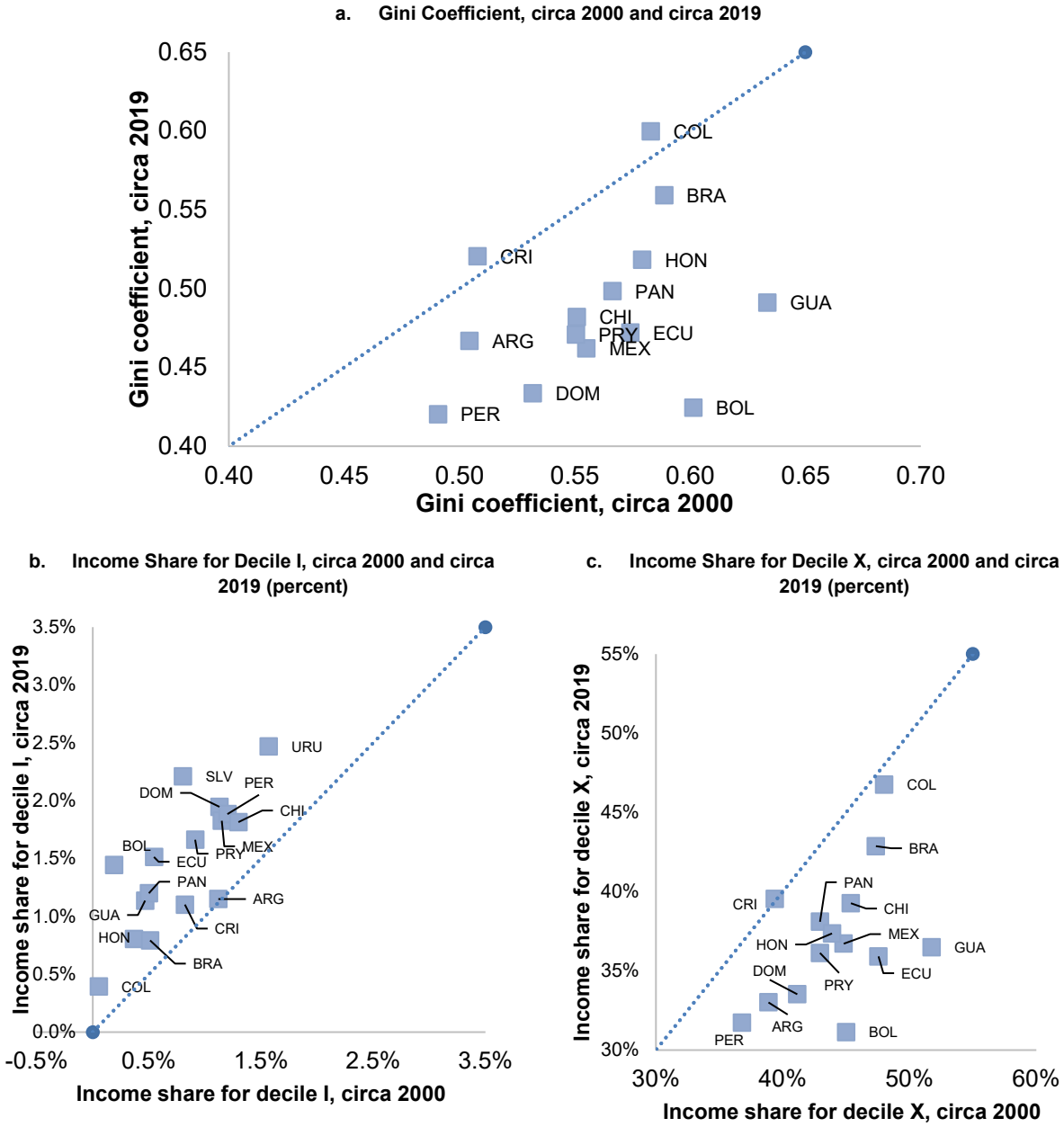
The higher inequality in 2020 was determined to a great extent by the reversion to increasing and declining trends of deciles 1 and 10, respectively (Figure 1, panels b and c).

The Gini index in Peru, Bolivia, Chile, and Colombia, grew by 6.8 percent, 6.5 percent, 5.4 percent, and 5.1 percent, respectively, between 2019 and 2020 (Figure 3). They are followed by Ecuador, Brazil, and Costa Rica, with increases of 2.6 percent, 2.5 percent, and 1.1 percent, respectively. The index registered almost no change in Argentina, while it fell by 2.5 percent in Mexico. The only country with a significant contrary trend is Paraguay, where the Gini index fell by 5.2 percent (see Appendix B for a more detailed disaggregation of the data).[10]

[9] The increase in these two countries is presumably due to increases in inequality in the intermediate deciles, given that the changes in deciles 1 and 10 on the extremes suggest that the dispersion of income declined.

[10] These results are in line with a recent study by Furceri et al. (2021), who analyze the effect that pandemics had on income distribution over the past two decades. Their results suggest that past pandemics—although they were on a smaller scale than COVID-19—are associated with increases in inequality due to an increase in the concentration of income in the wealthiest deciles. In addition, the authors carry out simulations to approximate the magnitude of the current health crisis. They find that the impact on the distribution of income varies substantially between countries and depends largely on the initial distribution of income, the set of public mitigation policies, and the particular characteristics of each country.

Figure 2. Differences in Indicators of Inequality in Latin America by County between circa 2000 and circa 2019



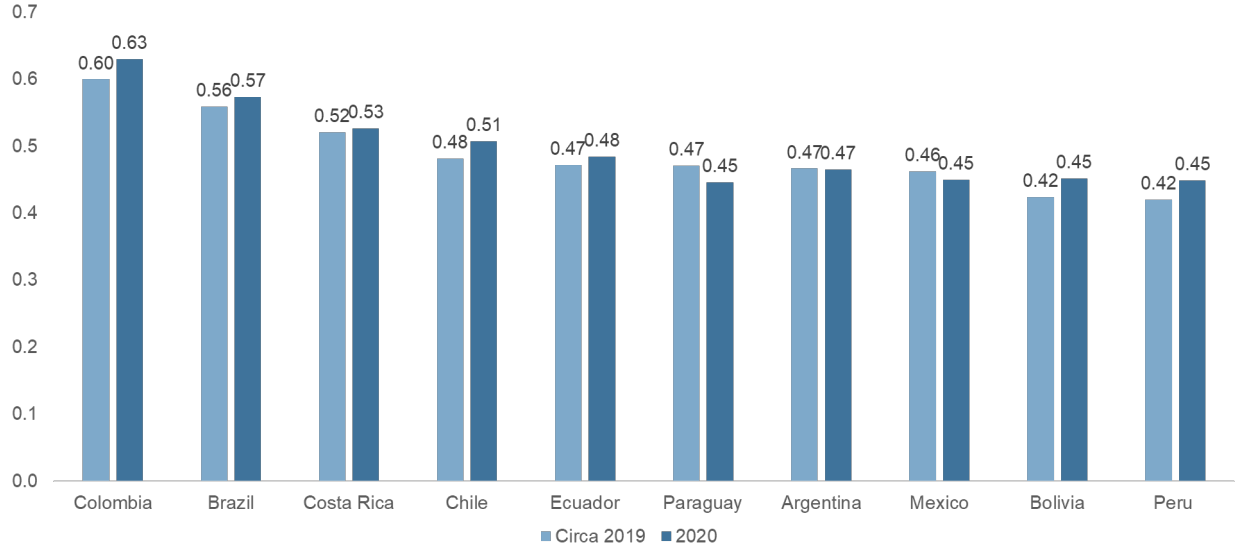
Source: Prepared by the authors based on Household Surveys and tabulations from the LAC Equity Lab of SEDLAC (see Appendix A).
Note: ARG = Argentina, BOL = Bolivia, BRA = Brazil, CHI = Chile, COL= Colombia, CRI = Costa Rica, DOM = Dominican Republic, ECU = Ecuador, GUA = Guatemala, HON = Honduras, MEX = Mexico, PAN = Panama, PER = Peru, PRY = Paraguay.

Table 1. Gini Coefficient and Income Distribution (Decile 1 and Decile 10), circa 1992, 2002, and 2019 (Group 1 Countries)

Country	Gini Coefficient				Decile 1 Percentage of Income (percent)				Decile 10 Percentage of Income (percent)			
	c. 1992	*c.* 2002	*c.* 2012	*c.* 2019	*c.* 1992	*c.* 2002	*c.* 2012	*c.* 2019	*c.* 1992	*c.* 2002	*c.* 2012	*c.* 2019
ARG	0.46	0.52	0.41	0.47	0.7	1.1	2.0	1.2	23.0	38.9	29.2	33.0
BOL	0.49	0.61	0.47	0.42	2.2	0.2	0.7	1.4	29.1	48.0	33.9	31.1
BRA	0.39	0.60	0.55	0.56	2.3	0.5	0.9	0.8	18.9	48.0	42.6	42.9
CHI	0.57	0.55	0.49	0.48	2.3	1.3	1.7	1.8	36.1	15.0	15.3	15.2
COL	0.49	0.58	0.62	0.60	0.4	0.1	0.3	0.4	33.1	48.0	48.6	46.8
CRI	0.46	0.51	0.52	0.52	0.1	0.9	1.0	1.1	23.3	39.5	39.3	39.5
DOM	0.49	0.52	0.48	0.43	1.4	1.6	1.5	1.9	37.2	41.4	37.8	33.5
ECU	0.59	0.57	0.48	0.47	0.3	0.6	1.9	1.5	47.3	46.6	36.5	35.9
SLV	0.53	0.53	0.44	0.39	1.4	0.8	1.8	2.2	28.3	40.5	33.4	29.8
GTM	0.59	0.60	0.54	0.49	1.4	0.5	1.0	1.1	45.9	46.1	40.9	36.5
HND	0.52	0.61	0.58	0.52	0.3	0.6	0.8	0.8	29.1	46.5	45.8	37.4
MEX	0.54	0.51	0.50	0.46	1.3	1.5	1.5	1.8	43.2	41.0	39.6	36.7
PAN	0.56	0.56	0.52	0.50	0.2	0.8	1.0	1.2	28.8	43.0	39.8	38.1
PRY	0.62	0.58	0.50	0.47	1.4	0.9	1.3	1.7	36.8	45.7	38.5	36.1
PER	0.48	0.54	0.45	0.42	1.1	1.0	1.5	1.9	24.5	42.1	34.0	31.7
URY	0.42	0.45	0.38	0.39	5.3	1.6	2.3	2.5	23.2	34.0	28.8	29.5

Source: Prepared by the authors based on household Surveys and tabulations from the LAC Equity Lab of SEDLAC (see Appendix A).
Note: ARG = Argentina, BOL = Bolivia, BRA = Brazil, CHI = Chile, COL= Colombia, CRI = Costa Rica, DOM = Dominican Republic, ECU = Ecuador, SLV = El Salvador, GTM = Guatemala, HND = Honduras, MEX = Mexico, PAN = Panama, PRY = Paraguay, PER = Peru, URY = Uruguay.

Figure 3. Gini Coefficient, circa 2019 and 2020



Source: Prepared by the authors based on household surveys.
Note: The data for the base year for comparison with 2020 are 2019 for all countries except for Chile (2017) and Mexico (2018). The Gini coefficient is for per capita income after taxes and transfers.

2. Factors Behind Distribution Trends for 2019–2020

This section provides an analysis of the factors that can be associated with the changes in income distribution.

Personal Characteristics behind Inequality

To explore the factors behind the changes in inequality, we estimate a simple regression for each country for 2019 and 2020, separately, where the dependent variable is the logarithm of per capita household income. As independent variables, we include dichotomous variables for the gender and urban/rural residence of the main income earner. We also compute the average age and years of education of all adults (over age 18), which we use to construct household age and education dummies.[11]

$$Ln(Income_{i,t}) = \alpha + \beta_1 Gender_{i,t} + \beta_2 Age_{i,t} + \beta_3 Education_{i,t} + \beta_4 Urban_{i,t} + u_{i,t}. \quad (1)$$

The regressions are limited to household heads older than 18 years. These variables are unlikely to change in a short period of time, so variations due to possible composition effects are isolated.

[11] The categorical education variables are created for the population of 18 years and older, and are classified as no school, primary, upper secondary, higher secondary, and tertiary education depending on each education system. The no school value is the baseline category. For the average age, the categorical variables include age ranges of 18–29 (baseline category), 30–44, and 45–59 years old.

We interpret the coefficients as the "premium" that the households receive based on the identified characteristics.[12]

To explore the wage premium by economic sector, we estimate a regression for each country and for each year limited to wage earners, where the dependent variable is the hourly wage,[13] and the independent variables are the same as in the regression described earlier, but dichotomous variables are aggregated by sector. Similarly, the regressions only include those older than 18 years. The primary sector includes agriculture, hunting, forestry, and fishing and serves as the baseline. The secondary sector consists of mining and quarrying, manufacturing industries, and electricity, gas, and water. The tertiary sector includes construction, commerce, restaurants and hotels, transport and storage, financial establishments, insurance, and social services. Coefficients are estimated in this manner because it is possible that the household head is unemployed and therefore cannot be assigned to a particular sector, and because persons working in different sectors can simultaneously live in the same household. The estimated equation is as follows:

$$ln(hourlywage_{i,t}) = \alpha + \beta_1 Gender_{i,t} + \beta_2 Age_{i,t} + \beta_3\, Education_{i,t} + \beta_4 Urban_{i,t} + \beta_4 Sector_{i,t} + u_{i,t}\ . \quad (2)$$

Figures 4 and 5 show the difference for each country between the coefficient from the regression of 2020 and the coefficient from the regression of circa 2019 (see also Appendix C).[14] Results vary significantly across countries. For example, in Peru, Ecuador, Bolivia, Chile, and Colombia, the income premium increased by between 3 and 10 percent in households where a male is the main income earner compared to households where a woman is the main income earner. On the other hand, in Costa Rica, the gender differential decreased by 4 percent (panel a of Figure 4). In Argentina, Brazil, Mexico, and Paraguay, the gaps remained almost constant.

Income differentials between urban and rural areas declined considerably by between 3 percent and 15 percent, except for Bolivia (panel b of Figure 4). This could be related to the fact that agricultural activities were less affected by the pandemic given that most activities are outdoors.

Panel c of Figure 4 also shows that in Bolivia, Chile, Argentina, and Paraguay, households with the average age of adults between 18 and 29 years old experienced a decline in their income relative to the group ages 30 to 44. On the other hand, household heads in the 45–59-year-old age group performed worse than 30–44-year-olds in Bolivia, Chile, Argentina, Colombia, and Mexico.

As panel d shows, in Argentina, Chile, Mexico, Costa Rica, and Brazil, persons working in the secondary and tertiary sectors registered a decline in their wage premium—compared to workers in the primary sector. In the remainder of the countries, and in particular in Colombia and Bolivia,

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[12] We focus on per capita income of the household as the traditional indicator to measure income inequality, which is why we also include a weight for household size. Rodríguez-Castelán et al. (2016) follow a similar strategy to analyze the dynamic of inequality in Latin America during the first decade of this century.

[13] For Chile, the dependent variable is the logarithm of weekly income because the 2020 survey did not ask about weekly hours but did ask about labor income.

[14] The data for the base year for comparison with 2020 are for 2019 for all countries except for Chile (2017) and Mexico (2018). .

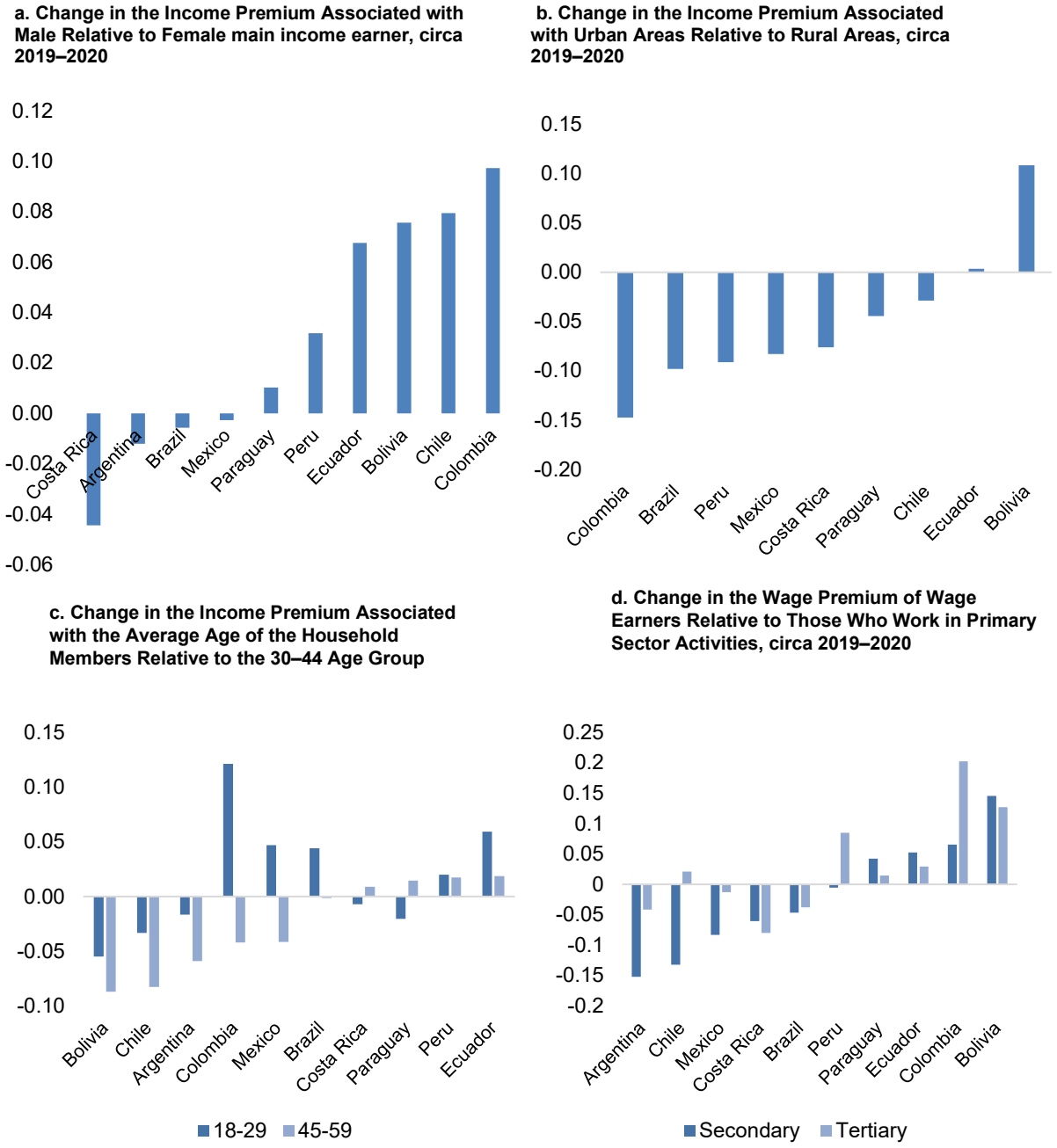
employees in the secondary and tertiary sectors exhibited a relatively substantial increase in comparison with the primary sector.[15]

Also, the income differentials by education level declined considerably between 2019 and 2020 in all cases except Bolivia and Argentina (Figure 5). This might reflect the pattern that during the economic crisis a large percentage of workers with a lower education level and lower wages—who make up a large share of the informal sector—left the labor market, when compared to more educated ones. This is in line with the results of Acevedo et al. (2021) that informal workers became inactive during the pandemic, leading to lower levels of informality.[16]

[15] The results in this second group of countries can seem counterintuitive because it would be expected that the premium with respect to the primary sector would diminish given that the secondary and tertiary sectors were the most affected. However, because the specification includes only persons who are wage earners, it is not possible to identify what the labor market dynamic was for each sector. For example, persons leaving the labor market could have been those whose salaries were greater in the primary sector or whose salaries were smaller in the secondary and tertiary sectors.

[16] Acevedo et al. (2021) study how the pandemic affected the labor markets of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, and Peru. They find that between the first and third quarter of 2020, the working-age population that left the labor market in the region increased by 6 percentage points and unemployment increased by 1 percentage point, while informality declined by 5 percentage points. That is, contrary to past crises where informality acted as a shock absorber, during the COVID-19 pandemic, informality as a share of the labor force participation declined, as a large number of informal (rather than formal) workers exited the labor market and became inactive. The dynamics of the formal sector might be explained by several factors, including (i) labor regulations that impose firing costs; (ii) uncertainty about the duration and depth of the health crisis that complicated estimating the costs and benefits of maintaining jobs; (iii) employment support measures introduced by different governments; and (iv) the preference of some employers to reduce the hours of activity per job instead of reducing the production plan, and thus avoiding firing costs. The dynamics of the informal sector might be explained by several factors, including the following: (i) Informality is specifically characterized by the lack of health insurance, so attention to contagion risks may be weaker, leading to longer recovery times (and inactivity) or less effective care due to the saturation of public services; (ii) Even in cases where government authorities have implemented economic support mechanisms to cushion the drop in employment, the informal population, which is outside tax and other public registries, is more difficult to identify and locate, and therefore unlikely to benefit from active policies.

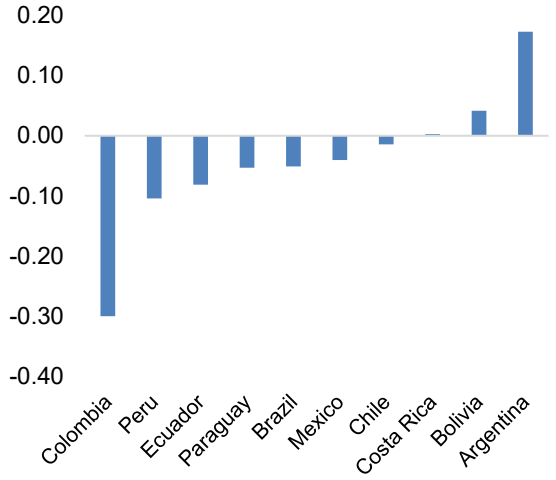
Figure 4. Percent Change in the Coefficient of the Per Capita Income or Wage Premium between circa 2019 and 2020



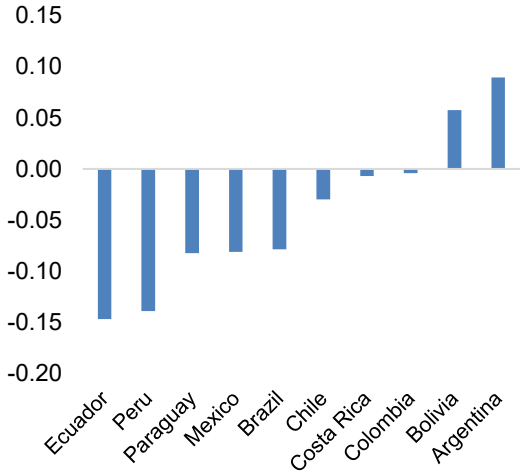
Source: Prepared by the authors based on household surveys.
Note: The data for the base year for comparison with 2020 are for 2019 for all countries except for Chile (2017) and Mexico (2018).

Figure 5. Percent Change in the Coefficient of the Per Capita Income Premium by Average Education of the Adults of the Household between circa 2019 and 2020

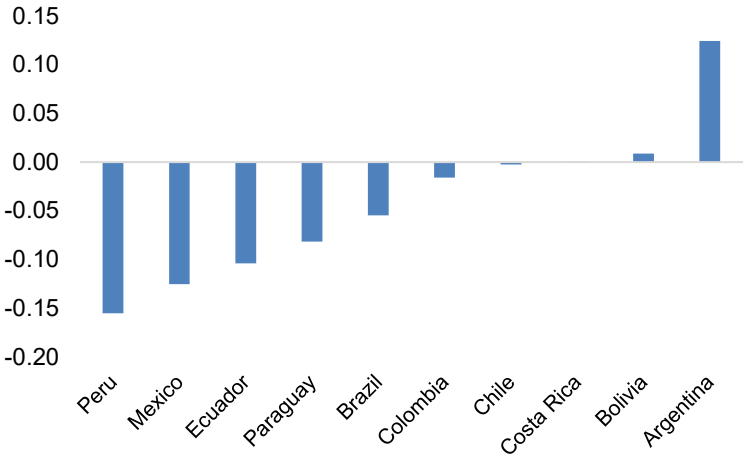
a. Change in the Income Premium Associated with Having Lower Secondary Education Relative to Not Having Education, circa 2019–2020



b. Change in the Income Premium Associated with Having Upper Secondary Education Relative to Not Having Education, circa 2019–2020



c. Change in the Income Premium Associated with Having Tertiary Education Relative to Not Having Education, circa 2019–2020



Source: Prepared by the authors based on household surveys.
Note: The data for the base year for comparison with 2020 are for 2019 for all countries except for Chile (2017) and Mexico (2018).

A Scenario without Remittances and Government Transfers

We perform an additional exercise where we calculate the Gini index value in each country excluding certain income categories to verify their contribution to the changes in inequality.[17]

According to the World Bank's Migration and Development Brief (World Bank/KNOMAD, 2021), remittances to Latin America and the Caribbean declined during the second quarter of 2020 but rebounded in the third and fourth quarters. Overall, they proved to be resilient in 2020, as officially recorded flows reached almost $103 billion in 2020 (a 6.5 percent rise compared to 2019) and were even more resilient than in other regions in the world. Since most of the remittances come from migrants living the United States,[18] their dynamics were very much linked to the circumstances in the United States, as many migrants living there were eligible to receive the economic stimulus checks provided by the government.

The literature has mostly found that remittances reduce poverty (Adams and Page, 2005; López-Córdova, 2005; Acosta, Calderón, Fajnzylber and Lopez, 2006; Lokshin, Bontch-Osmolovski, and Glinskaya, 2010; Adams and Cuecuecha, 2013), but the effects on inequality are mixed, as they depend on which part of the income distribution migrants come from and whether remittances benefit poorer or richer households (Beaton et al., 2017).[19] Our results indicate that if households had not received remittances from others either inside or outside the country, the changes in inequality would have been similar (Figure 6). This suggests that the flow of remittances benefited both tails of the households' income distribution to a similar extent.

In contrast, the absence of government transfers from social assistance and programs would have had substantial effects, according to our simulations. As highlighted in a recent report by the OECD (2020), most governments in the region reacted promptly and decisively in response to the pandemic. Countries put in place economic support measures, focusing in particular on the most vulnerable, to ensure that compliance with containment restrictions was feasible for lower-income individuals and those unable to work from home. The fiscal measures adopted often included expansions of existing cash transfers and in-kind programs and generated additional transfers for those not targeted by programs in place. The size of the average fiscal relief package in the region was 8.5 percent of GDP, but two-thirds of countries implemented more modest packages amounting to approximately 3 percent of GDP. By contrast, the size of the support in advanced economies reached 19 percent of GDP (Cavallo and Powell, 2021).

According to our simulations, inequality in 2020 would have been significantly higher in Argentina, Costa Rica, Ecuador, and Peru, and slightly higher in Paraguay and Chile if the households had not received this source of income. In Bolivia, Colombia, and Mexico, inequality in 2020 would have been lower.

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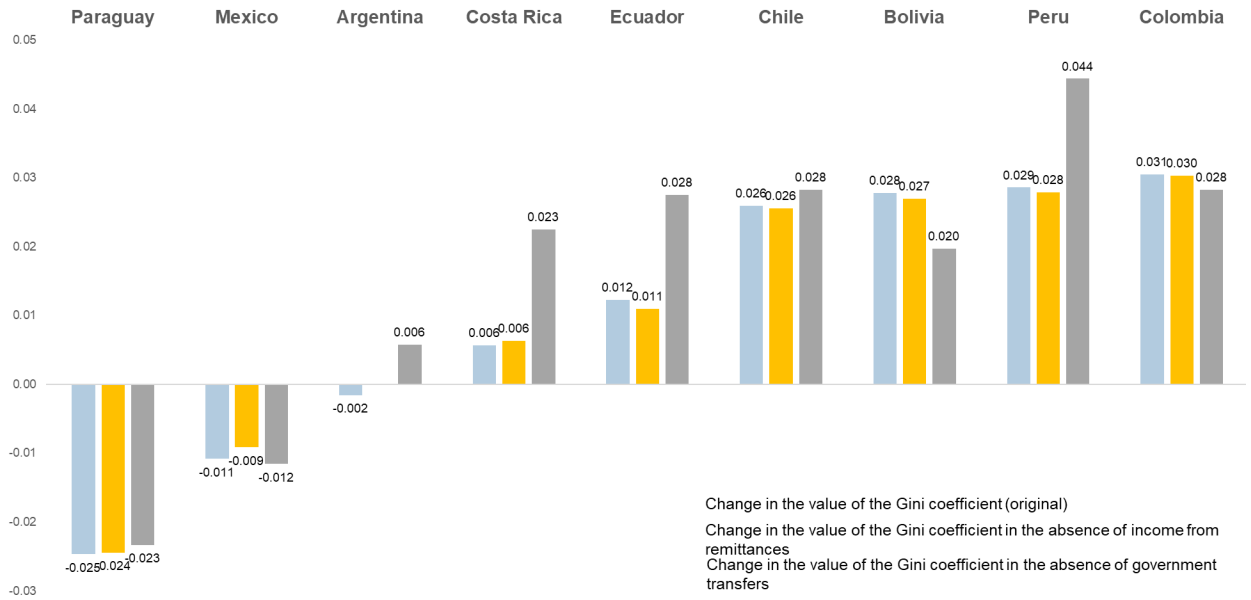
[17] This is a simple estimate that does not take into account collateral effects or behavioral changes that might occur if households experienced changes in their sources of income as simulated.

[18] For El Salvador, Guatemala, Honduras, Jamaica, and Mexico, 95 percent of remittances come from migrants living in the United States (World Bank/KNOMAD, 2021).

[19] See, for example, Adams (2006), Adams, Cuecuecha, and Page (2008), Acosta et al. (2008), Möllers and Meyer (2014), Margolis et al. (2013).

Figure 6. Estimated Change in the Gini Index in 2019 and 2020 in the Absence of Government Transfers and Remittances



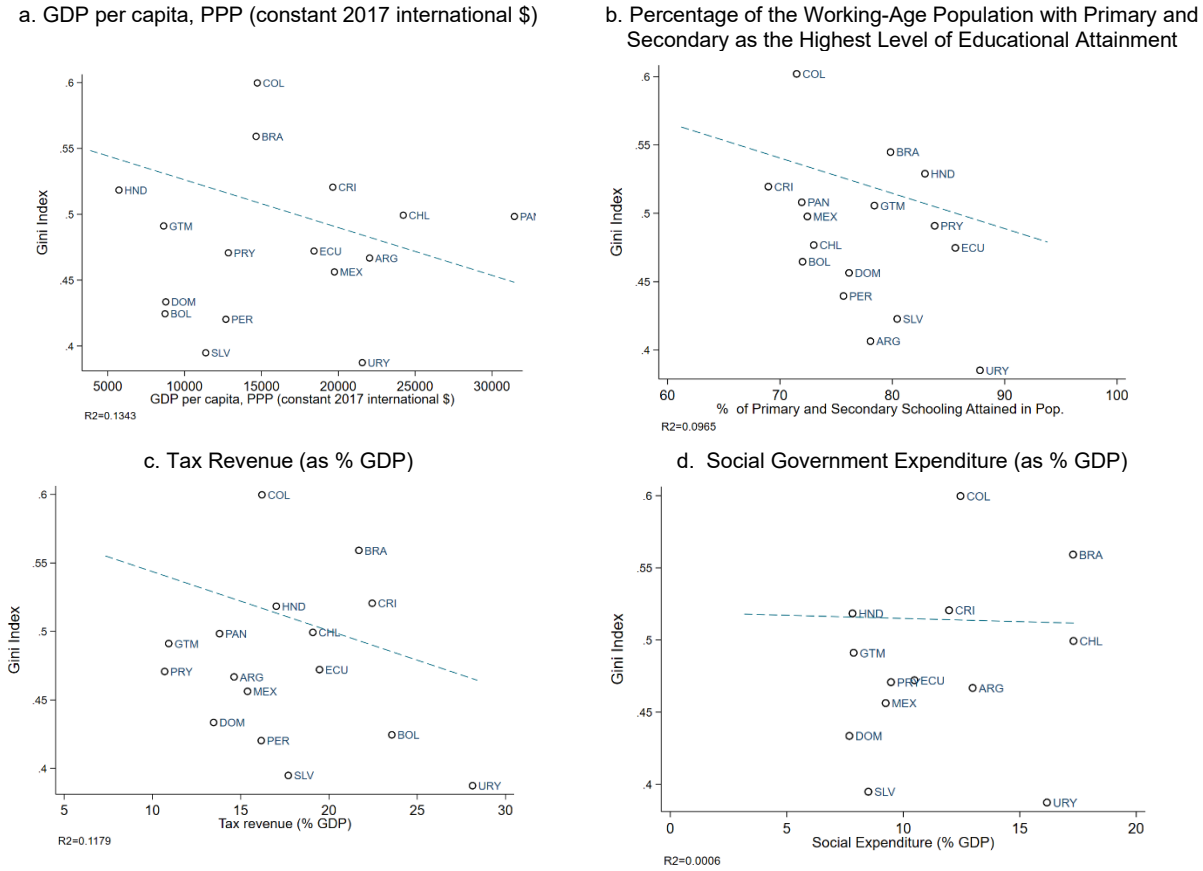
Source: Prepared by the authors based on household surveys.

3. Aggregate Analysis for Latin America

In this section, we construct a balanced panel for 16 Latin American countries to estimate the correlation between income inequality—measured by the Gini coefficient—and a set of variables associated with the socioeconomic context from 1992 to 2019 to identify associations that may shed light on what can be expected in the years to come. In this regard, the literature has explored the influence of factors such as income transfers and fiscal policies (Jaramillo, 2014; Scott, 2014; Higgins and Pereira, 2014); changes in the wage gap between qualified and unqualified workers (López Calva and Lustig, 2010 Cornia, 2014; Gasparini and Lustig, 2011); and the effects of previous crises such as the global financial crisis of 2008–2009 (Gasparini et al., 2016; Cord et al., 2017). Employing a similar approach, Székely and Mendoza (2017) analyze different short-, medium-, and long-term factors based on panel data from 1980 to 2013, including several variables.

Figure 7 provides scatterplots that show the correlation between inequality, GDP per capita, educational attainment, taxation, and government transfers. The correlation between GDP per capita and the Gini coefficient is negative (panel a), with Panama, Chile, and Costa Rica registering a lower Gini index and higher GDP per capita. However, Colombia and Brazil have a higher GDP per capita compared to Honduras and Guatemala, but both countries register a higher Gini coefficient. The association between educational attainment (panel b) and tax revenues (panel c) is also negative. . Finally, there is no clear association between inequality and social government expenditure in social areas (panel d).

Figure 7. Correlation between Inequality and Structural Variables, Latin America, circa 2019



Source: Prepared by the authors based on data from the World Bank's World Development Indicators; data from household surveys, and data from Barro-Lee (2013) and Lee and Lee (2018).
Note: PPP = purchasing power parity. ARG = Argentina, BOL = Bolivia, BRA = Brazil, CHI = Chile, COL= Colombia, CRI = Costa Rica, DOM = Dominican Republic, ECU = Ecuador, SLV = El Salvador, GTM = Guatemala, HND = Honduras, MEX = Mexico, PAN = Panama, PRY = Paraguay, PER = Peru, URY = Uruguay.

Using the panel data for the 16 Latin American countries for which household surveys are available to us, we estimate the following fixed effects model:[20]

$$\begin{aligned} &Ln(Gini_{i,t}) \\ &= \alpha + \beta_1 Ln(POPsec_{i,t}) + \beta_2 Ln(GDP_{i,t}) + \beta_3 Ln(Employment_{i,t}) + \beta_3 Ln(Tax_{i,t}) \\ &+ \beta_5 Ln(Social\ expenditure_{i,t}) + \beta_6 Ln(Dep.Ratio_{i,t}) + \beta_7 Ln(Inflation_{i,t}) + \delta_t + v_i \\ &+ u_{i,t} \quad , \end{aligned} \tag{3}$$

where the dependent variable, $Gini_{i,t}$, represents the Gini coefficient for country i in year t. The independent variables in the regression include the natural logarithm of the percentage of the

[20] The independent variables are from the World Bank's World Development Indicators, Barro and Lee (2013and, for education, Lee and Lee (2018). The data are fitted using a linear extrapolation.

working-age population (15 to 64 years old) who have primary and secondary as the highest level of educational attainment ($POPsec_{it}$). This serves as a proxy of the human capital endowment of each country. For the macroeconomic variables, the specification includes the natural logarithm of the GPD per capita ($GDP_{i,t}$), the percentage of the economically active population that is employed ($Employment_{i,t}$), and the inflation rate ($inflation_{it}$). Also, to account for demographic growth, the model includes the natural logarithm of the dependency ratio ($Dep.Ratio_{i,t}$), which represents the proportion of the population out of the labor force relative to the working-age population.[21] As a proxy of fiscal policy, the specification includes the country's tax revenues ($Tax_{i,t}$) and the social expenditures ($Social\ expenditure_{i,t}$). The controls δ_t and v_i represent the country- and time- fixed effects, respectively. It is important to clarify that the model in equation (3) does not aim to establish a causal relationship but rather to illustrate the association between the variables.

Column (2) in Table 2 provides the results of the fixed-effects model described in equation (3). In addition to this regression, we also report the results for the ordinary least squares (OLS) estimator in Column (1) and a random fixed-effects model (RE) in Column (3).[22] Results are mostly in line. Robust standard errors are reported in every column.

For the fixed-effects model, the coefficient for the percentage of the working-age population who has primary and secondary as the highest level of educational attainment is negative, suggesting as education levels raise income inequality is lower—with a coefficient statistically significant at the 10 percent level. The results are found to be in line with theoretical models that predict that educational inequality is positively correlated with income inequality (Becker and Chiswick, 1966; Mincer, 1974) and with studies that have tested this relationship empirically (Checchi, 2001; Jaumotte et al., 2013; Autor, 2014; Lee and Lee, 2018).

In terms of education, 2020 marked a turning point in educational trends. Acevedo et al. (2020b) document the early signs of educational dropout and learning losses during the COVID-19 pandemic among the students in the region, which can have serious consequences for educational achievement. Lustig et al. (2020) estimate that while the probability of finishing secondary education might be unaffected for high-income families, it might change for households in the medium and lower deciles, increasing educational inequality. In addition, at the global level —and adjusting for quality—COVID-19 could cause a loss of between 0.3 and 0.9 years of education, Acevedo et al. (2020b) estimate. In translating these effects to incomes, several studies analyze the potential effect of school closings, suggesting negative effects (Azevedo et al., 2021; Hanushek and Woessmann, 2020). Along these same lines, Psacharopoulos et al. (2021) calculate an annual loss in income of around US$2,862 per student in low-income countries and US$6,882 in medium-income ones. Thus, these educational reversals might reduce the equalizer effect of education on income inequality—especially for the cohorts entering the

[21] In this respect, the dependency ratio could generate a temporary increase in inequality because higher-income households experience reductions in fertility and dependency ratios before poorer households (Behrman, Duryea, and Székely 2002).

[22] If we believe that the omitted variables are uncorrelated with the explanatory variables that are in the model, then a random effects model is probably best because it will produce unbiased estimates and the smallest standard errors. However, if we believe that the omitted variables are time-invariant, with time-invariant effects, and correlated with the variables in the model, the fixed effects model would be most appropriate. See Wooldridge (2010) for a more thorough discussion.

labor market in the coming years—and mainly for the more vulnerable low-income groups (Blundell et al., 2020).

Table 2. Estimated for Latin America of the Correlation between Inequality and Aggregated Variables

Variables	(1) OLS	(2) FE	(3) RE
Percentage of primary and secondary schooling attained in population	-0.324***	-0.150*	-0.160*
	(0.049)	(0.083)	(0.082)
GDP per capita (PPP constant 2017)	-0.000***	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
Employment (% of EAP)	-0.689***	-0.860***	-0.798***
	(0.118)	(0.218)	(0.223)
Tax revenue	-0.105***	-0.146***	-0.145***
	(0.020)	(0.045)	(0.042)
Social expenditure	0.068***	-0.001	0.004
	(0.018)	(0.025)	(0.027)
Dependency ratio	0.141***	0.069	0.073
	(0.039)	(0.044)	(0.045)
Inflation	0.008***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)
Constant	-3.389***	-4.490***	-4.170***
	(0.572)	(1.086)	(1.114)
Observations	317	317	317
R-squared	0.404	0.816	-
Time fixed-effects	No	Yes	Yes
Country fixed-effects	No	Yes	Yes
Number of countries	16	16	16

Source: Prepared by the authors based on data from the World Bank's World Development Indicators, data from household surveys, and data from Barro-Lee (2013) and Lee and Lee (2018).
Note: All the variables are logged. Robust standard errors in parentheses. EAP = economically active population; FE = fixed effects; OLS = ordinary least squares; PPP = purchasing power parity; RE = random fixed-effects. *** p<0.01, ** p<0.05, * p<0.10.

The results from Column (2) also show that the employment coefficient—after controlling for confounding factors—is negative and statistically significant, suggesting that an increase in the percentage of the employed population is associated with a reduction in inequality. The $\widehat{\beta_3} = -0.860$ coefficient suggests that a 1.0 percent decrease in the percentage of the employed population is associated with a 0.86 percent increase in the Gini coefficient. In this sense, recent estimates by the International Monetary Fund (IMF, 2021) show that in 2020, the employment rate fell by around 5 percent in the countries included in this study—which, according to our estimates, would be associated with an increase of 0.43 percent in inequality. As for the other estimates, the coefficients for the tax revenue shows a negative and statistically significant association with inequality, while the coefficient for social expenditures also has a negative sign

but is not statistically significant. The dependency ratio and inflation rates have a positive association with inequality, as would be expected.

4. Conclusion

This paper explores the evolution of inequality in Latin America using household surveys available in the region during the COVID-19 pandemic in 2020 and places recent changes into historical perspective by analyzing information since the 1990s.

Between 2019 and 2020, inequality as measured by the Gini coefficient increased by approximately 2 percent—and increased by up to 3 percent compared to trends recorded in recent years. This represents a reversal from gains observed during the two previous decades, in particular from the increase in the share of total available income of the poorest 10 percent of the population.

While data show mixed results as to changes in the income premium disaggregated by gender, urban/rural location, and sector of economic activity, income differentials by education level decline in most cases, possibly because low-income workers have been exiting the labor market. Simulations on the absence of additional sources of income suggest that while remittances had a modest effect, government transfers played a central role in preventing larger disparities in half the countries studied. In a few cases, government transfers could have contributed to higher inequality.

As to the future evolution of inequality, the estimation of an aggregated model forecasts that the decline in employment levels resulting from the economic contraction caused by COVID-19 could be associated with increases in inequality in the short term. Moreover, in the medium and longer term, the negative educational impacts of the pandemic on youth, documented elsewhere, could generate pressures on raising inequality once those current generations enter the labor market, and these effects could counteract the expected effects of economic recovery in reducing inequality.

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Appendix A. Household Surveys

Country	Number of Surveys	Surveys	Original Survey Name	Survey Name in English
Argentina	21	1980 1996 1998 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	Encuesta Permanente de Hogares (EPH)	Permanent Household Survey (EPH)
Bolivia	21	1990 1993 1995 1997 1999 2001 2002 2006 2007 2008 2009 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	Encuesta de Hogares	Household Survey
Brazil	21	1992 1993 1995 1996 1998 1999 2001 2002 2003 2004 2008 2009 2012 2013 2014 2015 2016 2017 2018 2019 2020	Pesquisa Nacional por Amostra de Domicilio (PNAD)	National Survey by Household Sampling (PNAD)
Chile	10	1992 1996 1998 2003 2009 2011 2013 2015 2017 2020	Encuesta de Caracteriz-ación Económica (CASEN)	Economic Characteri-zation Survey (CASEN)
Colombia	18	1992 1996 1997 1998 1999 2006 2007 2009 2010 2012 2013 2014 2015 2016 2017 2018 2019 2020	Gran Encuesta Integrada de Hogares	Great Integrated Household Survey
Costa Rica	19	1991 1995 1997 1998 2000 2001 2002 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	Encuesta Nacional de Hogares	National Household Survey
Dominican Republic	8	1995 1996 2000 2001 2003 2004 2007 2017	Encuesta Nacional de Fuerza de Trabajo (ENFT)	National Labor Force Survey (ENFT)
Ecuador	15	1995 1998 2000 2008 2009 2010 2011 2013 2014 2015 2016 2017 2018 2019 2020	Encuesta Nacional Empleo, Desempleo y Subempleo	National Employment, Unemployment and Under-employment Survey

El Salvador	16	1992 1995 1996 1997 1998 1999 2000 2008 2009 2010 2011 2012 2013 2015 2017 2019	Encuesta de Hogares de Propósitos Múltiples	Household Survey for Multiple Purposes
Guatemala	16	1998 2000 2002 2004 2006 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019	Encuesta Nacional de Empleo e Ingresos	National Employment and Income Survey
Honduras	19	1992 1996 1997 1998 1999 2001 2002 2003 2004 2007 2008 2009 2010 2011 2012 2016 2017 2018 2019	Encuesta Permanente de Hogares de Proósitos Múltiples	Permanent Household Survey for Multiple Purposes
Mexico	16	1992 1994 1996 1998 2000 2002 2004 2005 2006 2008 2010 2012 2014 2016 2018 2020	Encuesta Nacional de Ingresos y Gastos de los Hogares	National Household Income and Expenditure Survey
Panama	16	1991 1995 1997 1998 1999	Encuesta Continua de Hogares	Continuous Household Survey
		2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019	LAB Equity Lab de SEDLAC	LAB Equity Lab SEDLAC
Paraguay	21	1995 1997 1999 2000 2002 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2019 2020	Encuesta Permanente de Hogares	Permanent Household Survey
Peru	17	1991 1994 1996 1997	Encuesta Nacional de Hogares sobre Medición de Niveles de Vida	National Household Survey for Standard of Living Measure-ment

		2002–2003	LAB Equity Lab de SEDLAC	LAB Equity Lab SEDLAC
		2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	Encuesta Nacional de Hogares sobre Condiciones de Vida en el Perú	National Household Survey for Standard of Living Measurement in Perú
Uruguay	17	1992 1995 1997 1998 2005 2007 2008 2009 2010 2011 2012 2013 2014 2016 2017 2018 2019	Encuesta Continua de Hogares	Continuous Household Survey

Source: Authors' compilations.
Note: SEDLAC = Socio-Economic Database for Latin America and Caribbean.

Appendix B. Change in the Distribution by Income Deciles, circa 2019 and 2020 (percent)

	Decile									
Country	I	II	III	IV	V	VI	VII	VIII	IX	X
Argentina	-7.0	8.8	0.8	2.4	-3.8	8.5	-7.4	2.3	-6.4	2.6
Bolivia	-15.0	-7.7	-7.5	-5.6	-4.7	-7.2	-0.2	-1.2	0.3	6.9
Brazil	3.1	-17.7	-0.7	3.7	-7.3	-10.9	3.7	-1.9	-3.5	4.4
Chile	-39.8	-12.6	-8.1	-5.8	-4.7	-3.7	-2.4	1.2	6.4	3.4
Colombia	-44.9	-23.9	-17.7	-19.0	-16.2	1.2	-5.5	-0.7	5.4	4.2
Costa Rica	-3.8	-2.5	-2.9	-4.6	-3.1	-1.7	-1.0	0.2	2.2	0.9
Ecuador	-16.0	-3.5	-0.2	-0.1	0.4	-1.2	-2.9	-4.7	-2.1	4.4
Mexico	3.6	2.2	1.3	1.7	2.2	2.4	2.9	2.9	1.4	-3.8
Paraguay	14.2	8.9	4.9	5.6	5.3	4.7	2.5	1.3	0.4	-5.8
Peru	-11.5	-9.2	-8.8	-6.9	-6.5	-4.8	-2.6	0.1	1.9	6.6

Source: Prepared by the authors based on household surveys.
Note: Negative percentages indicate a decline. Positive percentages indicate an increase. The data are for 2019 for all countries except for Chile (2017) and Mexico (2018).

Appendix C. Coefficients and Standard Errors from Estimations in Section 3

a. Specification (1)

Country	Year	(1) Primary	(2) Lower Secondary	(3) Upper Secondary	(4) Tertiary	(5) Male	(6) Urban
Argentina	2019	0.081	0.040	0.370	0.976	0.067	
		(0.05)	*(0.04)*	*(0.04)*	*(0.04)*	*(0.02)*	
Argentina	2020	0.253	0.213	0.459	1.101	0.055	
		(0.13)	*(0.13)*	*(0.12)*	*(0.12)*	*(0.03)*	
Bolivia	2019	-0.113	0.071	0.146	0.595	-0.005	0.455
		(0.03)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.03)*
Bolivia	2020	-0.048	0.112	0.203	0.604	0.071	0.564
		(0.04)	*(0.05)*	*(0.04)*	*(0.04)*	*(0.03)*	*(0.03)*
Brazil	2019	-0.271	0.059	0.487	1.318	0.239	0.480
		(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Brazil	2020	-0.228	0.009	0.408	1.263	0.233	0.382
		(0.02)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.01)*	*(0.01)*
Chile	2017	-0.052	-0.011	0.176	0.860	0.183	0.202
		(0.01)	*(0.01)*	*(0.01)*	*(0.02)*	*(0.01)*	*(0.01)*
Chile	2020	-0.009	-0.025	0.146	0.858	0.262	0.174
		(0.02)	*(0.02)*	*(0.02)*	*(0.03)*	*(0.01)*	*(0.01)*
Colombia	2019	-0.015	0.268	0.306	1.041	0.507	0.245
		(0.06)	*(0.06)*	*(0.08)*	*(0.09)*	*(0.05)*	*(0.05)*
Colombia	2020	0.095	-0.032	0.302	1.025	0.604	0.098
		(0.10)	*(0.13)*	*(0.11)*	*(0.12)*	*(0.06)*	*(0.07)*
Costa Rica	2019	-0.309	-0.011	0.503	1.349	0.173	0.190
		(0.03)	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*
Costa Rica	2020	-0.239	-0.009	0.496	1.349	0.129	0.114
		(0.04)	*(0.04)*	*(0.04)*	*(0.04)*	*(0.02)*	*(0.02)*
Ecuador	2019	-0.034	0.072	0.372	0.944	0.013	0.331
		(0.03)	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*
Ecuador	2020	-0.021	-0.010	0.225	0.840	0.081	0.335
		(0.05)	*(0.05)*	*(0.05)*	*(0.05)*	*(0.03)*	*(0.03)*
Mexico	2018	-0.062	0.135	0.403	1.041	-0.071	0.425
		(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Mexico	2020	-0.048	0.095	0.322	0.915	-0.074	0.342
		(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Paraguay	2019	-0.142	0.051	0.402	0.935	0.139	0.353
		(0.04)	*(0.04)*	*(0.04)*	*(0.04)*	*(0.02)*	*(0.02)*
Paraguay	2020	-0.143	-0.003	0.320	0.853	0.149	0.308
		(0.04)	*(0.04)*	*(0.04)*	*(0.04)*	*(0.02)*	*(0.02)*
Peru	2019	-0.081	0.117	0.383	0.837	-0.043	0.543
		(0.02)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.01)*	*(0.01)*
Peru	2020	-0.116	0.013	0.244	0.682	-0.012	0.452
		(0.02)	*(0.03)*	*(0.02)*	*(0.03)*	*(0.02)*	*(0.02)*

b. Specification (2)

Country	Year	(7) 18–29 Years	(8) 45–59 Years	(9) >60 Years	(10) Secondary Sector	(11) Tertiary Sector
Argentina	2019	-0.156	0.088	0.433	0.18	0.31
		(0.03)	*(0.03)*	*(0.02)*	*(0.05)*	*(0.02)*
Argentina	2020	-0.173	0.029	0.505	- 0.18	-0.04
		(0.07)	*(0.04)*	*(0.03)*	*(0.15)*	*(0.04)*
Bolivia	2019	-0.014	0.194	0.292	0.11	0.11
		(0.03)	*(0.03)*	*(0.02)*	*(0.04)*	*(0.04)*
Bolivia	2020	-0.069	0.107	0.358	-0.03	-0.00
		(0.03)	*(0.03)*	*(0.03)*	*(0.05)*	*(0.05)*
Brazil	2019	-0.234	0.199	-0.097	0.28	0.31
		(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Brazil	2020	-0.190	0.197	-0.064	0.81	0.80
		(0.02)	*(0.01)*	*(0.02)*	*(0.01)*	*(0.01)*
Chile	2017	-0.105	0.086	0.152	0.09	0.10
		(0.02)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Chile	2020	-0.139	0.004	0.163	0.31	0.57
		(0.03)	*(0.01)*	*(0.01)*	*(0.02)*	*(0.01)*
Colombia	2019	-0.231	0.003	-0.533	-0.18	-0.05
		(0.06)	*(0.05)*	*(0.07)*	*(0.04)*	*(0.04)*
Colombia	2020	-0.110	-0.040	-0.606	- 0.21	0.24
		(0.08)	*(0.07)*	*(0.09)*	*(0.02)*	*(0.02)*
Costa Rica	2019	-0.246	0.113	0.041	0.13	0.34
		(0.03)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*
Costa Rica	2020	-0.253	0.122	0.111	-0.01	0.09
		(0.04)	*(0.02)*	*(0.02)*	*(0.03)*	*(0.02)*
Ecuador	2019	-0.178	0.150	0.302	0.15	0.18
		(0.03)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*
Ecuador	2020	-0.119	0.169	0.385	0.27	0.55
		(0.07)	*(0.03)*	*(0.03)*	*(0.04)*	*(0.04)*
Mexico	2018	-0.128	0.154	0.232	0.33	0.34
		(0.01)	*(0.01)*	*(0.01)*	*(0.05)*	*(0.04)*
Mexico	2020	-0.081	0.113	0.303	0.96	0.93
		(0.01)	*(0.01)*	*(0.01)*	*(0.04)*	*(0.04)*
Paraguay	2019	-0.004	0.120	0.164	0.21	0.35
		(0.03)	*(0.03)*	*(0.03)*	*(0.04)*	*(0.02)*
Paraguay	2020	-0.024	0.135	0.165	0.12	0.07
		(0.04)	*(0.03)*	*(0.03)*	*(0.04)*	*(0.03)*
Peru	2019	-0.063	0.131	0.266	- 0.14	-0.01
		(0.02)	*(0.01)*	*(0.01)*	*(0.02)*	*(0.02)*
Peru	2020	-0.043	0.148	0.265	-0.20	0.15
		(0.03)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*

Source: Authors' estimations from household surveys.
Note: For columns (1) to (9), the results correspond to specification (1), while for columns (10) to (11), coefficients are from specification (2) in section 3. For columns (7), (8), and (9), the comparison is to the group ages 30 to 44. Standard errors are presented below each coefficient in parentheses.