



SHORT AND LONG-RUN DISTRIBUTIONAL IMPACTS OF COVID-19 IN LATIN AMERICA

Nora Lustig, Valentina Martínez Pabon, Guido Neidhöfer and Mariano Tommasi

COMMITMENT TO EQUITY



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University

Working Paper 96
October 2020
(Revised June 2021)

The CEQ Working Paper Series

The CEQ Institute at Tulane University works to reduce inequality and poverty through rigorous tax and benefit incidence analysis and active engagement with the policy community. The studies published in the CEQ Working Paper series are pre-publication versions of peer-reviewed or scholarly articles, book chapters, and reports produced by the Institute. The papers mainly include empirical studies based on the CEQ methodology and theoretical analysis of the impact of fiscal policy on poverty and inequality. The content of the papers published in this series is entirely the responsibility of the author or authors. Although all the results of empirical studies are reviewed according to the protocol of quality control established by the CEQ Institute, the papers are not subject to a formal arbitration process. Moreover, national and international agencies often update their data series, the information included here may be subject to change. For updates, the reader is referred to the CEQ Standard Indicators available online in the CEQ Institute's website www.commitmenttoequity.org/datacenter. The CEQ Working Paper series is possible thanks to the generous support of the Bill & Melinda Gates Foundation. For more information, visit www.commitmenttoequity.org.

The CEQ logo is a stylized graphical representation of a Lorenz curve for a fairly unequal distribution of income (the bottom part of the C, below the diagonal) and a concentration curve for a very progressive transfer (the top part of the C).



SHORT AND LONG-RUN DISTRIBUTIONAL IMPACTS OF COVID-19 IN LATIN AMERICA*

Nora Lustig, Valentina Martínez Pabon, Guido Neidhöfer and Mariano Tommasi

CEQ Working Paper 96

OCTOBER 2020; REVISED JUNE 2021

ABSTRACT

We simulate the short- and long-term distributional consequences of COVID-19 in the four largest Latin American economies: Argentina, Brazil, Colombia and Mexico. We show that the short-term impact on income inequality and poverty can be very significant, but that additional spending on social assistance more than offsets the effect in Brazil. The offsetting effect is significant in Argentina and Colombia, and nil in Mexico where there has been no such expansion. We find that a universal basic income that would have produced the same reduction in the poverty gap as actual policies would have cost slightly more but would have benefited the poor (the nonpoor) slightly less (more). To project the long-term consequences, we estimate the impact of the pandemic on school achievement and its intergenerational persistence. We use information on school closures, educational mitigation policies, and account for educational losses related to health shocks and parental job loss. Our findings show that in all four countries the impact is strongly asymmetric and affects particularly the high-school completion rates of children from disadvantaged families. Our simulations suggest that mitigation policies seem to have a minor impact on containing these negative effects.

JEL Codes: C63, D31, I24, I32, I38, J62

Keywords: COVID-19, lockdowns, inequality, poverty, human capital, school closures, social spending, intergenerational persistence, Latin America, Argentina, Brazil, Colombia, Mexico

* We are very grateful to an anonymous referee for excellent suggestions. The paper also benefited from comments, suggestions, and discussions at several virtual seminars. We would like to thank in particular the two discussants of our presentation within the ‘Facing Inequality’ Virtual Event Series of the Institute for International Economic Policy (George Washington University), Stephen Kaplan and Michael Wolfson, as well as the participants of presentations at the Center of Studies for Human Development (Universidad de San Andres) and the UNDP-CEQ Institute-CGEP-SEGIB group of experts “The economy of the pandemic and social protection in Latin America”. We are also grateful to Federico Sanz for his valuable inputs in the simulation of universal basic income scenarios and to Melanie Gross and Facundo Pernigotti for their excellent research assistance. This paper was prepared as part of the Commitment to Equity Institute’s research program. It benefitted from the generous support of the Bill & Melinda Gates Foundation. Also, this material is based upon work supported by the National Science Foundation under Grant No. 1758837. For more details, click here www.ceqinstitute.org. Guido Neidhöfer acknowledges funding by the Volkswagen Foundation (Project “Analyses of the Costs and Benefits of School Closures for the Containment of COVID-19”). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Short and Long-Run Distributional Impacts of COVID-19 in Latin America^{*}

Nora Lustig (Tulane University), Valentina Martinez Pabon (Tulane University), Guido Neidhöfer (ZEW Mannheim), Mariano Tommasi (Universidad de San Andrés)

ABSTRACT. We simulate the short- and long-term distributional consequences of COVID-19 in the four largest Latin American economies: Argentina, Brazil, Colombia and Mexico. We show that the short-term impact on income inequality and poverty can be very significant, but that additional spending on social assistance more than offsets the effect in Brazil. The offsetting effect is significant in Argentina and Colombia, and nil in Mexico where there has been no such expansion. We find that a universal basic income that would have produced the same reduction in the poverty gap as actual policies would have cost slightly more but would have benefited the poor (the nonpoor) slightly less (more). To project the long-term consequences, we estimate the impact of the pandemic on school achievement and its intergenerational persistence. We use information on school closures, educational mitigation policies, and account for educational losses related to health shocks and parental job loss. Our findings show that in all four countries the impact is strongly asymmetric and affects particularly the high-school completion rates of children from disadvantaged families. Our simulations suggest that mitigation policies seem to have a minor impact on containing these negative effects.

JEL Codes: C63, D31, I24, I32, I38, J62

Keywords: COVID-19, lockdowns, inequality, poverty, human capital, school closures, social spending, intergenerational persistence, Latin America, Argentina, Brazil, Colombia, Mexico

^{*} We are very grateful to an anonymous referee for excellent suggestions. The paper also benefited from comments, suggestions, and discussions at several virtual seminars. We would like to thank in particular the two discussants of our presentation within the ‘Facing Inequality’ Virtual Event Series of the Institute for International Economic Policy (George Washington University), Stephen Kaplan and Michael Wolfson, as well as the participants of presentations at the Center of Studies for Human Development (Universidad de San Andres) and the UNDP-CEQ Institute-CGEP-SEGIB group of experts “The economy of the pandemic and social protection in Latin America”. We are also grateful to Federico Sanz for his valuable inputs in the simulation of universal basic income scenarios and to Melanie Gross and Facundo Pernigotti for their excellent research assistance. This paper was prepared as part of the Commitment to Equity Institute's research program. It benefitted from the generous support of the Bill & Melinda Gates Foundation. Also, this material is based upon work supported by the National Science Foundation under Grant No. 1758837. For more details, click here www.ceqinstitute.org. Guido Neidhöfer acknowledges funding by the Volkswagen Foundation (Project “Analyses of the Costs and Benefits of School Closures for the Containment of COVID-19”). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

I. Introduction

In the last twenty-five years, Latin America experienced progress in reducing inequality and poverty, and their intergenerational persistence.¹ The COVID-19 pandemic puts this progress at a serious risk. By the end of 2020, Argentina, Brazil, Colombia, Mexico, and Peru were among the top ten countries in terms of infections. Brazil, Mexico, and Peru were also among the top ten in terms of deaths per hundred thousand inhabitants.² To contain the spread of the virus, governments implemented lockdown policies of various degrees. In addition, as individuals took their own precautions to avoid contagion, demand for many goods and services fell. Compounded by the fall in exports, tourism and capital inflows triggered by the global economic meltdown, these dislocations in domestic demand and supply caused sharp reductions in output, employment, and income.³ As a consequence, inequality, and poverty – both in income and non-income dimensions – have been on the rise.⁴ The measures to contain the pandemic have also involved massive school closures. If children from poor households are not able to adequately replace regular classes by home schooling, the pandemic could have a lasting impact on intergenerational mobility and equality of opportunity.

In this paper, we estimate the short- and long-term distributional consequences of the pandemic in the four largest Latin American countries: Argentina, Brazil, Colombia, and Mexico. For the short-term effects, we simulate potential income losses at the household level using microdata from household surveys and information on the sectoral effects of lockdowns and from high frequency surveys on households' reported income losses. The microsimulations do not take into account behavioral responses or general equilibrium effects, so they yield first-order effects only.⁵ For the long-run effects, we simulate the potential impact that the pandemic may have on one dimension of human capital – namely school achievement – and how these effects differ across the distribution. More precisely, to project the long-term consequences of the pandemic, we simulate the impact of school closures, combined with parental job loss and health shocks, on school achievements and its intergenerational persistence.

Our microsimulations suggest that the short-term impact of COVID-19 on income inequality and poverty can be very significant. Compared to their pre-shock income, households across the entire income distribution are worse off on average after the pandemic shock. Somewhat surprisingly perhaps, the losses tend to be higher for the middle deciles rather than the poorest. The middle deciles include the moderate poor, the non-poor households who are vulnerable to fall below the poverty line if subject to a shock, and also households in the middle-class. Our simulations suggest that additional

¹ See, for example, Lopez-Calva and Lustig (2010), Lustig (forthcoming), Neidhöfer, Serrano, and Gasparini (2018), and Neidhöfer (2019).

² <https://coronavirus.jhu.edu/data/mortality>.

³ According to IMF (2021) and ECLAC (2021), the region's GDP contracted in 2020 by 7.0 and 7.7 percent, respectively.

⁴ See, for example, Bottan, Hoffman, and Vera-Cossio (2020); Brussevich, Dabla-Norris, and Khalid (2020); Busso and Messina (2020); Egger et al. (2020); INEGI (2020); Lustig, Martinez Pabon, Sanz, and Younger (2021); Lustig and Martinez Pabon (forthcoming); OPHI-UNDP (2020); Universidad Iberoamericana (2021).

⁵ For studies that incorporate behavioral responses in a macroeconomically consistent framework see, for example, Alon et al. (2020)

spending on social assistance might have more than offset the negative effect on incomes especially for Brazil. The offsetting effect is significant in Argentina and Colombia, and nil in Mexico where there has been no such expansion.

Given the concern that formal social protection schemes and expanded social assistance programs may have left significant numbers of individuals who suffered severe income losses out, we simulate several universal basic income (UBI) scenarios. We estimate their fiscal cost and impact on poverty. A UBI that would have produced the same reduction in the poverty gap as actual policies would have cost slightly more in all three countries that expanded their social assistance. Thus, a UBI might seem a better option than actual policies because there would have been lower errors of exclusion and be less complicated from the administrative point of view. However, we show that the pre-pandemic poor suffer higher income losses under the UBI than under the implemented schemes while the richest half is protected from income losses almost in full.⁶ This clearly is not a desirable outcome. Hence, we conclude that the policies pursued appear to be a better option than a UBI.

In terms of the long-term effects, our findings show that in all four countries the impact is strongly asymmetric and affects particularly the human capital of disadvantaged children, leading to substantial decreases in secondary school completion rates. Consequently, educational inequality and inequality of opportunity are expected to increase, in spite of the mitigation policies. Our findings for the long term suggest that, in contrast to the significant contribution of mitigation policies in the short term, the mitigation policies seem to have a minor impact on containing effects on schooling. We conclude that, besides short-term interventions to cushion the immediate impact of the economic crisis, more effort and targeted policies are necessary to reduce the potential long lasting consequences of the pandemic on the human capital of the most vulnerable.

While there has been a growing literature on the impact of COVID-19 on living standards in Latin America (and globally), our paper makes several contributions. To the best of our knowledge, our study is the first that looks at both the short-term effects of the pandemic on inequality and poverty and the long-term impact on intergenerational mobility. Regarding the analysis of the short-term impact, in contrast to Lackner et al. (2021), CONEVAL (2020), Sumner, Hoy, and Ortiz-Juarez (2020), and Valensisi (2020), our poverty simulations do not assume that the distribution of income remains constant.⁷ As mentioned above, this assumption is not supported by the existing information which reveals that the distribution of income changed during the pandemic.⁸ Second, for the studies that allow inequality to change, our analysis corresponds to the entire year of 2020 rather than only part of it as in, for instance, Delaporte, Escobar and Peña (2020), Solidarity Research Network (2020) (for Brazil), Universidad de los Andes (2020) (for Colombia). Furthermore, we use non-anonymous

⁶ This happens even if the overall poverty gap is kept equal to that obtained with actual policies.

⁷ Decerf et al. and Ferreira et al. (forthcoming) evaluate the impact on welfare of increases in mortality and poverty generated by the pandemic. For the latter, both studies assume the distribution of income remains unchanged during the pandemic.

⁸ See, for instance, Bottan, Hoffmann, and Vera-Cossio (2020), World Bank's High-Frequency Monitoring Dashboard (World Bank, 2020) and Universidad Iberoamericana (2021) and other studies cited in footnote 5 above.

growth incidence curves to describe income losses across the *ex ante* income distribution. Acevedo et al. (2020), Delaporte, Escobar and Peña (2020), ECLAC (2021), and Vos, Martin, and Laborde (2020) do not provide non-anonymous analysis of income losses. Busso et al. (2020) focus on the coverage of social assistance programs and do not include estimates of the effects on inequality, poverty, and losses across the pre-pandemic income distribution. To the best of our knowledge, ours is the first study that estimates the effect of the expanded social assistance using parameters obtained from high frequency surveys and aggregate macroeconomic contractions on inequality, poverty, and non-anonymous income transitions. In addition, ours is the first one which compares the outcomes of actual policies with alternative policy options under UBI scenarios.

II. The Short-Term Distributional Impact of COVID-19 and the Expanded Social Assistance

In this section, we analyze the impact of COVID-19 and the governments' expanded social assistance on incomes across the socioeconomic ladder, inequality, and poverty in the four largest countries in Latin America: Argentina, Brazil, Colombia, and Mexico. The impact is analyzed for 2020. To mitigate the effect, Argentina, Brazil, and Colombia (but not Mexico) expanded the social assistance programs (existing and/or new ones).⁹ In addition to putting more cash into families' pockets (direct effect), government spending on social assistance helped contain the decline in aggregate economic activity through the so-called social transfers multiplier effect (indirect effect).¹⁰ In other words, in the absence of the expanded social assistance the GDP contraction would have been worse. Since in this paper we are not focused on estimating the counterfactual of the aggregate contraction (and given the uncertainty surrounding the multiplier effect), our microsimulations will use the GDP growth estimates published in the World Economic Outlook of April 2021. These estimates implicitly include both the direct and indirect effects of the expanded social assistance. In this sense, our analysis will not be able to capture the full extent of the expanded social assistance and should be considered a lower bound.

Drawing from Lustig et al. (2021), we use microsimulation to estimate the contribution of mitigation policies on the distributional consequences of COVID-19. In particular, we simulate the effects of the expanded social assistance that governments have introduced in Argentina, Brazil, and Colombia. There is a growing literature on the poverty impact of the crisis. In contrast to our exercise, several studies assume that losses are proportional across the income distribution (CONEVAL, 2020; Sumner, Hoy, and Ortiz-Juarez, 2020; Valensisi, 2020; and Lackner et al., 2021). However, this

⁹ At the federal level, Mexico neither expanded nor introduced new safety nets. There were only two mitigation policies and neither involves an additional transfer: beneficiaries of the noncontributory pensions and scholarships were given two months in advance (with total payments for the year unchanged, at least for now) and access to "crédito a la palabra" (a loan without any guarantees) to mainly small and medium enterprises (which could become a transfer in retrospect if they are not paid back).

¹⁰ Bracco et al., 2021 and forthcoming analyze the multiplier effect in detail both for advanced countries and Latin America. For the latter, they find that the multiplier equals 0.9. In their forthcoming paper, they analyze the multiplier effect in the short-run context under the COVID-19 shock. They find that the multipliers could range from 1.5 to 2.5.

assumption seems to be inadequate since “real time” telephone surveys show that the distribution of income is changing due to the COVID-19 effect.”¹¹ Other studies that do not assume incomes contract proportionally, either focus only on the initial phases of the lockdown, do not account for the impact of expanded social assistance, or do not provide a non-anonymous analysis of income losses (Acevedo et al., 2020; Delaporte, Escobar and Peña, 2020; Vos, Martin, and Laborde, 2020, ECLAC, 2021).¹²

At the onset of the pandemic, there were proposals to introduce a universal basic income transfer (UBI) to mitigate the negative effect on households’ incomes (ECLAC, 2020). A UBI was proposed because—given the large proportion of employment in the informal sector—there was concern that a significant number of affected households could not be reached through either the contributory social protection programs such as unemployment compensation or the noncontributory cash transfers which benefited primarily the poorest end of the distribution. Here we assess the extent to which a UBI would have been able to yield better outcomes than those which were applied, and if this were the case, at what additional fiscal cost. This is another contribution of our analysis.

Data and Methodology

The distributional impacts are estimated by simulating potential income losses at the household level using microdata from household surveys. Since we want to assess the impact of the 2020 economic shock and the extent to which the expanded social assistance mitigates the negative effect, the simulations use the most recent pre-2020 household survey available in each country: Encuesta Permanente de Hogares (EPH, 2019) for Argentina; the Pesquisa Nacional por Amostra de Domicílios Continua (PNADC, 2019) for Brazil; the Gran Encuesta Integrada de Hogares (GEIH, 2019) for Colombia; and, the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH, 2018) for Mexico.¹³ The household surveys for Brazil, Colombia, and Mexico are representative at the national level. In Argentina, the survey covers only urban areas and the sample is representative of roughly 62 percent of the population.

¹¹ See, for example, Bottan, Hoffman and Vera-Cossio (2020), INEGI (2020), Universidad Iberoamericana (2021), World Bank (2020).

¹² Acevedo et al. (2020), using the \$5 poverty line and before considering social assistance, estimate an increase in 17 million poor people in the four countries we analyze—almost identical to ours. ECLAC (2021), using national poverty lines, estimate an increase of 28.3 million poor people before social assistance and 17 million poor people after social assistance. Our estimate is an increase of 17.2 million before social assistance and 9.5 million after social assistance, considerably lower. ECLAC’s results are based on projections of contractions on GDP much larger than ours for Argentina, Brazil, and Mexico, a factor that may underlie their more pessimistic predictions. Delaporte, Escobar and Peña (2020) use the \$1.90 poverty line which is not really relevant for middle-income Latin America. Vos, Martin, and Laborde (2020) do not present results for individual countries.

¹³ In the case of Mexico, incomes are converted into December 2019 levels by first simulating the significant reforms introduced to the cash transfers system in 2019. The reforms are briefly described in Lustig and Scott (2019); details on how this update was carried out are available upon request. Then, incomes are multiplied by the GDP per capita growth rate for 2019 and the so-called pass through of 0.85. The use of a pass through to convert GDP changes into changes in household disposable incomes was proposed by Ravallion (2003) and is applied by Lakner et al. (2020).

The microsimulations proceed as follows. We first generate a counterfactual: namely, the incomes that would have resulted from the COVID shock in the absence of expanded social assistance. Second, we simulate the impact from the expanded social assistance. We use gross income per capita as the relevant income concept given that we are interested in tracking the effect both before and after government-funded cash transfers.¹⁴ Gross income is defined as labor income plus rents, private transfers, pensions, and government cash transfers before any direct taxes.¹⁵

In order to generate the above two distributions, we proceed as follows. We first identify individuals whose income is “at risk” or “not at risk”. We assume that income derived from work in sectors that are “essential” is not at risk.¹⁶ The not-at-risk income category also includes incomes from cash transfers programs, social security pensions, public employment, private transfers (e.g., remittances),¹⁷ and the income earned in “nonessential” sectors by white-collar workers who are CEO’s, managers, and researchers with internet access at home.¹⁸ The not at risk income category excludes incomes of informal street vendors regardless of the sector in which they work and rental incomes; both these categories are included in the at risk income. We aggregate the not-at-risk income at the household level. The at-risk income is then obtained as the difference between the total gross household income and the total income that is not at risk. Once we identified the at-risk incomes, we proceed to simulate potential losses using a range of two parameters: the share of households with at-risk income that lose income and, of those who lose income, the share of at-risk income lost. Households who lose income are randomly selected. We allow both parameters to range from zero to one hundred percent (in 10 percent intervals) which yields a ten-by-ten matrix of possible total per capita gross income losses. The matrices are shown in the Appendix, Table A1.

To ensure consistency with macroeconomic forecasts, we proceed as follows. We first identify the scenarios for which the decline in per capita gross income comes closest to the IMF’s World

¹⁴ We prefer gross income over disposable income because our simulation exercises leave the average tax incidence unchanged. It should be noted that even if the tax parameters are not modified, changes in gross income may result in “mechanical” changes in the direct (and, of course, indirect) taxes households actually pay.

¹⁵ To maintain comparability across countries, own-consumption and the rental value of owner-occupied housing are excluded. Note that gross income might be different to the income concept usually reported in international databases such as the World Bank’s POVCAL or SEDLAC. For income-based surveys, the latter conventionally report inequality and poverty indicators using disposable income.

¹⁶ The determination of at-risk income is based on the economic sectors in which one works. It is assumed that income derived from work in sectors that are “essential” is not at risk, while other earned income is. For Argentina and Colombia, the lockdown measures stated explicitly which sectors are essential. For Brazil and Mexico, we use the ILO definition of essential sectors. [Decree 297/2020](#) (Argentina), [Decree 457 of March 22nd of 2020](#) (Colombia), and [ILO Monitor: COVID-19 and the world of work](#) (Brazil and Mexico). The distribution of employment between at-risk and not-at-risk by sector is presented in Lustig et al (2021).

¹⁷ Existing information suggests that international remittances in Latin America have not been negatively affected by the pandemic. In our four countries, remittances are important primarily for Mexico. Based on information from Banco de Mexico (2021), despite the crisis, income from remittances grew in 2020 compared to 2019. We have also replicated the simulations assuming that all earnings (including remittances and the rest of labor income but excluding salaries from the public sector) are at risk and the results are similar to our current exercise. In particular, the qualitative conclusions remain the same.

¹⁸ In the case of Argentina, the household survey does not allow us to identify internet access at home for white-collar workers. Thus, all of these workers were considered as not having their income at risk.

Economic Outlook country growth estimates published in April 2021.¹⁹ Second, among those scenarios (cells in the ten-by-ten matrix) that yield a similar aggregate contraction, we choose the scenario for which the share of households that bear the burden of losses comes closest to the real-time telephone surveys such as the World Bank’s High-Frequency Monitoring Dashboard (World Bank, 2020) and Universidad Iberoamericana (2021). Specifically, our microsimulations are based on the following scenarios shown in Table A1 in the Appendix. In Argentina, we choose the total gross per capita income contraction of 9.2 percent with 70 percent of households losing 50 percent of their income; in Brazil, 4.3 percent with 80 percent of households losing 20 percent; in Colombia, 7.0 percent with 70 percent of households losing 30 percent; and in Mexico, 7.8 percent with 60 percent of households losing 40 percent.²⁰

Finally, for simulating the effect of the expanded social assistance, we proceed as follows. In the case of programs that existed pre-COVID, we assigned the post-COVID additional payments to the households in which household members in the survey reported being beneficiaries of the existing pre-COVID programs. For the new social assistance programs, we first identify possible beneficiary households based on the definition of each program’s target population (e.g., informal workers, female household head, socio-economic level, and so on) and then assign the transfer randomly but only among the target population to match the number of total beneficiaries in the survey to that reported in the administrative data. Table 1 gives a brief description of each government’s policy responses in 2020 incorporated in our simulations of emergency social assistance programs.²¹

¹⁹ We use the IMF GDP estimated for 2020 adjusted to per capita growth rates with data on population growth for latest year available. Then, following the method suggested by Ravallion (2003) and applied by Lackner et al. (2020), we assume a “pass-through” of GDP growth to household (gross) income growth of 0.85.

²⁰ For Colombia, the World Bank (2020) shows that 71.7 percent of households experienced a decline in their total income; to estimate results, we rounded this up to 70 percent. For Mexico, Universidad Iberoamericana (2021) finds that between April and December 2020, on average, 64 percent of households experienced a decrease in total income and we rounded it up to 60 percent for the selected scenario. Since there is no information for Argentina and Brazil, we used 70 and 80 percent, respectively. We chose these figures based on the 67.6 percent average reported for Latin America in World Bank (2020). Based on the matrices in Table A1, we chose the closest option (that is, from those consistent with the aggregate contraction).

²¹ Our simulation of social assistance programs includes most but not all the emergency programs implemented. We do not include employment support programs. Their impact is implicit in the projected aggregate contraction in the sense that the income of the beneficiary households of these programs is not at risk. In order to estimate the benefit of this policy, proper pre-policy counterfactuals need to be generated, which is beyond the scope of this paper. Thus, the contribution of government policies to mitigate the impact of the pandemic presented here may be a closer to a lower bound. For a more comprehensive description of programs that were introduced by the governments in the four countries examined here, see Blofield, Lustig and Trasberg (2020).

TABLE 1. COVID-19 New and Expanded Social Assistance Included in Simulations

Country	Program	Target population of new programs	Number of transfers	Amount of the transfers		Transfer as % of poverty lines		Total beneficiaries by the end of the year (administrative data)	Fiscal cost as % of GDP
				LCU	USD	National	\$5.50 PPP		
Argentina	Ingreso Familiar de Emergencia*	Vulnerable, Informal workers	3	ARG\$10,000	US\$148	113.5	253.3	9 million people	1.41%
	AUH / AUE	-	1	ARG\$3,100	US\$46	35.2	78.5	4.3 million people	0.07%
	<i>memo:</i> Total								1.48%
Brazil	Auxílio Emergencial*	Vulnerable, Informal workers	9	R\$300-R\$600	US\$53-US\$107	121.9	140.3	67 million people	3.32%
	<i>memo:</i> Total								3.32%
Colombia	Ingreso solidario*	Vulnerable, Informal workers	9	COL\$160,000	US\$42	65.9	58.8	3 million households	0.44%
	Bogotá solidaria*	Vulnerable, Informal workers	5	COL\$233,000	US\$60	95.9	85.6	521 thousand households	0.06%
	Familias en Acción	-	5	COL\$145,000	US\$38	59.7	53.2	2.6 million households	0.19%
	Jóvenes en Acción	-	5	COL\$356,000	US\$92	146.5	130.7	204 thousand people	0.04%
	Colombia Mayor	-	5	COL\$160,000	US\$42	65.9	58.8	1.7 million people	0.14%
	<i>memo:</i> Total								0.87%
Mexico	No additional social assistance								

Notes: * refers to the new social assistance programs that were introduced in response to the COVID-19 pandemic. Information on the social assistance covers the whole year 2020. Amount of the transfer in (local/USD) prices of May 2020. The number of beneficiaries in the simulations do not necessarily correspond exactly to those shown above because in Argentina—given the coverage of the household survey—the simulations apply to urban areas only. The numerator of the fiscal cost is obtained by multiplying the size of the transfers by the number of times (for example, months) it was given and the number of beneficiaries; the denominator equals GDP per IMF projections for 2020 (IMF, 2021).

Source: Lustig, Martinez Pabon, Sanz and Younger. (2021).

Impact on Inequality and Poverty

The economic dislocation caused by the COVID-19 shock is asymmetric. Households whose working members are employed in nonessential sectors are hit harder because of the lockdown policies. Table 2 presents results of our microsimulation exercise for inequality. One can observe the change in the Gini coefficient from the pre-pandemic inequality levels for the two simulated distributions. As expected, the rise in the Gini coefficient in the absence of expanded social assistance could be significant, ranging from 0.8 (Brazil) to 2.6 (Argentina) points. The expanded social assistance measures implemented in Argentina, Brazil and Colombia succeed in reducing the pandemic-induced increase in inequality. In fact, in the case of Brazil, the rise in inequality could potentially be completely offset. The mitigation effect is very large for Brazil to the extent that inequality in 2020 could even be lower than in 2019. For Argentina and Colombia, the effects are smaller but still worth noting. By definition, there are no effects for Mexico.

TABLE 2. Gini Coefficient

	<i>Ex ante</i>	<i>Ex Post</i> without Expanded Social Assistance		<i>Ex Post</i> with Expanded Social Assistance	
Country	Gini Coefficient	Gini Coefficient	Change (Gini points)	Gini Coefficient	Change (Gini points)
	(1)	(2)	(3)	(4)	(5)
Argentina (urban)	44.4	47.0	2.6	45.3	0.9
Brazil	55.4	56.1	0.8	52.5	-2.9
Colombia	55.0	56.2	1.2	55.1	0.1
Mexico	46.4	47.9	1.5	47.9	1.5

Notes: Data for Argentina covers urban areas (62 percent of the population).

Source: Lustig, Martinez Pabon, Sanz and Younger. (2021).

Table 3 shows the change in poverty. As with any negative macroeconomic shock, poverty should rise due to the sharp contraction in overall economic activity. During 2020, the first year of the pandemic, poverty rose even more because inequality increased. We estimate the effects on the incidence of poverty using two poverty thresholds: the national poverty lines and the US\$5.50 a day international poverty line (in 2011 purchasing power parity).²² The increases in poverty due to COVID-19 are quite large for all countries and poverty lines. Using the national poverty line, the rise in the headcount ratio in the absence of expanded social assistance would have potentially been equal to 7.4 percentage points for Argentina, 2.9 for Brazil, 4.6 for Colombia, and 5.5 for Mexico. The expanded social assistance measures implemented in Argentina, Brazil and Colombia mitigate the impact on poverty to the tune of 2.2 percentage points in Argentina, 6.1 (!) in Brazil, 2.3 in Colombia, and zero in Mexico where social assistance was not expanded (that is the difference between columns 2 and 5 in Table 3). In fact, and similar to what happened with inequality, in the case of Brazil the expanded social assistance appeared to have lowered poverty compared to the pre-pandemic level.

²² The national poverty line in 2011 PPP a day is equivalent to \$12.3 in Argentina, \$6.3 in Brazil, \$4.9 in Colombia, and \$7.8 in Mexico. For Argentina, the conversion to 2011 PPP uses Buenos Aires city's CPI because the one produced by the National Statistics Institute (INDEC) went through a series of methodological changes that weakened its credibility. See, for example, Cavallo (2013).

TABLE 3. Incidence of Poverty

Country	<i>Ex ante</i>	<i>Ex Post</i> without Expanded Social Assistance			<i>Ex Post</i> with Expanded Social Assistance		
	Headcount ratio (%)	Headcount ratio (%)	Change (pp.)	New poor (in millions)	Headcount ratio (%)	Change (pp.)	New poor (in millions)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel (a) National Poverty Line							
Argentina (urban)	35.5	43.0	7.4	2.1	40.7	5.2	1.5
Brazil	28.2	31.0	2.9	6.0	24.9	-3.3	-6.8
Colombia	31.8	36.4	4.6	2.3	34.1	2.3	1.1
Mexico	53.8	59.3	5.5	6.9	59.3	5.5	6.9
Panel (b) \$5.5 PPP Poverty Line							
Argentina (urban)	10.9	16.5	5.6	1.6	13.0	2.1	0.6
Brazil	25.4	27.6	2.2	4.6	20.6	-4.7	-9.9
Colombia	37.6	42.1	4.5	2.2	40.3	2.7	1.3
Mexico	34.9	41.6	6.7	8.4	41.6	6.7	8.4

Notes: Data for Argentina covers urban areas (62 percent of the population).

Source: Lustig, Martinez Pabon, Sanz and Younger. (2021).

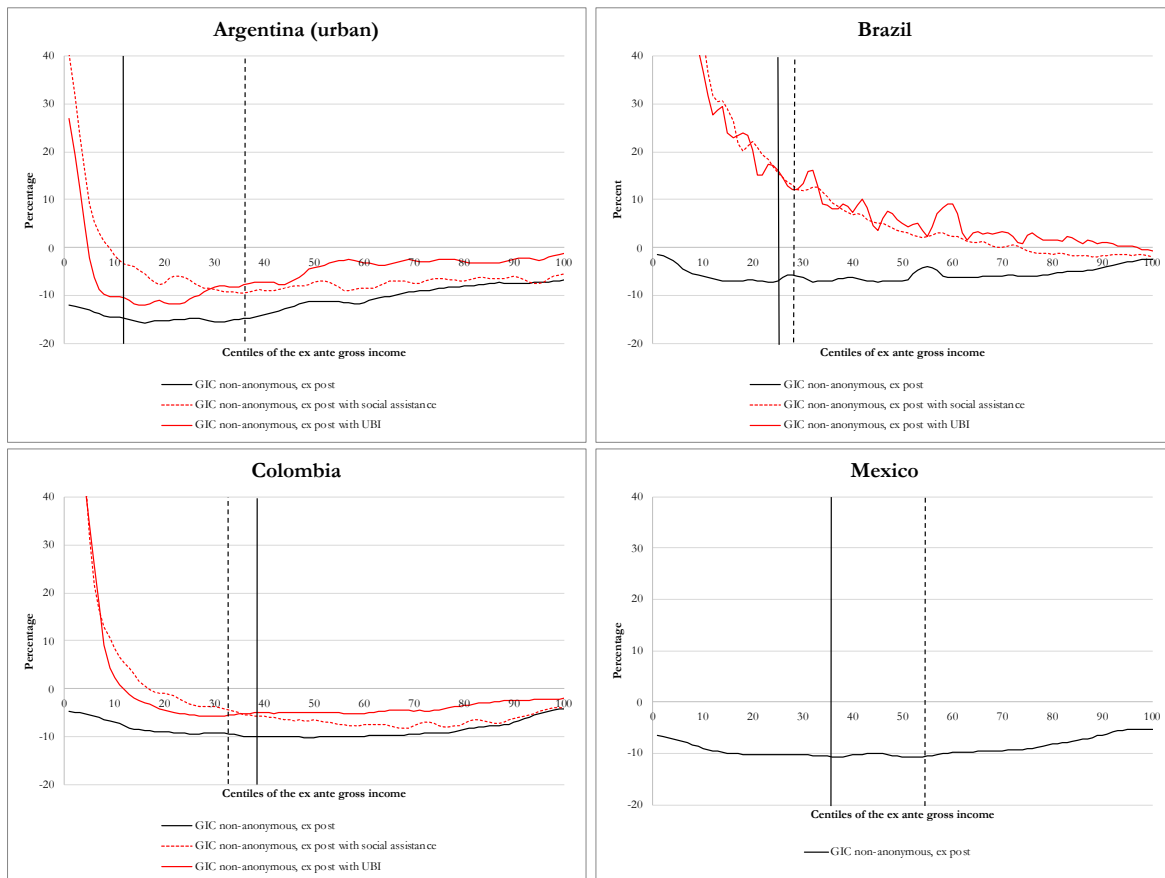
Who Bears the Largest Losses?

Income trajectories are of considerable interest when income losses (or gains) differ, perhaps greatly, among households as they do here. To describe those trajectories, we use non-anonymous growth incidence curves which are analogous to those in Bourguignon (2011). Figure 1 shows the change in income at each percentile of the *ex ante* income distribution.²³ Households across the entire income distribution are worse off on average due to the COVID shock, which is not surprising, but the losses tend to be higher for the middle deciles rather than the poorest or the highest. The middle deciles include, in particular, the moderate poor, the non-poor households who are vulnerable to fall below the poverty line if subject to a shock, and also households who might belong to the “middle-class.” This U-shaped result reflects that poorest and richest household are somewhat more protected from this shock, albeit for different reasons. On one end, poorest households have a cushion given by the existing targeted social assistance programs. On the other end, three types of income not at risk are concentrated at the higher end of the *ex ante* income distribution: social security pensions, salaries earned in the public sector, and labor earnings of white collar workers who are CEO’s, managers and researchers with internet access at home.

²³ Each point on the curves shows the loss for the households that are, *ex ante*, in the shown centile in the x-axis. The y-axis shows the average change in per capita income. For example, the households in the first centile in Argentina could potentially lose about 13 percent of their pre-COVID per capita income before the expanded social assistance; that loss becomes a gain of roughly 30 percent once we consider expanded social assistance.

The dotted lines show the growth incidence curves after considering the effect of the expanded social assistance. As expected, social assistance cuts the losses and, indeed, increases the income of poor households by significantly more in Brazil where the mitigation policies have been much more ambitious. In all three countries that have new social assistance transfers those transfers favor the *ex ante* poor and the poorest within the *ex ante* poor, which is a desirable outcome.

FIGURE 1. Non-anonymous Growth Incidence Curves.



Notes: The dashed line is the national poverty line and the bold line is the \$5.50 (moderate poor) per day international line (in 2011 PPP). Poverty lines based on the *ex ante* distribution of income. Data for Argentina covers urban areas (62 percent of the population). UBI scenario: change in poverty gap index equals *ex post* plus social assistance scenario.

Source: Authors' calculations based on ENIGH (2018), EPH (2019), GEIH (2019), PNADC (2019).

Assessing Alternatives Mitigation Policies: Universal Basic Income

Given the extent of informality in Latin American labor markets, would it have been better to rely on a universal basic income (UBI) than on introducing new targeted schemes that, inevitably, had both inclusion and exclusion errors? First of all, let us define what is meant by “better.” In the context of this paper, we want to assess the impact on poverty and the associated fiscal cost. We considered the

following four scenarios: a) a UBI that keeps the change in the poverty gap index equal to the *ex post* plus social assistance scenario described above; b) a UBI that mitigates 50 percent of the increase in the poverty gap index that corresponds to the *ex post* plus social assistance scenario; c) a UBI that mitigates 75 percent of poverty increase; and, d) a UBI that mitigates 100 percent of poverty increase.²⁴ The results are shown on Table 4. The impact of a UBI on the growth incidence curves is shown in Figure 1.

For Argentina, the fiscal cost in scenario a) would be 0.15 percent higher (panel b, column 8 in Table 4). Based on this, one could conclude that it would have been perhaps simpler to implement a UBI. However, the non-anonymous growth incidence curves (Figure 1) show that the pre-pandemic poor suffer higher income losses (starting from after the bottom 5 percent) than under the implemented schemes while the richest 50 percent is protected from income losses almost in full. This clearly is not a desirable outcome. Hence, we conclude that the policies pursued were a better option than a UBI of these characteristics. A UBI designed to offset the entire increase in the poverty gap would have cost 1.13 percent of GDP, a nontrivial amount (panel b, column 11 in Table 4). In Colombia, the results are very similar. Scenario a) costs very little more than the actual policies (panel b, column 8 in Table 4). However, the pre-pandemic poor suffer greater losses while the richest half of the population suffer smaller losses than under the actual policies (Figure 1). A UBI that offsets the entire increase of the poverty gap costs 0.28 percent more (panel b, column 11 in Table 4).

As discussed above, Brazil's federal government expanded significantly its spending on social assistance and the number of beneficiaries of the emergency cash transfers was very large. As a result, poverty in 2020 might have ended up being lower than in 2019. Thus, even the UBI that offsets the entire increase in the poverty gap would have been less expensive than the actual policies (panel b, column 11 in Table 4) but the poverty gap index would have been higher. A UBI that would have kept the change in the poverty gap index equal to that obtained with the actual mitigation policies would have been just 0.32 percent more expensive. However, based on the pre-pandemic distribution, the benefits would have been relatively higher for the richest 50 percent (Figure 1), an outcome that is not really desirable given that there are still a large number of people living in poverty in Brazil even after the expanded social assistance under such a UBI.

²⁴ We use the poverty gap index instead of the headcount ratio because the latter is insensitive to how much poorer the poor are. If the number of poor would remain constant across scenarios but their income fell, the headcount ratio would be the same. To compare policy interventions, we want to use an indicator that captures the extent of to which the poor became poorer.

TABLE 4. Simulated UBI Scenarios

Country	<i>Ex ante</i>	<i>Ex post</i>	<i>Ex post</i> + Social Assistance	UBI				Change			
				Change in Poverty Gap Index Equals <i>Ex Post</i> + Social Assistance scenario	Mitigates 50% of Increase in Poverty Gap Index	Mitigates 75% of Increase in Poverty Gap Index	Mitigates 100% of Increase in Poverty Gap Index	Diff. (4) - (3)	Diff. (5) - (3)	Diff. (6) - (3)	Diff. (7) - (3)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel (a) Poverty Gap Index (%)											
Argentina (urban)	14.1	19.0	16.6	16.6	16.6	15.3	14.1	0.0	0.0	-1.3	-2.5
Brazil	13.8	15.1	9.6	9.6	14.4	14.1	13.8	0.0	4.9	4.6	4.3
Colombia	14.2	16.6	14.7	14.7	15.3	14.8	14.1	0.0	0.7	0.1	-0.6
Mexico	20.8	25.0	25.0	25.0	22.9	21.8	20.7	0.0	-2.1	-3.2	-4.3
Panel (b) Fiscal Cost as % of the 2020 GDP											
Argentina (urban)			0.75	0.90	0.91	1.38	1.88	0.15	0.16	0.63	1.13
Brazil			3.18	3.50	0.37	0.56	0.75	0.32	-2.81	-2.62	-2.44
Colombia			0.68	0.73	0.47	0.71	0.96	0.05	-0.21	0.02	0.28
Mexico			0.00		0.68	1.02	1.38		0.68	1.02	1.38

Notes: Data for Argentina covers urban areas (over 62 percent of the population).

Source: Authors' calculations based on ENIGH (2018), EPH (2019), GEIH (2019), PNADC (2019).

From Short-Term Income Losses to Long-Term Effects

All the previous exercises use (gross) income as the relevant indicator of living standards. One should be careful, however, not to equate income with welfare. Even though our simulations suggest that – before the expanded social assistance– the poor suffer smaller relative income losses, their losses may be larger in welfare terms. Under the standard assumption of marginal utility decreasing with income, the same absolute reduction in income will mean a higher welfare loss for the poor than the nonpoor. Moreover, if one abandons the standard assumptions of homogeneous discount rates and nonconvexities and consider that the ability to smooth consumption differs, the fact that reductions in income for the poor can have a disproportionate effect on their welfare becomes even more patent. This would be the case, for example, if the poor cannot afford to fall below a minimum consumption level without jeopardizing their survival.²⁵ For those not far from subsistence levels, even a small temporary drop in income might have dramatic welfare effects. Given that the ability to smooth consumption increases with income,²⁶ the impact of the pandemic, especially on the upper-middle classes and the rich, could be smaller than suggested by our exercises.²⁷ Estimating the welfare implications of the pandemic, however, is beyond the objectives of this paper.

²⁵ For a discussion on this matter see, for example, Lustig (2000).

²⁶ Gandelman (2015); Cavallo and Serebrinsky (2016).

²⁷ Bracco et al. (2021) write that a large proportion of households in the countries under analysis report they are not able to smooth consumption when faced with a shock (the so-called hand-to-mouth households). Specifically, 64.5 percent in Argentina, 53.9 percent in Brazil, 62.8 percent in Colombia, and 71.8 percent in Mexico. However, 30 to 40 percent of the households, depending on the country, report that they are able to smooth consumption in the face of an income shock. For them, the welfare impact will be smaller than the reduction in income suggests. In contrast, for the hand-to-mouth households who are poor (especially, extremely poor), the welfare impact may be more severe than for hand-to-mouth households at higher levels of income because the former are closer to subsistence. Even though our simulations show that after considering expanded social assistance average income losses for the very poor have been tempered in Argentina, Brazil, and Colombia, there are still likely to be some extreme poor households who have suffered important income losses. That is true in the microsimulations and possibly more so in reality, given that the compensations we study are

In addition to the differential welfare effects that income losses have on the poor, the extreme poor suffer from multiple deprivations which become exacerbated during the pandemic (Lustig and Tommasi, 2020a and 2020b) and the poor are more likely to suffer from some permanent effects of the pandemic situation, to which we return below. For all these reasons, the poor should still be the main focus of attention of the policy response even if other groups lose a higher share of their income during the pandemic. The expanded social assistance in Argentina, Brazil, and Colombia did benefit the extreme poor relatively more.

Not all of the changes caused by the COVID shock estimated above are likely to be permanent. As the economy recovers, incomes of certain groups will bounce back. However, long-lasting effects on poverty and inequality may occur because some households get trapped in their new circumstances. Of the various channels by which the current situation is going to impact the future, education is one of the most important ones. School closures are likely to deeply affect the children of poor households who may find it extremely difficult if not impossible to continue their education at home due to lack of adequate equipment, connectivity and coaching. Hence, the next section analyzes these potentially irreversible losses in educational attainment. As we shall see, even in the countries where short-run mitigation policies appear to protect the incomes of the poor fairly well such as in Argentina, Brazil, and Colombia, the impact on educational attainment of today's children of poor households can be quite dire.

III. Long-run Effects of COVID-19 on the Intergenerational Persistence of Human Capital

This section analyzes the potential long-run distributional effects of the COVID-19 pandemic in Argentina, Brazil, Colombia, and Mexico. We evaluate one of the main mechanisms of these long-run effects, namely shocks to the accumulation and allocation of human capital and its intergenerational persistence. As mentioned before, the opportunities to invest in the human capital of children are seriously challenged by the pandemic, but to a different degree depending on the socioeconomic background of the family. As a consequence, the current impact of the pandemic could have lasting distributional consequences that might be transferred over generations.

The shock to the human capital of children during the COVID-19 pandemic is mainly driven by three factors affecting the supply and demand of education: the closure of educational institutions, the income loss suffered by families, and the health consequences related to the spread of the disease. On the other side, public interventions to mitigate the educational, economic and social impact of the crisis cushion these impacts. Taking into account all these circumstances, we quantify the effect of the

statutory, assigning the transfers to those who should receive them, but what actually happens on the ground might be somewhat different.

pandemic on the human capital of children with different parental socioeconomic background. Following Neidhöfer, Lustig, and Tommasi (forthcoming), we perform a counterfactual exercise to simulate the impact of the COVID-19 crisis on the intergenerational persistence of human capital.²⁸ Here, we adopt a different specification of parental educational background, defined in terms of quantiles of the educational distribution, and include new estimates of household income loss based on the most recent projections.

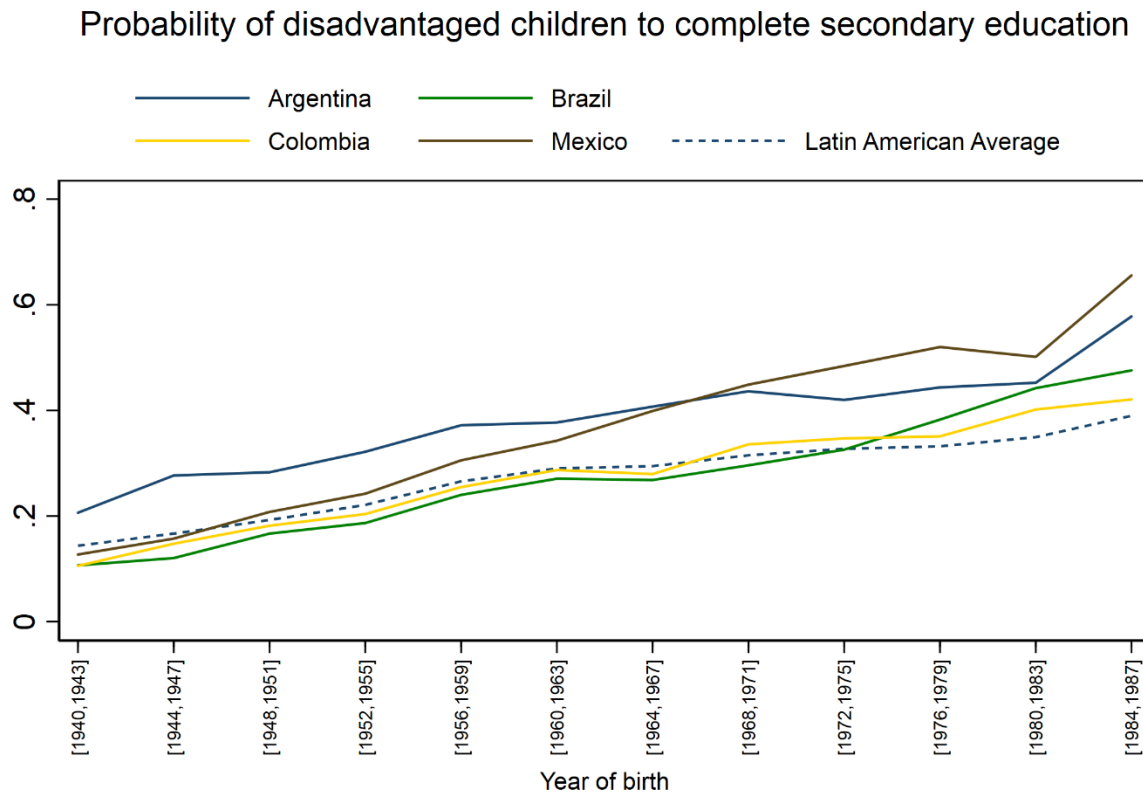
Intergenerational Persistence of Education in Latin America

The intergenerational persistence of socioeconomic status is insightful about the long-run distribution of resources and equality of opportunity in a society (Becker and Tomes, 1979 and 1986). The strength of the relationship between the education of parents and children yields a useful measure of such equality of opportunities, particularly in developing countries where income data over two subsequent generations is scant (Blanden, 2013; Narayan et al. 2018). Furthermore, education is one of the key dimensions for the opportunities of economic well-being later in life. Latin America has historically been one of the regions with the highest levels of intergenerational persistence and low equality of opportunity (Behrman et al., 2001; Hertz et al., 2007; Brunori, Ferreira, and Peragine, 2013; Torche, 2014; Daude and Robano, 2015). However, educational expansions that mostly benefited children at the bottom of the distribution led to a notable increase in upward mobility, and to higher degree completion rates in recent decades (Neidhöfer, Serrano, and Gasparini, 2018). This rise in mobility seems also related to the decrease in income inequality experienced by the region in the last decades (Neidhöfer, 2019).

Figure 2 shows the evolution of secondary school completion rates of children with disadvantaged background in Argentina, Brazil, Colombia, and Mexico, as well as the Latin American average, using the Mobility-Latam Database (Neidhöfer, Serrano, and Gasparini, 2018). We observe a clearly positive trend in the four countries. In the following analysis, we will perform a counterfactual exercise to project how the COVID-19 crisis could impact this trend and lead to stronger intergenerational persistence of educational attainments.

²⁸ Some recent studies analyzed the effect of the pandemic on learning outcomes, either with surveys and real time data (e.g. Angrist et al., 2020; Aucejo et al., 2020), standardized test scores (e.g. Maldonado and De Witte, 2020), or simulating the potential aggregate impact (e.g. Azevedo et al., 2020) and its consequences for long-run earnings (Psacharopoulos et al., 2020). The present study is, together with Neidhöfer, Lustig, and Tommasi (forthcoming), the first to estimate the potential impact of the pandemic on intergenerational persistence.

FIGURE 2. Secondary School Completion of Children with Disadvantaged Background



Notes: Lines show the trend in the likelihood of children with low educated parents (no secondary degree) to complete secondary education.

Source: Mobility-Latam Database (see Neidhöfer, Serrano, and Gasparini, 2018), own elaboration.

COVID-19 Shock on Human Capital

The COVID-19 pandemic shocks the demand and supply of education at the same time. Hence, we use a unified framework to evaluate the impact of both types of shocks on the human capital of affected children, accounting for asymmetries in the response of countries as well as in the capabilities of families to cushion instructional losses. We apply a counterfactual exercise to simulate changes in the education of individuals with distinct parental background, if they would have experienced the COVID-19 crisis in their childhood.²⁹ The exercise is applied on individual data from Latinobarometro.³⁰

²⁹ That is, we take generations for which we know their education history and modify those histories as if they had suffered a shock equivalent to that of COVID-19. The framework and logic of the counterfactual exercise is developed in more detail in Neidhöfer, Lustig, and Tommasi (forthcoming).

³⁰ The Latinobarometro survey is particularly suitable for an evaluation of intergenerational persistence in the four analyzed countries because it includes information about the education of individuals and, retrospectively, about the education of

The post-pandemic counterfactual education is defined as the actually reported years of schooling subtracting the instructional time lost due to COVID-19, measured as share of the year. The instructional time lost varies by country depending on several variables: closure and reopening of educational facilities; interventions aimed at facilitating learning at home and infrastructural characteristics (such as internet coverage) supporting this process; epidemiological parameters affecting the likelihood of infection and death of household members; household income losses; economic mitigation strategies.

Additionally, our procedure to estimate the instructional loss takes the ability of parents to substitute formal schooling into account. Parents with high education may compensate the instructional loss, while children of low educated parents completely rely on the supply of schooling provided by the education system (either in class or through the support of home learning).³¹ The range of the resulting loss in instructional time may, in principle, range from zero to one; i.e. the potential instructional loss due to school closures may be completely offset by parental and public interventions, or the entire year of schooling might be lost due to the pandemic, respectively.

The procedure of defining the instructional time lost as share of the academic year, similar to the ones followed by Adda (2016) and Abadzi (2009), has the caveat of not considering a potential cumulative negative effect of the learning loss. Hence, our assumption is that individuals continue their educational trajectory after having suffered the COVID-19 shock. Despite being a rather restrictive assumption, the direction of the bias deriving from it is clear: if learning losses generate higher drop-out rates, our estimates shall be interpreted as a lower bound of the negative impact of the shock. The same applies to additional negative effects of the pandemic on other features, such as nutrition, mental health, teenage pregnancy, non-cognitive skills.³² Also, in the choice of all the parameters within the model, we choose the combination that goes in the same direction yielding lower bound estimates.

Formally, the expected counterfactual post-pandemic years of schooling \hat{e} of individuals with parental education background j living in country c is defined as:

$$\widehat{e}_{ijc} = e_{ijc} - \left(\frac{t_c(1-f_c \cdot \delta - n_c \cdot A_{jc} \cdot (1-\delta)) + \tau}{\tau_c} \right) \cdot \alpha_j - D_{jc} \quad (1)$$

their parent with the highest degree (see Neidhöfer, Serrano, and Gasparini, 2018; Neidhöfer, 2019). Hereby, it encompasses information on completed degrees as well as incomplete educational tracks. We use survey waves from 1998 to 2017 and restrict the sample to individuals born between 1987 and 1994 who were at least 23 years old when responding to the survey. All our estimates are obtained weighting for the inverse probability of selection, while normalizing individual weights over different survey waves. For more details on the survey, see <https://www.latinobarometro.org/>.

³¹ For instance, see the evidence on the negative short and long-run effects of teacher strikes in Argentina provided by Jaume and Willen (2019).

³² See e.g. Wang et al. (2020).

where e are the reported years of schooling, t the days of instructional loss (taking into account the dates of school closure and eventual reopening, as well as school vacations lying within this period), and T the days in a regular year of schooling. f and n are indices constructed to measure the alternative supply of education during school closures through offline (TV, radio, cellphone, printed copies) and online (internet) learning, respectively, while δ is a weight that defines their relative efficiency. In order to fulfill the criteria to compute lower bound estimates, we assume both alternatives to be equally efficient and their combination to potentially be a perfect substitute of in-class schooling; i.e. we set δ to 0.5. Online education is also interacted with the probability of having internet access A , measured by the internet coverage among people in socioeconomic group j . τ captures the learning loss due to the health shocks related to COVID-19 suffered by household members. Table 5 shows the parameters of the model for the four countries under consideration.³³

TABLE 5 – Parameters Used to Estimate the Country-Specific Instructional Loss

c	<i>Schooling</i>				<i>Connectivity among socioeconomic groups by the education of the HH head</i>						<i>COVID-19 (09/20)</i>		<i>Avg. HH size</i>
	t	T	f	n	<i>less than primary</i>	<i>complete primary</i>	<i>incomplete secondary</i>	<i>complete secondary</i>	<i>incomplete tertiary</i>	<i>complete tertiary</i>	<i>Cases per inh.</i>	<i>Deaths per inh.</i>	
ARG	154	180	0.75	0.69	0.63	0.67	0.69	0.72	0.78	0.81	0.01090	0.00023	3.3
BRA	157	200	0.50	0.63	0.49	0.59	0.68	0.84	0.91	0.92	0.01972	0.00060	3.3
COL	150	200	0.75	0.75	0.32	0.48	0.66	1.00	1.00	1.00	0.01350	0.00043	3.5
MEX	136	185	0.25	0.50	0.33	0.48	0.65	0.93	1.00	1.00	0.00504	0.00054	3.7

Notes: t are the days of instructional lost (assuming schools reopen in November 2020 if they are still closed), T the days in a regular year of schooling, f and n indices that measure the alternative supply of education during school closures through offline (TV, radio, cellphone, printed copies) and online (internet) learning. Reported COVID-19 cases and deaths per inhabitant recorded in September 2020.

Source: Neidhöfer, Lustig, and Tommasi (forthcoming).

All parameters described so far, mainly related to the supply of education, are interacted with α , which we define as one minus the *parental factor of substitution* that measures the ability of parents to substitute formal schooling. This parameter is defined as:

$$\alpha_j = 1 - \frac{e_j^p}{\max(e_j^p)} \quad (2)$$

³³ A more exhaustive description of the parameters and their computation is provided in Neidhöfer, Lustig, and Tommasi (forthcoming) for a larger set of countries.

where e_j^p are the years of schooling of the parent with education j ; the most educated of the two parents. The range goes from zero to 15 years of schooling. Hence, the extreme values of α are zero for the highest educated parents, who are able to fully substitute the instructional loss, and one for children of the least educated parents. For other levels of parental education α lies within this interval.³⁴ Conceptually, α is the capability of parents to support their children's education, both helping them with the learning material and investing, for instance, in technological devices, private schooling, and tutoring.³⁵

Finally, $D_{jc} = \alpha_j \cdot d_{jc}$ measures the additional negative effect of household income loss on schooling outcomes. Hereby, d_{jc} is the probability to lose at least 20 percent of income during the pandemic for families with socioeconomic background j in country c that translates into a school drop-out of the child with a likelihood that we set equal to α_j . We estimate this probability for each socio-economic group applying the microsimulation exercise used in the first part of the paper. Again, we calculate this likelihood with and without the mitigating effect of social assistance.

Consequences for Intergenerational Persistence and Educational Inequality

Using the actual education of individuals, as well as the counterfactual simulated years of schooling after consideration of the COVID-19-shock, we estimate the probability of individuals to complete secondary education in the two scenarios. By definition, secondary education pre-COVID is completed with 12 years of schooling. In the simulation, the likelihood to complete secondary education is estimated by the predicted probability to attain 11.75 or more adjusted years of schooling despite of the learning loss due to COVID-19. The last figure provides a more conservative estimate than the strict 12 and it amounts to the assumption that a child will complete secondary education despite of the COVID-19 shock if her reported education in absence of the shock is a completed secondary degree or higher, and the instructional loss she suffers due to the pandemic is not higher

³⁴ Note that the same instructional loss can be produced in two different situations: either every child in socioeconomic group j loses the same α -share of the instructional loss due to the supply of education, or the α -share of children suffer the entire instructional loss while the other are able to substitute formal schooling. In the former α is the degree in which the parents are able to substitute schooling, while in the latter, it is the probability that the parents may perfectly substitute schooling. In what follows, we present the latter case of "concentrated instructional losses". The former case of "dispersed instructional losses" shows a similar pattern with a larger average gap in completion rates and is available in the Appendix (Figure A1).

³⁵ Parental time is another interesting dimension of parental investment with potential implications for educational inequality and intergenerational persistence between and within socioeconomic classes (Berniell and Estrada, 2020), not explicitly modelled here. Our simulation exercise encompasses this dimension as far as time devoted to children is positively correlated with parental education. It may overstate the impacts of the educational disruption for children whose parents lose their job and compensate with more time devoted to their children. Whether this scenario applies is an interesting subject for future research.

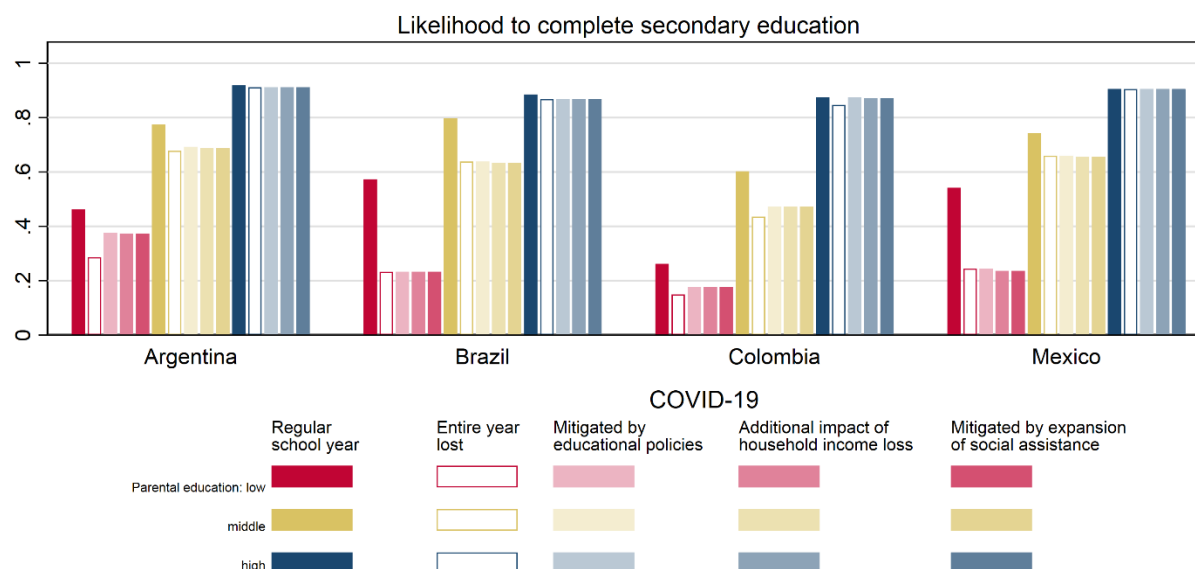
than 25 percent of the school year. This is based on past literature showing that pupils may be able to offset a moderate loss of instructional time in one year.³⁶

Comparing the average probability of individuals with low, middle and high parental educational background to complete secondary education yields an intuitive indicator of intergenerational persistence: the higher is the estimated likelihood to complete secondary for children whose parents are at the bottom of the distribution, the lower (higher) is intergenerational persistence (upward mobility). Hereby, the categories of parental educational background are defined by subdividing the distribution of parental years of schooling into three quantiles.

Figure 3 shows the results of applying the mentioned simulation exercise on Latinobarometro data. The bars show the estimated likelihood of children with low, middle, and high educated parents to complete secondary education with and without the COVID-19 shock. Within each parental education group, the first bar reflects the baseline, i.e. the actually measured likelihood of individuals in the sample to complete secondary education in the absence of the pandemic shock. The second bar shows secondary school completion rates in the worst case, namely a drop in the supply of education equivalent to an instructional loss by 100 percent of the school year only offset by the parental factor of substitution (i.e. setting $t=T$ and all other factors to zero). The third bar shows the simulated likelihoods taking into account both, parental capabilities and health shocks, as well as the supply of alternative learning tools by the public education system. Finally, the last two bars show the additional simulated effect of instructional loss due to household income losses, first without any compensatory mitigation policies, then considering the mitigation by social assistance (see Table 1). All estimates and their standard errors can be found in the Appendix, Table A2.

³⁶ See e.g. Kubitschek et al. (2005). To put it differently, our assumption is that if an individual is not able to complete at least 11.75 years of schooling due to the pandemic, she will never be able to complete secondary education. We test the robustness of our results and provide a lower and higher bound of the effect of the pandemic on secondary school completion rates also defining secondary school completion at 11.6 and 12 years of schooling. Even in the less restrictive scenario we observe a substantial gap among low background pupils. The results of these additional analyses are available in the Appendix.

FIGURE 3 – Consequences of COVID-19 on Intergenerational Persistence of Education



Notes: The Figure presents the “concentrated instructional losses” case. The “dispersed instructional losses” case is included in the Appendix (Figure A1). Bars show the likelihood to complete at least 11.75 years of schooling before and after simulation of the COVID-19 shock on education. Categories of parental education mirror three quantiles of the distribution of parental years of schooling.

Source: Latinobarometro, own estimates.

Our results reveal interesting patterns. The impact of the shock is small or even inexistent at the top for all countries, while there are different impacts across countries for families at the bottom and in the middle of the distribution. At the same time, there are substantial differences in the estimated cushioning effect of mitigation policies. The instructional loss is disproportionately hitting those at the bottom of the distribution and leading to an intensification of the intergenerational persistence of education. We record a decrease in secondary school completion rates of low background children by 8.5 percent in Argentina and Colombia, by 30 percent in Mexico and by 35 percent in Brazil.

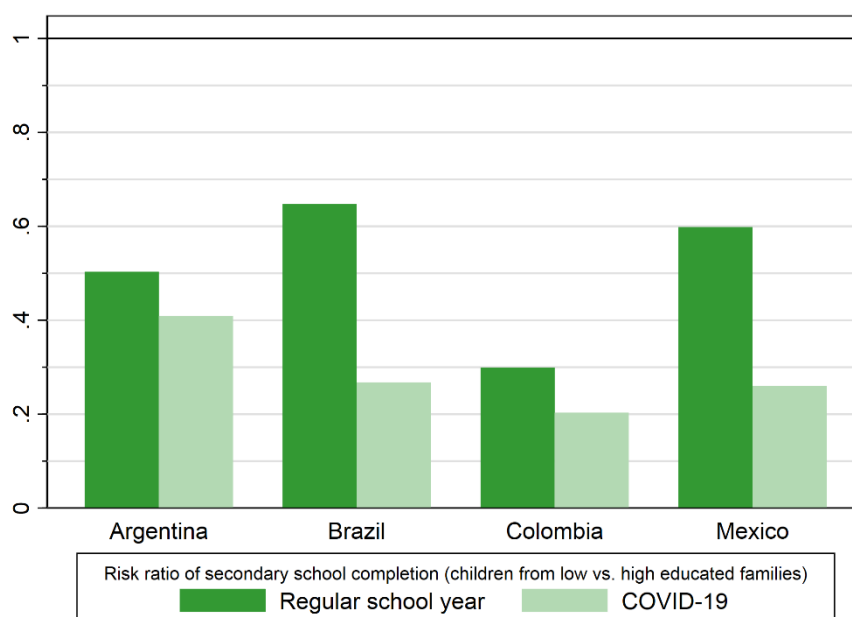
The largest proportion of the instructional loss, responsible for the decrease in secondary school completion rates, is driven by the closure of schools. The additional effect of household income losses on the demand for education is only marginal.³⁷ Due to the not optimal implementation of online and offline learning resources and the rather unequal distribution of internet coverage among socio-economic groups (see Table 5), the mitigating impact of educational policies is rather limited and not capable to close the learning gap. The mitigation of income losses, which, as we show in the first part of the analysis, has been able to reduce the short-term effect on inequality and poverty, provides little to none offsetting of instructional losses. This highlights that supporting the demand for education

³⁷ If any, an additional effect of income loss is observed for families in the middle of the distribution which, as shown in Section II, are the ones suffering the largest and more wide-spread income losses.

with cash transfers – which under regular circumstances may improve educational outcomes (Fiszbein and Schady, 2009; Molina Millan et al., 2019) – is only effective in interaction with the supply of education. Conversely, pure economic measures do not incentivize human capital investments in contexts where educational supply is affected by the shock, as in case of wars and natural disasters (Ichino and Winter-Ebmer, 2004; Caruso and Miller, 2015).

Next, we evaluate the potential effect of the pandemic on educational inequality (of opportunity). Figure 4 shows the risk ratio of secondary school completion between children at the bottom and at the top of the distribution of parental education. A risk ratio of one indicates that the opportunities to complete a secondary degree are the same in both groups. Hence, the difference of the estimated risk ratios from one shows the distance of the status quo from total equality in educational opportunities.

FIGURE 4. Consequences of COVID-19 on Educational Inequality



Notes: The Figure presents the “concentrated instructional losses” case. The “dispersed instructional losses” case is included in the Appendix (Figure A1). The graph shows the risk ratio of secondary school completion; i.e. the probability of children of low educated parents (bottom quantile) to complete secondary education over the probability of children of highly educated parents (top quantile). A risk ratio of one indicates that the likelihood is the same among both groups. For the COVID-19 case we focus on the last columns of Figure 3, with all mitigation measures in place.

Source: Latinobarometro, own estimates.

We observe that, under regular circumstances, individuals with low educated parents in the sample are half as likely to complete secondary schooling as their peers with highly educated parents in Argentina, more than 60 percent as likely in Brazil and Mexico, and around 30 percent as likely in Colombia.

After the COVID-19 shock, the unequal drop in the likelihood to complete secondary education is such to produce a substantial increase in inequality. The risk ratio falls to 0.4 in Argentina and even under 0.3 in the other three countries.

IV. Conclusions

We estimate the potential short- and long-run distributional consequences of the COVID-19 pandemic for Argentina, Brazil, Colombia, and Mexico using microsimulations and counterfactual scenarios. Our findings suggest that the short-term impact on income inequality and poverty can be very significant, but that additional spending on social assistance – if wide in coverage and significant in magnitude per person – could have a large offsetting effect. Compared to their pre-shock income and before the expanded social assistance, households across the entire income distribution are worse off on average after the pandemic shock. The poorest are not the ones hit the hardest as a share of pre-shock incomes, though; income losses tend to be higher for the moderate poor, the vulnerable to poverty, and for households that belong to the middle-class.³⁸ After the expanded social assistance, the extreme poor appear protected from income losses in Argentina, Brazil and Colombia. In fact, the expanded social assistance in Brazil was so high in coverage and generous in size that for the first six deciles the post-pandemic income is higher, and inequality and poverty are lower, than the pre-pandemic levels. Since Mexico did not increase its social assistance, this country shows the sharpest increase in inequality and poverty associated with the pandemic shock.

The COVID-19 shock, however, affected other dimensions of wellbeing and human capital beyond income. We focused on one important dimension, namely school achievement, and empirically quantified the effect of the pandemic on the potential instructional losses suffered by children with distinct parental background. Our results suggest that secondary school completion rates among children from low educated families are likely to drop substantially due to the pandemic. In contrast, the likelihood of children from highly educated families to complete secondary education are almost unaffected. Consequently, the asymmetric nature of the shock seriously imperils equality of educational opportunities. Moreover, while our results suggest that economic mitigation measures seem to be effective to cushion income losses, the same could not be confirmed about the impact of educational interventions. Although the educational emergency interventions might have been able to reduce part of the instructional loss, our estimates show that, in part due to deficiencies in the digital infrastructure that is necessary to support online learning, they are unlikely to close the resulting educational gap. Hence, upward mobility and the longer-run income chances of children from vulnerable families are expected to decrease, perhaps dramatically.³⁹

³⁸ Oliva et al. (forthcoming) apply the same methodology to estimate the effect of COVID-19 and expanded social assistance on poverty and inequality in Guatemala, El Salvador, and Honduras. The authors find that COVID-19 intensifies the already high poverty and inequality in the countries analyzed, even after incorporating the effect of new social assistance. In other words, the inequality and poverty-increasing impact of the COVID-19 shock appears again. Since in these three countries the expanded social assistance was very small, the negative effects are mitigated only slightly.

³⁹ As shown by Neidhöfer, Lustig, and Tommasi (forthcoming), although of different magnitude, this problem is likely to extend to other Latin American countries, as well, and affect both female and male children.

REFERENCES

- Abadzi, H. 2009. Instructional Time Loss in Developing Countries: Concepts, Measurement, and Implications. *The World Bank Research Observer*, 24(2): 267–290.
- Acevedo, I., F. Castellani, I. Flores, G. Lotti, and M. Szekely. 2020. Implicaciones Sociales Del COVID-19: Estimaciones y Alternativas Para America Latina y El Caribe. *Documento de discusion del BID*, (820). <https://publications.iadb.org/es/implicaciones-sociales-del-covid-19-estimaciones-y-alternativas-para-america-latina-y-el-caribe>
- Adda, J. 2016. Economic Activity and the Spread of Viral Diseases: Evidence from High Frequency Data. *The Quarterly Journal of Economics*, 131(2): 891–941.
- Alon, T. M., Kim, M., Lagakos, D., & VanVuren, M. (2020). How should policy responses to the covid-19 pandemic differ in the developing world? (No. w27273). *National Bureau of Economic Research*.
- Angrist, N., Bergman, P., Brewster, C., & Matsheng, M. (2020). Stemming Learning Loss During the Pandemic: A Rapid Randomized Trial of a Low-Tech Intervention in Botswana. *CSAE Working Paper WPS/2020-13*, Centre for the Study of African Economies, University of Oxford. <https://www.csae.ox.ac.uk/materials/papers/csae-wps-2020-13.pdf>
- Aucejo, E. M., French, J., Ugalde Araya, M. P., and Zafar, B. 2020. The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *Journal of Public Economics*, 191, 104271.
- Azevedo, J., Hasan, A., Goldemberg, D., Iqbal, S., & Geven, K. (2020). *Simulating the Potential Impacts of COVID-19 School Closures on Schooling and Learning Outcomes : A Set of Global Estimates*. Policy Research Working Paper; No. 9284. World Bank, Washington, DC. World Bank. <https://openknowledge.worldbank.org/handle/10986/33945>
- Becker, G. S., and Tomes, N. 1979. An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility. *Journal of Political Economy*, 87(6): 1153–1189.
- Becker, G. S., and Tomes, N. 1986. Human Capital and the Rise and Fall of Families. *Journal of Labor Economics*, 4(3, Part 2): S1–S39.
- Behrman, J. R., Gaviria, A., Székely, M., Birdsall, N., & Galiani, S. 2001. Intergenerational mobility in Latin America [with comments]. *Economia*, 2(1), 1-44.
- Berniel, I., and Estrada, R. 2020. Poor little children: The socioeconomic gap in parental responses to school disadvantage. *Labour Economics*, Volume 66.
- Blanden, J. 2013. Cross-country rankings in intergenerational mobility: a comparison of approaches from economics and sociology. *Journal of Economic Surveys*, 27(1): 38-73.
- Blofield, M., N. Lustig and M. Trasberg. (2021). Social Protection During the Pandemic: Argentina, Brazil, Colombia, and Mexico. *CEQ Working Paper 104*, Commitment to Equity Institute, Tulane University, January. <http://repec.tulane.edu/RePEc/ceq/ceq104.pdf>
- Bottan, N., Hoffmann, B., and Vera-Cossio, D. 2020. The unequal impact of the coronavirus pandemic: Evidence from seventeen developing countries. *PLoS ONE*, 15(10):e0239797.

- Bourguignon, F. 2011. Non-anonymous growth incidence curves, income mobility and social welfare dominance. *The Journal of Economic Inequality*, 9(4): 605-627.
- Bracco, J., L. Galeano, P. Juarros, D. Riera-Crichton, and G. Vuletin. 2021. Social Transfer Multipliers in Developed and Emerging Countries: The Role of Hand-to-Mouth Consumers. *Policy Research Working Paper*; No. 9627. World Bank, Washington, DC.
- Bracco, J., L. Galeano, P. Juarros, D. Riera-Crichton, and G. Vuletin. (forthcoming). Targeting COVID-19 Stimulus Payments to Hand-to-Mouth individuals: Evidence and Implications for United States and Latin America.
- Brunori, P., Ferreira, F. H., & Peragine, V. 2013. Inequality of opportunity, income inequality, and economic mobility: Some international comparisons. In *Getting development right* (pp. 85-115). Palgrave Macmillan, New York.
- Brussevich, M., Dabla-Norris, E., and Khalid, S. 2020. Who will Bear the Brunt of Lockdown Policies? Evidence from Tele-workability Measures Across Countries. Working Paper No. 20/88. Washington, D.C.: International Monetary Fund
- Busso, M., J. Camacho, J. Messina, and G. Montenegro (2020). The Challenge of Protecting Informal Households during the COVID-19 Pandemic: Evidence from Latin America. *LADB. Discussion paper* 780.
- Busso, M and Messina, J. 2020. La desigualdad en tiempos de crisis: lecciones de la crisis de la COVID-19. In Busso, M and Messina, J. (Eds.) *La crisis de la desigualdad en América Latina*. Banco Interamericano de Desarrollo.
- Decerf, B., Ferreira, F. H., Mahler, D. G., & Sterck, O. (forthcoming). Lives and livelihoods: estimates of the global mortality and poverty effects of the Covid-19 pandemic. The World Bank. *Policy Research Working Paper* 9277.
- Caruso, G., and Miller, S. 2015 Long run effects and intergenerational transmission of natural disasters: A case study on the 1970 Ancash Earthquake. *Journal of Development Economics*, 117: 134-150.
- Cavallo, A. 2013. Online and official price indexes: measuring Argentina's inflation. *Journal of Monetary Economics*, 60(2): 152-165.
- Cavallo, E., and Serebrisky, T. 2016. *Saving for Development: How Latin Americans Can Save More and Better*. Inter-American Development Bank and Palgrave Macmillan.
- CONEVAL. 2020. La Política Social en el Contexto de la Pandemia por el Virus SARS-CoV-2 (COVID-19) en México. *Consejo Nacional de Evaluación de la Política de Desarrollo Social*.
- Daude, C., and Robano, V. 2015. On intergenerational (im) mobility in Latin America. *Latin American Economic Review*, 24(1), 9.
- Delaporte, I., J. Escobar, and W. Peña. (2020). The Distributional Consequences of Social Distancing on Poverty and Labour Income Inequality in Latin America and the Caribbean. *Global Labor Organization (GLO) Discussion Paper* No. 682.
- ECLAC. 2020. El desafío social en tiempos del COVID-19. COVID-19 Special Report, No. 3. United Nations Economic Commission for Latin America and the Caribbean.
- ECLAC. 2021. Social Panorama of Latin America 2020. United Nations Economic Commission for Latin America and the Caribbean.

- Egger, D., E. Miguel, S. Warren, A. Shenoy, E. Collins, D. Karlan, D. Parkerson, A. M. Mobarak, G. Fink, C. Udry, M. Walker, J. Haushoof, M. Larrebourg, S. Athey, P. Lopez-Pena, S. Benhachmi, M. Humphreys, L. Lowe, N. Meriggi, A. Wabwire, C. A. Davis, U. J. Pape, T. Graff, M. Voors, C. Nekesa, C. Vernot. Forthcoming. Falling Living Standards during the COVID-19 Crisis: Quantitative Evidence from Nine Developing Countries.
- Ferreira, F. H. G., Sterck, O., Mahler, D. G., and Decerf, B. (2021). Death and Destitution: The Global Distribution of Welfare Losses from the COVID-19 Pandemic. *LSE Public Policy Review*, 1(4), 2. DOI: <http://doi.org/10.31389/lseppr.34>
- Fiszbein, A., and Schady, N. R. 2009. *Conditional cash transfers: reducing present and future poverty*. The World Bank.
- Gandelman, N. 2017. Do the rich save more in Latin America?. *The Journal of Economic Inequality*, 15(1): 75-92.
- Hertz, T., Jayasundera, T., Piraino, P., Selcuk, S., Smith, N., and Verashchagina, A. 2007. The inheritance of educational inequality: International comparisons and fifty-year trends. *The BE Journal of Economic Analysis & Policy*, 7(2).
- Ichino, A., and Winter-Ebmer, R. 2004. The Long-Run Educational Cost of World War II, *Journal of Labor Economics*, 22, issue 1, p. 57-86
- Instituto Nacional de Estadística y Geografía (INEGI). 2020. Resultados de la Encuesta Telefónica de Ocupación y Empleo (ETOE) Cifras Oportunas de Junio de 2020. *Comunicado de Prensa* 387/20.
- International Monetary Fund (IMF). 2021. World Economic Outlook Update, April 2021. International Monetary Fund. <https://www.imf.org/en/publications/weo>
- Jaume, D., & Willén, A. 2019. The long-run effects of teacher strikes: evidence from Argentina. *Journal of Labor Economics*, 37(4), 1097-1139.
- Kubitschek, W. N., Hallinan, M. T., Arnett, S. M., and Galipeau, K. S. 2005. High school schedule changes and the effect of lost instructional time on achievement. *The High School Journal*, 89(1): 63-71.
- Lakner, C., Mahler, D. G., Negre, M., and Prydz, E. B. 2020. How Much Does Reducing Inequality Matter for Global Poverty? Policy Research Working Paper; No. 8869. World Bank, Washington, DC.
- Lackner, C., N. Yonzan, D. G. Mahler, D., A. Castaneda Aguilar and H. Wu. 2021. Updated Estimates of the Impact of COVID-19 on Global Poverty: Looking Back at 2020 and the Outlook for 2021. World Bank Blogs. <https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty-effect-new-data>
- Lopez-Calva, L.F., and Lustig, N. 2010. (Eds.), *Declining Inequality in Latin America: A Decade of Progress?* Washington, D.C.: Brookings Institution and UNDP.
- Lustig, N. 2000. Crises and the Poor: Socially Responsible Macroeconomics. *Economía* 1(1): 1-19.
- Lustig, N. forthcoming. "Desigualdad y política Social." in *El desafío del desarrollo in América Latina. Políticas para una región más productiva, integrada and inclusiva*. Caracas
- Lustig, N., and Martinez Pabon, V. forthcoming. The Impact of COVID-19 Economic Shock on Inequality and Poverty in Mexico. Estudios Economicos, El Colegio de Mexico.

- Lustig, N., Martinez Pabon, V., Sanz, F., and Younger, S.D. 2021. The Impact of Covid-19 and Expanded Social Assistance on Inequality and Poverty in Argentina, Brazil, Colombia and Mexico. CEQ Working Paper 92, Commitment to Equity Institute, Tulane University.
- Lustig, N. and Tommasi, M. 2020a. El COVID-19 y la proteccion social de los grupos pobres y vulnerables en America Latina. Revista CEPAL No. 132. Edición Especial. https://www.cepal.org/sites/default/files/publication/files/46836/RVE132_Lustig.pdf (For English version: Covid-19 and social protection of poor and vulnerable groups in Latin America: a conceptual framework. UNDP COVID-19 Policy Document Series No. 8.)
- Lustig, N. and Tommasi, M. 2020b. El COVID-19 y la proteccion social de los grupos pobres y vulnerables en America Latina. https://www.udes.edu.ar/sites/default/files/lustig_y_tommasi_covid_y_vulnerables_may_2020.pdf
- Maldonado, J., and De Witte, K. 2020. The Effect of School Closures on Standardised Student Test Outcomes. KU Lueven Department of Economics Discussion Paper Series DPS20.17, September.
- Molina Millán, T. M., Barham, T., Macours, K., Maluccio, J. A., and Stampini, M. 2019. Long-term impacts of conditional cash transfers: review of the evidence. *The World Bank Research Observer*, 34(1): 119-159.
- Narayan, A., Van der Weide, R., Cojocar, A., Lakner, C., Redaelli, S., Mahler, D. G., Ramasubbaiah, R., and Thewissen, S. 2018. *Fair Progress?: Economic Mobility Across Generations Around the World*. World Bank Publications.
- Neidhöfer, G. 2019. Intergenerational mobility and the rise and fall of inequality: Lessons from Latin America. *The Journal of Economic Inequality*, 17(4): 499-520.
- Neidhöfer, G., Serrano, J., and Gasparini, L. 2018. Educational inequality and intergenerational mobility in Latin America: A new database. *Journal of Development Economics*, 134, 329-349.
- Neidhöfer, G., Lustig, N. and Tommasi, M. Forthcoming. “Intergenerational transmission of lockdown consequences: Prognosis of the longer-run persistence of COVID-19 in Latin America”. *Journal of Economic Inequality*.
- Oliva, J. A., C. Alas de Franco, M. Cabrera, C. Carrera, and P. Larroulet. Forthcoming. The impact of COVID-19 crises and emergency response programs on poverty and inequality in Guatemala, El Salvador and Honduras. Report prepared for Southern Voice.
- OPHI-UNDP 2020. Charting pathways out of multidimensional poverty: Achieving the SDGs.
- Psacharopoulos, G., Collis, V., Patrinos, H., and Vega, E. 2020. Lost Wages The COVID-19 Cost of School Closures. World Bank Policy Research Working Paper 9246.
- Ravallion, M. 2003. Measuring aggregate welfare in developing countries: How well do national accounts and surveys agree?. *Review of Economics and Statistics*, 85(3): 645-652.
- Solidarity Research Network. (2020). COVID-19: Public Policies and Society’s Responses. Bulletin 14. Solidarity Research Network, July 6, 2020. https://rededesquisasolidaria.org/wp-content/uploads/2020/07/boletimpps_14_3julho_ingles.pdf
- Sumner, A., Hoy, C., and Ortiz-Juarez, E. 2020. Estimates of the Impact of COVID-19 on Global Poverty. *UNU-WIDER, April*, 800-9.

- Torche, F. 2014. Intergenerational mobility and inequality: The Latin American case. *Annual Review of Sociology*, 40, 619-642.
- Universidad de los Andes. (2020). La Vulnerabilidad del Empleo a la Emergencia de COVID19. Nota Macroeconómica No. 11. Macroeconomics Research Group, Universidad de los Andes, Colombia.
https://economia.uniandes.edu.co/components/com_booklibrary/ebooks/BM%2011.pdf
- Universidad Iberoamericana. (2021). Encuesta de Seguimiento de los Efectos del COVID-19 en el Bienestar de los Hogares Mexicanos. Universidad Iberoamericana, Mexico.
<https://equide.org/pobreza/https-equide-org-pobreza-impactos-del-covid-19-en-mexico/>
- Valensisi, G. 2020. COVID-19 and global poverty: Are LDCs being left behind? *Working Paper No. 2020/73. United Nations University, World Institute for Development Economics Research*
- Vos, R., W. Martin, and D. Laborde. 2020. How much will global poverty increase because of COVID-19? IFPRI. Retrieved from: <https://www.ifpri.org/blog/poverty-and-food-insecurity-could-grow-dramatically-covid-19-spreads>.
- Wang, G., Zhang, Y., Zhao, J., Zhang, J., & Jiang, F. (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. *The Lancet*, 395(10228), 945-947.
- World Bank. 2020. COVID-19 High-Frequency Monitoring Dashboard. The World Bank.
<https://www.worldbank.org/en/data/interactive/2020/11/11/covid-19-high-frequency-monitoring-dashboard>

APPENDIX

Table A1 – Income Losses Matrix (as % of total gross income)

Argentina

% of income lost											
		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
% households losing income	10%	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7
	20%	0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	5.2
	30%	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0
	40%	1.0	2.1	3.1	4.2	5.2	6.3	7.3	8.3	9.4	10.4
	50%	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	13.0
	60%	1.6	3.1	4.7	6.2	7.8	9.3	10.9	12.4	14.0	15.5
	70%	1.8	3.7	5.5	7.3	9.2	11.0	12.8	14.7	16.5	18.3
	80%	2.1	4.2	6.3	8.4	10.5	12.6	14.7	16.8	18.9	21.0
	90%	2.4	4.8	7.1	9.5	11.9	14.3	16.7	19.0	21.4	23.8
	100%	2.6	5.3	7.9	10.6	13.2	15.9	18.5	21.1	23.8	26.4

Brazil

% of income lost											
		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
% households losing income	10%	0.3	0.5	0.8	1.1	1.3	1.6	1.8	2.1	2.4	2.6
	20%	0.5	1.1	1.6	2.1	2.7	3.2	3.7	4.3	4.8	5.4
	30%	0.8	1.6	2.4	3.2	4.1	4.9	5.7	6.5	7.3	8.1
	40%	1.1	2.2	3.2	4.3	5.4	6.5	7.5	8.6	9.7	10.8
	50%	1.3	2.7	4.0	5.4	6.7	8.1	9.4	10.7	12.1	13.4
	60%	1.6	3.2	4.8	6.4	8.1	9.7	11.3	12.9	14.5	16.1
	70%	1.9	3.8	5.6	7.5	9.4	11.3	13.2	15.0	16.9	18.8
	80%	2.2	4.3	6.5	8.6	10.8	12.9	15.1	17.3	19.4	21.6
	90%	2.4	4.8	7.3	9.7	12.1	14.5	17.0	19.4	21.8	24.2
	100%	2.7	5.4	8.1	10.8	13.5	16.2	18.9	21.6	24.3	27.0

Colombia

% of income lost											
		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
% households losing income	10%	0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	3.4
	20%	0.7	1.3	2.0	2.6	3.3	3.9	4.6	5.2	5.9	6.6
	30%	1.0	2.0	2.9	3.9	4.9	5.9	6.9	7.8	8.8	9.8
	40%	1.3	2.6	4.0	5.3	6.6	7.9	9.2	10.5	11.9	13.2
	50%	1.7	3.3	5.0	6.6	8.3	9.9	11.6	13.3	14.9	16.6
	60%	2.0	4.0	6.0	8.0	10.0	12.0	13.9	15.9	17.9	19.9
	70%	2.3	4.7	7.0	9.4	11.7	14.0	16.4	18.7	21.1	23.4
	80%	2.7	5.3	8.0	10.7	13.4	16.0	18.7	21.4	24.0	26.7
	90%	3.0	6.0	9.0	12.0	15.0	18.0	21.1	24.1	27.1	30.1
	100%	3.4	6.8	10.2	13.6	17.0	20.4	23.8	27.2	30.6	34.0

Mexico

% of income lost % households losing income	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10%	0.3	0.6	1.0	1.3	1.6	1.9	2.3	2.6	2.9	3.2
20%	0.6	1.3	1.9	2.6	3.2	3.9	4.5	5.2	5.8	6.4
30%	1.0	1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.7	9.7
40%	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	13.0
50%	1.6	3.3	4.9	6.5	8.1	9.8	11.4	13.0	14.6	16.3
60%	2.0	3.9	5.9	7.8	9.8	11.8	13.7	15.7	17.7	19.6
70%	2.3	4.6	6.9	9.1	11.4	13.7	16.0	18.3	20.6	22.8
80%	2.6	5.2	7.8	10.5	13.1	15.7	18.3	20.9	23.5	26.1
90%	2.9	5.9	8.8	11.7	14.7	17.6	20.5	23.5	26.4	29.3
100%	3.3	6.6	9.9	13.1	16.4	19.7	23.0	26.3	29.6	32.8

Notes: The highlighted cell in each matrix correspond to the scenario for which losses are similar to the loss projections by IMF (2021) and the share of households that have reported losing income corresponds to the available information.

Source: Lustig, Martinez Pabon, Sanz and Younger. (2021).

Table A2 – Estimates of the Likelihood to Complete Secondary Education

Parents' Education	Scenario	ARGENTINA		BRAZIL		COLOMBIA		MEXICO	
		Likelihood to complete secondary schooling		Likelihood to complete secondary schooling		Likelihood to complete secondary schooling		Likelihood to complete secondary schooling	
		Estimation	Standard Error	Estimation	Standard Error	Estimation	Standard Error	Estimation	Standard Error
Low	Regular school year	0.462	0.031	0.573	0.030	0.262	0.034	0.542	0.027
	Mitigated by educational policies	0.377	0.030	0.232	0.026	0.177	0.031	0.245	0.023
	Entire year lost	0.286	0.028	0.232	0.026	0.149	0.030	0.245	0.023
	Household income loss	0.373	0.030	0.232	0.026	0.177	0.031	0.236	0.023
	Mitigated by social assistance	0.373	0.030	0.232	0.026	0.177	0.031	0.236	0.023
Middle	Regular school year	0.775	0.028	0.798	0.027	0.602	0.044	0.742	0.029
	Mitigated by educational policies	0.692	0.030	0.639	0.032	0.473	0.044	0.660	0.032
	Entire year lost	0.678	0.030	0.639	0.032	0.436	0.044	0.660	0.032
	Household income loss	0.687	0.030	0.634	0.032	0.473	0.044	0.656	0.032
	Mitigated by social assistance	0.692	0.030	0.634	0.032	0.473	0.044	0.656	0.032
High	Regular school year	0.919	0.025	0.885	0.041	0.874	0.027	0.905	0.030
	Mitigated by educational policies	0.912	0.026	0.868	0.043	0.874	0.027	0.905	0.030
	Entire year lost	0.912	0.026	0.868	0.043	0.847	0.028	0.905	0.030
	Household income loss	0.912	0.026	0.868	0.043	0.871	0.027	0.905	0.030
	Mitigated by social assistance	0.912	0.026	0.868	0.043	0.871	0.027	0.905	0.030

Figure A1 – Estimates for the Scenario of Dispersed Instructional Losses

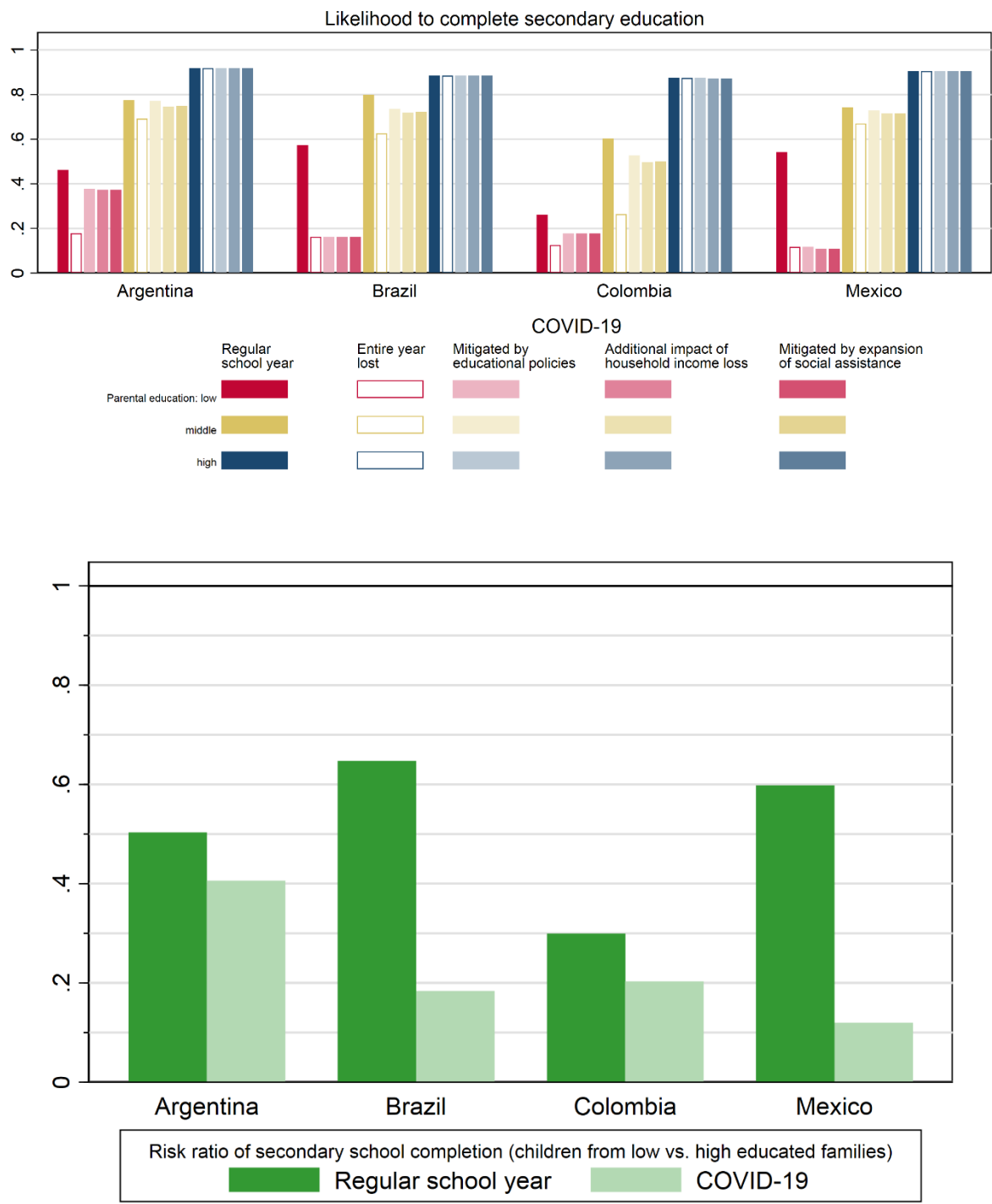
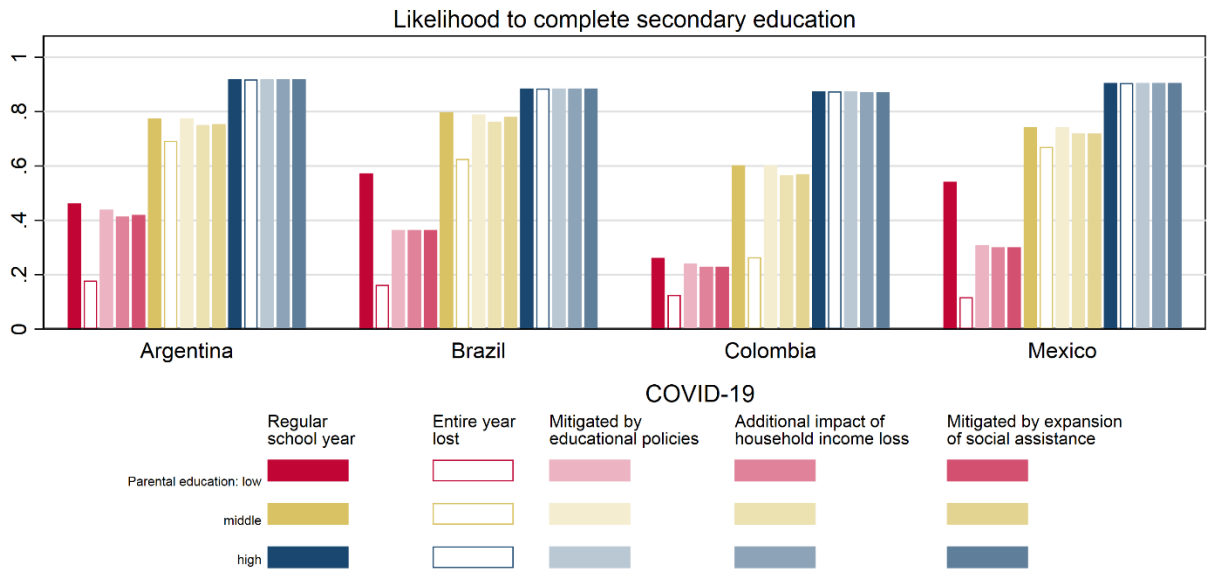


Figure A2 – Estimates for Different Thresholds of Secondary School Completion

(a) 11.6 years of schooling



(b) 12 years of schooling

