



Tulane Economics Working Paper Series

# The Impact of COVID-19 Economic Shock on Inequality and Poverty in Mexico

Nora Lustig  
Tulane University and  
Commitment to Equity  
Institute  
nlustig@tulane.edu

Valentina Martinez Pabon  
Tulane University  
vmartinezpabon@tulane.edu

Working Paper 2014  
November 2020

## Abstract

Based on the economic sector in which household members work, we use microsimulation to estimate the distributional consequences of the COVID-19 pandemic in Mexico. Although the predicted increase in poverty is significant, we find that the worst effects may not be on the poorest, but those (roughly) in the middle deciles of the ex ante income distribution: the moderate poor and those vulnerable to falling below the poverty line if subject to an adverse shock. We estimate that the economic shock could induce significantly less increase in poverty in rural areas and among the indigenous population. The increase in poverty seems to be similar for male- and female-headed households. Compared to other countries, Mexico stands out because of the absence of mitigation policies. In contrast, in Argentina and Brazil, the expanded social assistance seems to significantly offset the impact of the economic dislocation.

Keywords: COVID-19; Inequality; Poverty; Mobility; Microsimulations; Latin America; Mexico.  
JEL codes: C63; D31; I32; I38.

# The Impact of COVID-19 Economic Shock on Inequality and Poverty in Mexico\*

Nora Lustig and Valentina Martinez Pabon†

November 2020

## Abstract

Based on the economic sector in which household members work, we use microsimulation to estimate the distributional consequences of the COVID-19 pandemic in Mexico. Although the predicted increase in poverty is significant, we find that the worst effects may not be on the poorest, but those (roughly) in the middle deciles of the *ex ante* income distribution: the moderate poor and those vulnerable to falling below the poverty line if subject to an adverse shock. We estimate that the economic shock could induce significantly less increase in poverty in rural areas and among the indigenous population. The increase in poverty seems to be similar for male- and female-headed households. Compared to other countries, Mexico stands out because of the absence of mitigation policies. In contrast, in Argentina and Brazil, the expanded social assistance seems to significantly offset the impact of the economic dislocation.

**JEL Codes:** C63, D31, I32, I38

**Keywords:** COVID-19, inequality, poverty, mobility, microsimulations, Latin America, Mexico

---

\* This paper will appear in Estudios Económicos - Número Especial Sobre la Economía Mexicana coordinated by Gerardo Esquivel and Susan Parker, 2021. This paper draws from N. Lustig, V. Martinez Pabon, F. Sanz and S. D. Younger (2020). “The Impact of COVID-19 Lockdowns and Expanded Social Assistance on Inequality, Poverty and Mobility in Argentina, Brazil, Colombia and Mexico.” COVID Economics: Vetted and Real-Time Papers, Issue 46, Center for Economic Policy Research (CEPR), 2020. However, in contrast to the former, we include two additional sources of income: consumption of own production and imputed rent. In addition, we carry out the analysis not only at the national level but also by urban and rural areas. The authors are grateful to Raymundo Campos and John Scott for their very useful suggestions.

† Nora Lustig is Samuel Z. Stone Professor of Latin American Economics in the Department of Economics at Tulane University, and Director of the Commitment to Equity Institute at Tulane University (nlustig@tulane.edu). Valentina Martinez Pabon is a Ph.D. student in the Department of Economics at Tulane University (vmartinezpabon@tulane.edu).

## 1. Introduction

The recent COVID-19 pandemic has come at overwhelming health and economic costs to Latin America, Mexico in particular <sup>1</sup>. In August 2020, Mexico was among the top ten countries in terms of infections and the top five in terms of deaths per one-hundred thousand inhabitants.<sup>2</sup> To contain the spread of the virus, governments implemented lockdown policies of various degrees.<sup>3</sup> Although in Mexico, the federal government did not implement full-lockdown measures, “stay-at-home” recommendations were put in place. Inevitably, these measures caused a sharp reduction of activity, a fall in employment and income, and a rise in poverty and inequality.<sup>4</sup> In this paper we analyze the impact of the economic dislocation on poverty, inequality, and income mobility in Mexico, and compare it with the impacts in the three other largest Latin American countries: Argentina, Brazil and Colombia.<sup>5</sup> In addition to lockdowns to control infection rates, governments in these three countries have introduced new or expanded social assistance measures to varying degrees. In Mexico, there has been no such expansion.

Based on the economic sector in which household members work, we use microsimulation to estimate potential income losses at the household level, using ENIGH (2018).<sup>6</sup> The simulations first identify individuals whose income is “at risk” because they work in sectors in which COVID-19 has reduced or eliminated activity. We base our determination of at-risk income on the economic sectors in which one works. We assume that income derived from work in sectors that are “essential” is not at risk, while any income earned in “nonessential” sectors is at risk. For Mexico we use the ILO definition of essential sectors. We aggregate this at-risk income to the household level and then simulate actual losses using a range of two key parameters: the share of households with at-risk income that actually lose income and, of those who lose income, the share of at-risk income lost. We allow both parameters

---

<sup>1</sup> IMF (2020).

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

<sup>3</sup> For a description of lockdowns by country see, for example, Pages et al. (2020).

<sup>4</sup> According to IMF (2020) and ECLAC (2020), the region’s GDP could contract in 2020 by 9.4 and 9.1 percent, respectively.

<sup>5</sup> Note that mobility here refers to *ex ante/ex post* comparisons and not to mobility over time or intergenerational mobility.

<sup>6</sup> Our exercise falls under the definition of microsimulation by the International Microsimulation Association. Namely: The International Microsimulation Association defines microsimulation as a modelling technique that operates at the level of individual units such as persons, households, vehicles or firms. Within the model each unit is represented by a record containing a unique identifier and a set of associated attributes – e.g. a list of persons with known age, sex, marital and employment status; or a list of vehicles with known origins, destinations and operational characteristics. A set of rules (transition probabilities) are then applied to these units leading to simulated changes in state and behavior. These rules may be deterministic (probability = 1), such as changes in tax liability resulting from changes in tax regulations, or stochastic (probability <= 1), such as chance of dying, marrying, giving birth or moving within a given time period. In either case the result is an estimate of the outcomes of applying these rules, possibly over many time steps, including both total overall aggregate change and (importantly) the way this change is distributed in the population or location that is being modeled. For an overview of microsimulation models for distributional analysis and impact assessment of policy reforms see Figari, Paulus and Sutherland (2015).

<sup>6</sup> <https://coronavirus.jhu.edu/data/mortality>.

to range from zero to one-hundred percent, yielding one-hundred possible outcomes. To narrow our focus to reasonable possibilities, we choose a combination of the two key parameters that yields a decline in per capita income that comes closest to the IMF World Economic Outlook forecast from October 2020: 9.0 percent for Mexico.<sup>7</sup> Even here, there are multiple possibilities of which we present two extremes, one in which a smaller proportion of households lose a large share of their income and another in which a larger number of households lose less income. To complete the analysis, we construct a simulated income distribution that incorporates the losses we estimate and compare it with the *ex ante* distribution. In addition to comparing standard distributional statistics for each income distribution, we find it especially useful to examine income losses conditional on one's position in the *ex ante* distribution.<sup>8</sup>

This paper makes several contributions. First, most existing exercises that predict the impact of COVID-19 on poverty assume that income losses are proportional across the income distribution.<sup>9</sup> Two exceptions are ECLAC (2020) and Hufmann and Najera (2020) who combine data from several surveys—including post-COVID telephonic surveys and use small-sample and matching methods to predict post-COVID incomes and extreme poverty. Based on existing information, however, the distribution of income is changing—and changing fast—during the pandemic.<sup>10</sup> Our use of microsimulation allows us to relax the equal loss assumption and so incorporate distributional changes in the analysis. In particular, we use techniques analogous to non-anonymous growth incidence curves to describe income losses across the *ex ante* income distribution. Second, we carry out the analysis not only at the national level but also by ethnicity and gender of the household head, and by urban and rural areas. Third, we test the sensitivity of our results to two assumptions: the definition of income “at risk” and the size of the aggregate contraction.

Our findings show that the potential impact of the economic dislocation on inequality and poverty can be quite large. The Gini coefficient could rise between 1.3 and 3.7 points. The increase in the number of poor (measured with the national poverty line) could be between 7.5 and 8.7 million. In contrast, a distribution-neutral simulation would result in an increase of 6.8 million individuals. In addition, contrary to many people's priors, the non-anonymous growth incidence curves show that income losses could be greater in the middle deciles of the *ex ante* distribution. That is, losses are more pronounced for the moderate poor and those vulnerable to falling below the poverty line rather than among the poorest. This is so because social assistance programs and consumption of own production represent a larger share of total gross income for the poorest; essentially, these two items put a “floor” for their incomes. The economic dislocation is likely to cause a smaller increase in poverty for rural areas because it is here where consumption of own production—as a share of gross income—is the

---

<sup>7</sup> We use the IMF predictions for 2020 adjusted to per capita growth rates using 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.

<sup>8</sup> This is analogous to the non-anonymous growth incidence curves in Bourguignon (2011), albeit here describing a contraction.

<sup>9</sup> CONEVAL (2020), Gerszon Mahler et al. (2020), and World Bank (2020a).

<sup>10</sup> See, for example, Bottan, Vera-Cossio, and Hoffman (2020), Brussevich, Dabla-Norris, and Khalid (2020), Busso et al., (2020), INEGI (2020), Universidad Iberoamericana (2020).

largest. Because the indigenous population is concentrated in rural areas, the rise in poverty among the indigenous population is potentially lower than for the non-indigenous one. The expected rise in poverty is similar for male- and female-headed households.

Our exercise has some important caveats. The microsimulations do not take into account behavioral responses or general equilibrium effects, so they yield first-order effects only. The depth and duration of the crisis is still uncertain, and the Mexican economy could end up contracting by more (or less) than the IMF's October 2020 projections. Our results depend on the specific assumptions we make about income sources that are "at risk" and the extent to which losses are concentrated or dispersed across households. Finally, our exercise does not include social assistance measures undertaken by the Mexican states (or other subnational entities).<sup>11</sup>

## 2. Data and Methodology

For our simulations, we use the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH, 2018), the most recent income expenditure survey available for Mexico. We use gross income per capita as the welfare indicator. Gross income is defined as labor income plus rents, private transfers, pensions, consumption of own production, the rental value of owner-occupied housing and government cash transfers before any direct taxes. We update gross incomes for Mexico to 2019 by the rate of growth of GDP per capita for 2019 multiplied by a so-called pass through of 0.85.<sup>12</sup> Also, for Mexico, we update gross incomes to take into account the significant reforms introduced to the cash transfers system in 2019.<sup>13</sup>

We obtain our estimates by simulating potential income losses at the household level using the updated ENIGH. The simulations first identify individuals whose income is "at risk" because they work in sectors in which the COVID-19 pandemic have reduced or eliminated activity. We base our determination of at-risk income on the economic sectors in which one works. We assume that income derived from work in sectors that are "essential" is not at risk, while any income earned in "nonessential" sectors is at risk. For Mexico we use the ILO definition of essential sectors.<sup>14</sup> At the household level, the at-risk incomes also include rental incomes and incomes of informal street

---

<sup>11</sup> The National Laboratory of Public Policies (LNPP in Spanish) of the Center for Economic Research and Teaching (CIDE in Spanish) which monitors the economic measures that the states have adopted in the face of the pandemic shows that out of the 32 states, 14 states have implemented direct transfer programs to respond to the crisis (<https://lnppmicrositio.shinyapps.io/PoliticaseconomicasCOVID19/>). According to a database collected by Cecilia Soto in Mexico, seven states (Chihuahua, Guanajuato, Jalisco, Nuevo Leon, Mexico, Mexico City, and Yucatan) spent around 0.7 percent of GDP as of July 2020 (email sent to Nora Lustig on August 31, 2020).

<sup>12</sup> 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).

<sup>13</sup> The reforms are briefly described in Lustig and Scott (2019); details on how this update was carried out are available upon request.

<sup>14</sup> [ILO Monitor: COVID-19 and the world of work](#). The distribution of employment between at-risk and not-at-risk by sector can be found in Table A2 of Lustig et al. (2020).

vendors (regardless of the sector in which they work). We aggregate this at-risk income at the household level.

Regarding incomes that are not-at-risk, besides including all the employment not counted as at risk according to the above definitions, we make two additional assumptions. First, incomes from cash transfers programs, consumption of own production, imputed rent, social security pensions, public employment and private transfers (e.g., remittances) are not affected. Second, we do not consider the income of white-collar workers who are CEO's, managers and researchers with internet access at home to be at-risk even if they work in nonessential sectors.<sup>15</sup>

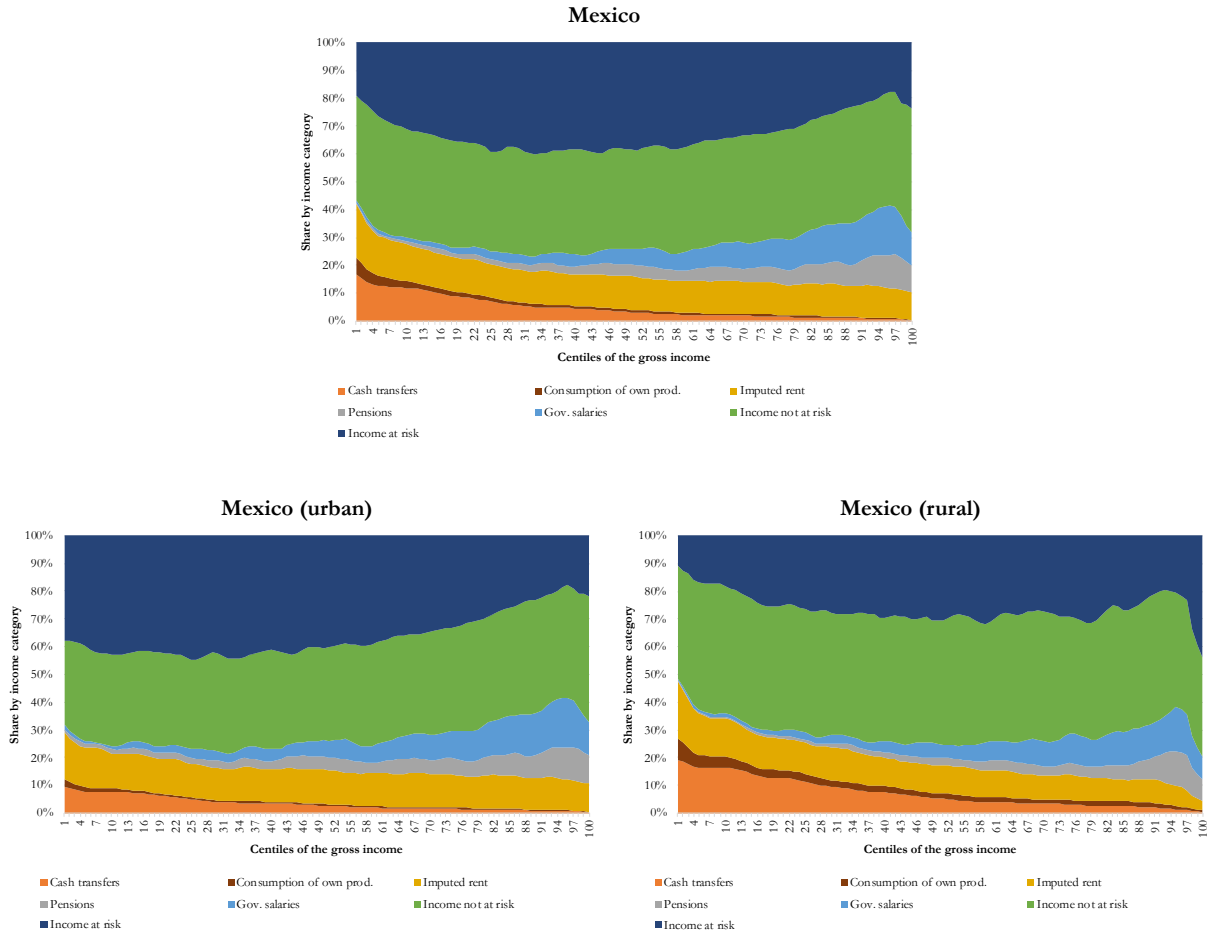
Figure 1 shows the composition of per capita household income by centile of the pre-crisis income (per capita) distribution across seven categories: cash transfers, consumption of own production, imputed rent, social security pensions, government salaries, other incomes not-at-risk, and incomes at-risk. This is shown at the national level and disaggregated by urban and rural areas. The population in urban areas, defined as those living in localities with 2,500 inhabitants or more, represents 75.5 percent of the country's total population.

There are several results to note. First, the share of income that is not at risk – everything but the dark blue area – is not equal across the income distribution as many studies assume, nor is it uniformly decreasing in income as it would be if the poorest were most at risk. Rather, it is U-shaped with the greatest risk in the middle of the income distribution rather than either extreme. The very poorest households have an income floor (albeit low) that protects an important share of their income. This income floor comes from three sources: cash transfers, consumption of own production and imputed rent. Consumption of own production is especially notable in rural areas.

---

<sup>15</sup> This assumption is supported by the findings from Garrote Sanchez et al. (2020). Their results show that better paid workers are less vulnerable to the labor market shocks from COVID-19 as they are more likely to be able to work from home. CEO's, managers and researchers belong to the group of better paid workers.

**Figure 1. Composition of Per Capita Household Gross Income**



Notes: Rural is defined as a locality with less than 2,500 inhabitants; 24.5 percent of the population is rural.

Source: Authors' calculations based on ENIGH (2018).

After at risk income is identified, we simulate potential losses using a range of two key parameters: the share of households with at-risk income that actually lose income and, of those who lose income, the share of at-risk income lost. Households who actually lose income (from the set of households with at-risk income) are randomly selected. We allow both parameters to range from zero to one-hundred percent (in 10 percent intervals), yielding a ten-by-ten matrix of possible income losses (Table 1).

**Table 1. Income Losses Matrix (as % of total gross income)**

| % of income lost<br>% households losing income | 10% | 20% | 30% | 40%  | 50%  | 60%  | 70%  | 80%  | 90%  | 100% |
|------------------------------------------------|-----|-----|-----|------|------|------|------|------|------|------|
| 10%                                            | 0.3 | 0.5 | 0.8 | 1.1  | 1.4  | 1.6  | 1.9  | 2.2  | 2.5  | 2.7  |
| 20%                                            | 0.6 | 1.1 | 1.7 | 2.2  | 2.8  | 3.3  | 3.9  | 4.4  | 5.0  | 5.5  |
| 30%                                            | 0.8 | 1.7 | 2.5 | 3.4  | 4.2  | 5.0  | 5.9  | 6.7  | 7.5  | 8.4  |
| 40%                                            | 1.1 | 2.2 | 3.4 | 4.5  | 5.6  | 6.7  | 7.8  | 9.0  | 10.1 | 11.2 |
| 50%                                            | 1.4 | 2.8 | 4.2 | 5.6  | 7.0  | 8.4  | 9.8  | 11.2 | 12.6 | 14.0 |
| 60%                                            | 1.7 | 3.4 | 5.2 | 6.9  | 8.6  | 10.3 | 12.1 | 13.8 | 15.5 | 17.2 |
| 70%                                            | 2.0 | 4.1 | 6.1 | 8.2  | 10.2 | 12.3 | 14.3 | 16.4 | 18.4 | 20.5 |
| 80%                                            | 2.3 | 4.7 | 7.0 | 9.3  | 11.6 | 14.0 | 16.3 | 18.6 | 20.9 | 23.3 |
| 90%                                            | 2.6 | 5.2 | 7.8 | 10.4 | 13.0 | 15.6 | 18.2 | 20.8 | 23.4 | 26.0 |
| 100%                                           | 2.9 | 5.8 | 8.7 | 11.6 | 14.5 | 17.4 | 20.3 | 23.1 | 26.0 | 28.9 |

Notes: Cells in yellow correspond to losses similar to the loss projections by IMF (2020); cells in dark yellow correspond to the “concentrated losses” and “dispersed losses” scenarios described in the text. Source: Authors’ calculations based on ENIGH (2018).

Cells in Table 1 show the range of possible per capita gross income losses (as a proportion of *ex ante* gross income) of all households as we vary both the probability that households lose at-risk income (down the rows) and the share of that at-risk income they lose (across the columns). For example, in the 10 percent-20 percent cell of this matrix we show the fall in income in percent corresponding to the case in which 10 percent of the households (with at risk income) lose 20 percent of their income each (and so on). The possible losses are very wide indeed, ranging from near zero to near 30 percent of pre-crisis income. For macroeconomic consistency, we narrow our focus to outcomes that have income losses similar to the IMF’s October 2020 World Economic Outlook projections for the decline in GDP per capita, highlighted in yellow in Table 1.<sup>16</sup> From that “iso-loss” curve, we choose two scenarios: either a smaller proportion of households lose much income, or a larger proportion of households lose smaller amounts of income. In the selected “concentrated losses” scenario, 30 percent of households lose 100 percent of their income while in the “dispersed losses” scenario, 100 percent lose 30 percent.

### 3. Results

#### *Impact on inequality*

We use the Gini coefficient to measure the impact on inequality. Table 2 shows the difference between the *ex ante* and *ex post* income Gini coefficients. As expected, the estimated increase in inequality is larger under the “concentrated losses” scenario than in the “dispersed losses” scenario. In the former, a smaller proportion of households are losing almost all their at-risk income which shifts them far to the lower end of the income distribution, necessarily increasing

<sup>16</sup> We use the IMF predictions for 2020 adjusted to per capita growth rates using 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.



inequality almost regardless of where they started. In the latter, each losing household's loss is smaller and so less likely to move a large number of households to the low end of the distribution.

**Table 2. Gini Coefficient**

| Group                      | <i>Ex ante</i> | <i>Ex post</i> | Change |
|----------------------------|----------------|----------------|--------|
| Panel (c) Gini Coefficient |                |                |        |
| Concentrated losses        | 0.452          | 0.490          | 0.037  |
| Dispersed losses           | 0.452          | 0.465          | 0.013  |

Notes: Change is in Gini points.

Source: Authors' calculations based on ENIGH (2018).

### *Impact on poverty*

We estimate the incidence of poverty using two poverty thresholds: the national poverty line and the US\$5.50 a day international poverty line (in 2011 purchasing power parity).<sup>17</sup> Table 3 shows the change in poverty from *ex ante* income to *ex post* income.<sup>18</sup> Given the size of the shock, it is not surprising that the estimated increases in poverty are very large for all poverty lines and scenarios. For both poverty lines, the results at the national level are quite similar across scenarios, suggesting that our results are robust to any particular pair of loss probability and loss share chosen from Table 1 so long as they produce a national decline in income per capita similar to the IMF's projections for GDP. Overall, the increase in the number of poor (measured with the national poverty line) could be between 7.5 and 8.7 million. In contrast, a distribution-neutral simulation would result in an increase of 6.8 million individuals.

Table 3 presents the results for the change in poverty for *ex ante* and *ex post* income distributions by geographic area, and by ethnicity and gender of the household head. The impact of the economic dislocation on rural areas is potentially much less severe than for urban areas for both poverty lines and both scenarios. Because the indigenous population is concentrated in rural areas, the increase in poverty is lower for the indigenous than for the non-indigenous population. These results are closely related to the fact that, as shown in Figure 1, households in rural areas have a larger income floor as a share of their *ex ante* gross income. The increase in poverty seems

<sup>17</sup> The national poverty line in 2011 PPP a day is equivalent to \$7.8 in Mexico.

<sup>18</sup> The results presented in this paper do not necessarily coincide with those shown in Lustig et al. (2020) because we use a different definition of the household gross income. In this paper, we added consumption of own production and imputed rent.

to be broadly similar between male- and female-headed households, especially for the national poverty line.<sup>19</sup>

**Table 3. Incidence of Poverty**

**Panel (a) “Concentrated losses”**

| Group                                        | <i>Ex ante</i> | <i>Ex post</i> | Change | New poor<br>(in millions) |
|----------------------------------------------|----------------|----------------|--------|---------------------------|
| Panel (a) Headcount (National Poverty Line)  |                |                |        |                           |
| National                                     | 45.6           | 51.7           | 6.0    | 7.5                       |
| Urban                                        | 43.6           | 49.8           | 6.2    | 5.9                       |
| Rural                                        | 52.0           | 57.3           | 5.3    | 1.6                       |
| Indigenous                                   | 70.4           | 74.2           | 3.8    | 0.4                       |
| Non-Indigenous                               | 43.5           | 49.7           | 6.2    | 7.1                       |
| Female                                       | 43.8           | 49.6           | 5.9    | 1.8                       |
| Male                                         | 46.3           | 52.3           | 6.0    | 5.7                       |
| Panel (b) Headcount (\$5.5 PPP Poverty Line) |                |                |        |                           |
| National                                     | 27.4           | 35.1           | 7.7    | 9.6                       |
| Urban                                        | 19.4           | 27.9           | 8.4    | 8.0                       |
| Rural                                        | 51.7           | 57.1           | 5.3    | 1.6                       |
| Indigenous                                   | 58.8           | 63.4           | 4.6    | 0.5                       |
| Non-Indigenous                               | 24.6           | 32.5           | 7.9    | 9.1                       |
| Female                                       | 24.6           | 31.6           | 7.0    | 2.2                       |
| Male                                         | 28.3           | 36.2           | 7.9    | 7.4                       |

<sup>19</sup> The somewhat surprising result that *ex ante* poverty is higher for male-headed households is a consequence of the fact that in Mexico a portion of female-headed households are households whose male wage earner is a migrant in the United States (or a richer urban area in Mexico). These households receive income from remittances that can be quite significant.

### Panel (b) “Dispersed losses”

| Group                                        | <i>Ex ante</i> | <i>Ex post</i> | Change | New poor<br>(in millions) |
|----------------------------------------------|----------------|----------------|--------|---------------------------|
| Panel (a) Headcount (National Poverty Line)  |                |                |        |                           |
| National                                     | 45.6           | 52.6           | 6.9    | 8.7                       |
| Urban                                        | 43.6           | 51.1           | 7.5    | 7.1                       |
| Rural                                        | 52.0           | 57.3           | 5.3    | 1.6                       |
| Indigenous                                   | 70.4           | 75.5           | 5.1    | 0.5                       |
| Non-Indigenous                               | 43.5           | 50.6           | 7.1    | 8.2                       |
| Female                                       | 43.8           | 50.5           | 6.7    | 2.1                       |
| Male                                         | 46.3           | 53.3           | 7.0    | 6.6                       |
| Panel (b) Headcount (\$5.5 PPP Poverty Line) |                |                |        |                           |
| National                                     | 27.4           | 34.1           | 6.8    | 8.5                       |
| Urban                                        | 19.4           | 26.7           | 7.2    | 6.8                       |
| Rural                                        | 51.7           | 57.1           | 5.4    | 1.7                       |
| Indigenous                                   | 58.8           | 64.8           | 6.1    | 0.6                       |
| Non-Indigenous                               | 24.6           | 31.4           | 6.8    | 7.8                       |
| Female                                       | 24.6           | 30.9           | 6.3    | 2.0                       |
| Male                                         | 28.3           | 35.2           | 6.9    | 6.5                       |

Notes: Rural is defined as a locality with less than 2,500 inhabitants. The indigenous population includes individuals who responded that they speak an indigenous language. Change in poverty is in percentage points.

Source: Authors’ calculations based on ENIGH (2018).

In sum, our exercise predicts an increase in the number of poor between 7.5 (“concentrated losses”) and 8.7 (“dispersed losses”) millions. Compared to other studies, our estimates are lower than ECLAC (2020) and Solis and Hernandez (2020) which estimate an increase of 9.5 million poor people (using the national poverty line). Our estimates are also lower than CONEVAL (2020) which predicts an increase in the number of poor between 8.9 and 9.8 million. Hufmann and Najera (2020) predict an increase in the number of *extreme* poor between 13 and 16 million. Because we do not estimate the number of poor with the extreme poverty line, we are unable to compare our results with theirs.

Table 4 presents the test of the sensitivity of our poverty estimates to two assumptions: the definition of at-risk income and the size of the aggregate contraction. First, we replicate the results assuming that all labor income (except for government salaries) is at risk. Overall, the increase in the number of poor (measured with the national poverty line) could be between 7.2 and 8.3 million (to be compared with the simulations shown in Table 3: 7.5 and 8.7 million). Second, we increase the aggregate contraction of GDP to 11.6 percent (an increase of 3 percentage points) and find that the increase in the number of poor (measured with the national poverty line) could be between 10 and 13 million.

**Table 4. Sensitivity Analysis of the Incidence of Poverty****Panel (a) “Concentrated losses”**

| Sensitivity Analysis                         | <i>Ex ante</i> | <i>Ex post</i> | Change | New poor<br>(in millions) |
|----------------------------------------------|----------------|----------------|--------|---------------------------|
| Panel (a) Headcount (National Poverty Line)  |                |                |        |                           |
| All income is at risk                        | 45.6           | 51.4           | 5.8    | 7.2                       |
| Shock +3 higher                              | 45.6           | 53.7           | 8.0    | 10.0                      |
| Panel (b) Headcount (\$5.5 PPP Poverty Line) |                |                |        |                           |
| All income is at risk                        | 27.4           | 34.0           | 6.6    | 8.3                       |
| Shock +3 higher                              | 27.4           | 37.7           | 10.4   | 13.0                      |

**Panel (b) “Dispersed losses”**

| Sensitivity Analysis                         | <i>Ex ante</i> | <i>Ex post</i> | Change | New poor<br>(in millions) |
|----------------------------------------------|----------------|----------------|--------|---------------------------|
| Panel (a) Headcount (National Poverty Line)  |                |                |        |                           |
| All income is at risk                        | 45.6           | 51.5           | 5.8    | 7.3                       |
| Shock +3 higher                              | 45.6           | 55.0           | 9.3    | 11.6                      |
| Panel (b) Headcount (\$5.5 PPP Poverty Line) |                |                |        |                           |
| All income is at risk                        | 27.4           | 32.9           | 5.5    | 6.9                       |
| Shock +3 higher                              | 27.4           | 37.2           | 9.8    | 12.3                      |

Notes: Change in poverty is in percentage points.

Source: Authors’ calculations based on ENIGH (2018).

*Impact on income mobility*

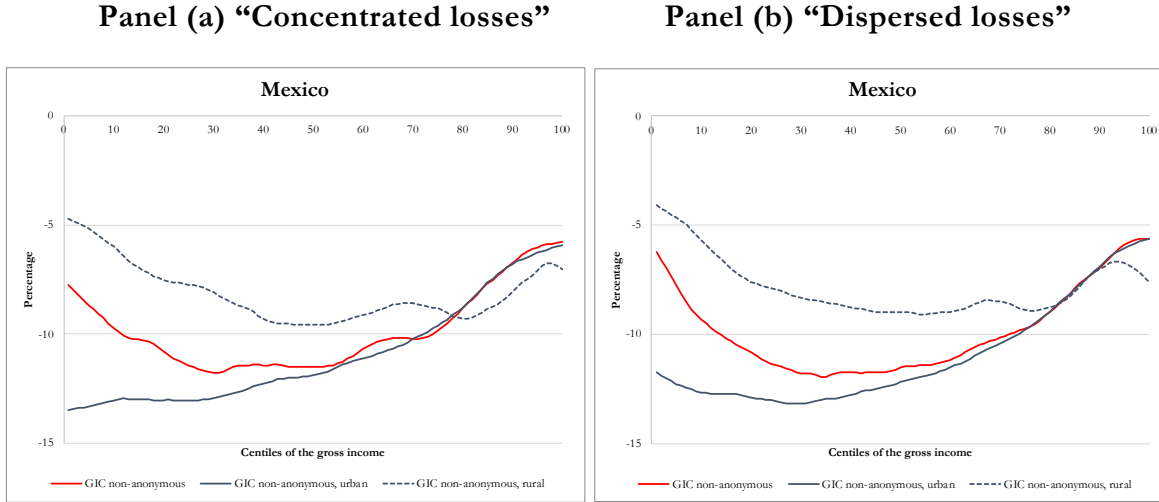
The inequality and poverty comparisons above are anonymous. By (re-)ranking households from poorest to richest in each distribution, they do not consider the income trajectories of individual households. But those income trajectories are of considerable interest when income losses (or gains) differ, perhaps greatly, among households as they do here. To describe those trajectories, we use the non-anonymous growth incidence curves (GIC).<sup>20</sup>

We estimate that households across the entire income distribution could be worse off on average (regardless of the scenario) after the COVID-19 impact, which is not surprising (Figure 2). We find that the worst effects may not be on the poorest, but those (roughly) in the middle deciles of the *ex ante* income distribution: the moderate poor and those vulnerable to falling below the poverty line if subject to an adverse shock. This result does not downplay the negative effect of the economic crisis on poor households. Even if poorer households lose less in relative terms, the impact on living standards could be devastating, especially for the extreme poor.<sup>21</sup>

<sup>20</sup> Bourguignon (2011) discusses the theoretical and practical differences between the standard anonymous comparisons and non-anonymous GIC.

<sup>21</sup> See Wagstaff (1986) and Lustig (2000).

**Figure 2. Non-anonymous Growth Incidence Curves**



Source: Authors’ calculations based on ENIGH (2018).

The trajectories, however, could be quite different for rural in comparison to urban areas. The blue lines in Figure 2 show the GIC after the effect of the COVID-19 crisis for urban (solid line) and rural (dashed line) areas. First, except for the top, the fall in incomes is lower for rural areas throughout the distribution and for either scenario. The reason why households in the top (10 or 20 percent, depending on the scenario) fare better in urban areas is associated with the larger share of incomes from public employment and pensions, two sources assumed to remain unaffected. The larger participation of incomes from agricultural employment, consumption of own production and cash transfers in rural areas explains why for the rest of the distribution rural areas are hit less. Second, within each area, the poorest urban households are actually among those who get hurt the most. In contrast, for rural areas the impact is U-shaped. The latter reflects that poorer households in rural areas have a larger share of their income coming from social assistance and consumption of own production (Figure 1).

#### 4. Conclusions

Our microsimulations show that the potential impact of the economic dislocation on inequality and poverty can be quite large. In addition, contrary to many people’s priors, the non-anonymous growth incidence curves show that income losses could be more pronounced for the moderate poor and those vulnerable to falling below the poverty line rather than among the poorest. This is so because social assistance programs and consumption of own production represent a larger share of total gross income for the poorest, especially in rural areas. In essence, these two items put a “floor” for the incomes of the poorest of the poor (the poor in rural areas). The economic dislocation is likely to

cause a smaller increase in poverty for rural areas because it is here where consumption of own production—as a share of gross income—is the largest. Because the indigenous population is concentrated in rural areas, the rise in poverty among the indigenous population is potentially lower than for the non-indigenous one. The expected rise in poverty is similar for male- and female-headed households.

Lustig et al. (2020) estimate the increase in poverty due to the COVID-induced economic dislocation in Argentina, Brazil, Colombia, and Mexico. Their estimates suggest that Brazil and Mexico could face the largest increase in the number of poor among these countries. However, they also find that the expanded social assistance governments have introduced in response to the crisis could have a large offsetting effect in Brazil and Argentina. In Colombia, the mitigation is quite modest. In Mexico, it is nil: the Federal government has provided no (at least, not as of the writing of this article) additional social assistance in the wake of the crisis.

## References

Bottan, N. L., Vera-Cossio, D. A., and Hoffmann, B. (2020). The Unequal Impact of the Coronavirus Pandemic: Evidence from Seventeen Developing. IADB Discussion Paper 785. <https://publications.iadb.org/publications/english/document/The-Unequal-Impact-of-The-Coronavirus-Pandemic-Evidence-from-Seventeen-Developing-Countries.pdf>

Brussevich, M., E. Dabla-Norris, and S. Khalid. Teleworking is Not Working for the Poor, the Young, and the Women. IMF Blogs. <https://blogs.imf.org/2020/07/07/teleworking-is-not-working-for-the-poor-the-young-and-the-women/>

Bourguignon, F. (2011). Status quo in the welfare analysis of tax reforms. *Review of Income and Wealth*, 57(4), 603-621.

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. IADB. Discussion paper 780. <https://publications.iadb.org/publications/english/document/The-Challenge-of-Protecting-Informal-Households-during-the-COVID-19-Pandemic-Evidence-from-Latin-America.pdf>

CONEVAL. (2020). La Política Social en el Contexto de la Pandemia por el Virus SARS-CoV-2 (COVID-19) en México. [https://www.coneval.org.mx/Evaluacion/IEPSM/Paginas/Politica\\_Social\\_COVID-19.aspx](https://www.coneval.org.mx/Evaluacion/IEPSM/Paginas/Politica_Social_COVID-19.aspx)

ECLAC (2020). Addressing the growing impact of COVID-19 with a view to reactivation with equality: new projections. [https://repositorio.cepal.org/bitstream/handle/11362/45784/1/S2000470\\_en.pdf](https://repositorio.cepal.org/bitstream/handle/11362/45784/1/S2000470_en.pdf)

Figari, F., Paulus, A. & Sutherland, H. (2015). Microsimulation and Policy Analysis. In A. B. Atkinson & F. Bourguignon, eds. *Handbook of Income Distribution*. Oxford: Elsevier B.V., pp. 2141–2221.

Garrote Sanchez, D., N. Gomez Parra, C. Ozden, B. Rijkers, M. Viollaz, and H. Winkler. (2020). Who on Earth Can Work from Home. The World Bank. Policy Research Working Paper 9347.

Gerszon Mahler, D., C. Lakner, A. Castaneda Aguilar and H. Wu (2020). Updated estimates of the impact of COVID-19 on global poverty. World Bank Blogs.

<https://blogs.worldbank.org/opendata/updated-estimates-impact-COVID-19-global-poverty>

Hufmann, C. and H. Nájera (2020). Estimación del costo de eliminar la pobreza extrema por ingreso en México, en tiempos de COVID. Programa Universitario de Estudios del Desarrollo, Universidad Nacional Autónoma de México.  
<http://www.pued.unam.mx/opencms/difusion/pobreza.html>

Instituto Nacional de Estadística y Geografía (INEGI). Resultados de la Encuesta Telefónica de Ocupación y Empleo (ETOE) Cifras Oportunas de Junio de 2020.

[https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2020/enoe\\_ie/ETOE2020\\_08.pdf](https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2020/enoe_ie/ETOE2020_08.pdf)

International Monetary Fund (2020). World Economic Outlook Update, June 2020. IMF.  
<https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020>

Lakner, C., Mahler, D. G., Negre, M., and Prydz, E. B. (2020). How Much Does Reducing Inequality Matter for Global Poverty?. The World Bank.  
<https://openknowledge.worldbank.org/bitstream/handle/10986/33902/How-Much-Does-Reducing-Inequality-Matter-for-Global-Poverty.pdf?sequence=1&isAllowed=y>

Lustig, N. (2000). Crises and the Poor: Socially Responsible Macroeconomics. *Economía*, 1(1), 1-30. LACEA's Presidential Address.

Lustig, N., V. Martinez-Pabon, F. Sanz and S. D. Younger (2020). "The Impact of COVID-19 Lockdowns and Expanded Social Assistance on Inequality, Poverty and Mobility in Argentina, Brazil, Colombia and Mexico." COVID Economics: Vetted and Real-Time Papers, Issue 46, Center for Economic Policy Research (CEPR), 2020.

Pages, C., C. Aclan, M. Alfonso, R. Arroio, J. Irigoyen, I. Mejía, C. Mendieta, S. Moreno, A. Muente, S. Peñaherrera, C. Pombo, F. Regalia, W. Savedoff, E. Stein, L. Tejerina (2020). From lockdown to reopening: Strategic considerations for the resumption of activities in Latin America and the Caribbean within the framework of COVID-19. IADB.  
<https://publications.iadb.org/es/del-confinamiento-a-la-reapertura-consideraciones->



estrategias-para-el-reinicio-de-las-actividades-en-america-latina-y-el-caribe-en-el-marco-de-la-COVID-19

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.

Solís, V. and V. Hernández. (2020). Actividad Económica de México 2020. Resultados de la Matriz de Contabilidad Social. INEGI, mimeo.

Universidad Iberoamericana (IBERO). Resultados Actualizados de la “Encuesta de Seguimiento de los Efectos del COVID-19 en el Bienestar de los Hogares Mexicanos” #EnCOVID19. [https://ibero.mx/sites/default/files/comunicado\\_enCOVID19\\_mayo\\_2020\\_final.pdf](https://ibero.mx/sites/default/files/comunicado_enCOVID19_mayo_2020_final.pdf)

Wagstaff, A. (1986). The demand for health: theory and applications. *Journal of Epidemiology & Community Health*, 40(1), 1-11.

World Bank (2020). Macro Poverty Outlook: Country-by-country Analysis and Projections for the Developing World. The World Bank. <http://pubdocs.worldbank.org/en/302511582655271446/mpo-lac.pdf>