The Distributional Impact of the COVID-19 Pandemic in Mexico

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The Distributional Impact of the COVID-19 Pandemic in Mexico.[1]

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The COVID-19 pandemic hit Mexico[2] at a time when the country's economy was already showing signs of weakness, having recorded a slight decline in GDP in 2019, at a rate of -0.048%, and a negative variation of -2.2% in the first quarter of 2020 with respect to the same quarter the previous year. A health emergency was declared on March 30th, suspending non-essential activity for up to a month[3], after which the shutdown was extended until June. Despite this, the country has officially recorded 125,807 COVID-19 deaths as of December 31st, 2020.[4]

With this in mind, it is imperative to take stock of the impacts on employment, income, inequality and poverty in Mexican households as a result of the fall in economic activity that came with the partial or total shutdown of various sectors of the economy across the country. It is also worth noting that the current administration did not add any additional funding to tackle the pandemic beyond what was already allocated in the budget at the beginning of 2020.[5]

A deeper understanding of these effects will lay the groundwork for considering a series of public policy proposals to compensate various agents and Mexican families for the shutdown, determine the Mexican government's capacity to respond to the pandemic and make the corresponding adjustments to current social policy programs. It should be noted that access to health services in Mexico is not equitable and studies have reported high variations in the prevalence of the disease, with the most vulnerable having been most severely affected, owing to the fact they are unable to work remotely (Ortiz-Hernández & Pérez Sastré, 2020).

An in-depth analysis of the effects of the pandemic was performed using MEXMOD, the tax-benefit microsimulation for Mexico (Huesca & Llamas, 2020), developed especially to simulate scenarios involving cash transfers or tax changes to determine their impact on individual and family income. The analysis consisted in assessing the impact of loss of employment and income on poverty and income distribution in May 2020, when the economy was hardest hit by the pandemic. The model simulated the social policy of the current Mexican administration and the impact of COVID-19 during the second quarter of 2020, in comparison to December 2019.

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[2] The first official death from COVID-19 was recorded on March 18th.
[3] Diario Oficial de la Federación (Official Gazette of the Federation), March 31st, 2020.
[4] Daily report by the Secretariat of Health, Government of Mexico.
[5] This meant that some programs had no new recipients in addition to those already enrolled in 2019 – for example, the Benito Juárez scholarships, which run in tandem with the school year, beginning in September and ending in June, and Tandas para el Bienestar. Both of these programs began operating last year, in 2019.

First of all, the National Survey of Occupation and Employment (ENOE 2019 and ETOE 2020)[6] was used to calculate job losses in each sector of the economy and the fall in both formal and informal worker income. Since MEXMOD is based on the National Survey of Household Income and Expenditure (ENIGH 2018), this survey was adjusted to capture changes in employment and income recorded between December 2019 and May 2020. This provides a database that reflects household income in May 2020, making it possible to calculate the impact of the pandemic and the scope and depth of the impact of various aspects of the Mexican tax-benefit system on poverty and inequality.[7] One advantage of MEXMOD is that it is not necessary to wait for a new survey to measure the effects of social policy in Mexico, since social security contributions, taxes and the most significant transfers are simulated, and only information on household characteristics is needed to determine how much households receive.

MEXMOD includes policies from 2014 to 2020, but for this exercise, particular emphasis was placed on transfers granted by the Mexican government in 2019 and 2020. For all programs, the simulations were calibrated to ensure the number of recipients and expenditure on each program matched the official figures reported. This adjustment was made for the individual non-contributory old-age pension, the Benito Juárez scholarships for all levels of schooling considered, the Jóvenes Construyendo el Futuro program, the disability benefit, the Tandas para el Bienestar program, and, last but not least, the Crédito a la Palabra program.

Simulating changes in employment and labor income due to COVID-19

For this exercise, we established the month of May 2020 as the benchmark as it was then that the economy felt the greatest impact from the shutdown. Figure 1 shows the changes that occurred in the labor market in Mexico as a result of the pandemic, based on occupation and employment surveys (ENOE and ETOE) at the end of 2019 and in May 2020, the month of greatest impact.

The chart shows the impact on workers with income and workers in employment but without income in both the formal and informal sectors, the unemployed, and the non-working or inactive population (excluding full-time students, pensioners or individuals with a disability). Changes in unemployment are insignificant since unemployment tends to be more of a permanent status in Mexico, and instead workers left jobless joined the ranks of the inactive population.

This shift affected, above all, Mexicans working in the informal sector, where 8.7 million jobs were lost. The formal sector, meanwhile, lost 3.4 million workers, a figure that, while not insignificant, is to some extent a reflection of the fact that there were winners and losers across sectors of the economy and the private sector did, to some degree and insofar as possible, heed the president's call not to lay off essential workers or reduce their pay.

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[6] ETOE (*Encuesta Telefónica de Ocupación y Empleo*) refers to a set of telephone surveys conducted over the months of April, May and June as a result of the pandemic, which enabled the National Institute of Statistics and Geography (INEGI) to collect data and monitor employment and wage behavior adequately in the second quarter in Mexico ((https://www.inegi.org.mx/investigacion/etoe/).
[7] The methodology is based on recent studies that use microsimulation techniques for European and Latin American countries (Brewer & Tasseva, 2020; Jara et al., 2020).

Figure 1. Changes in the Mexican labor market between December 2019 and May 2020 (thousands of workers).
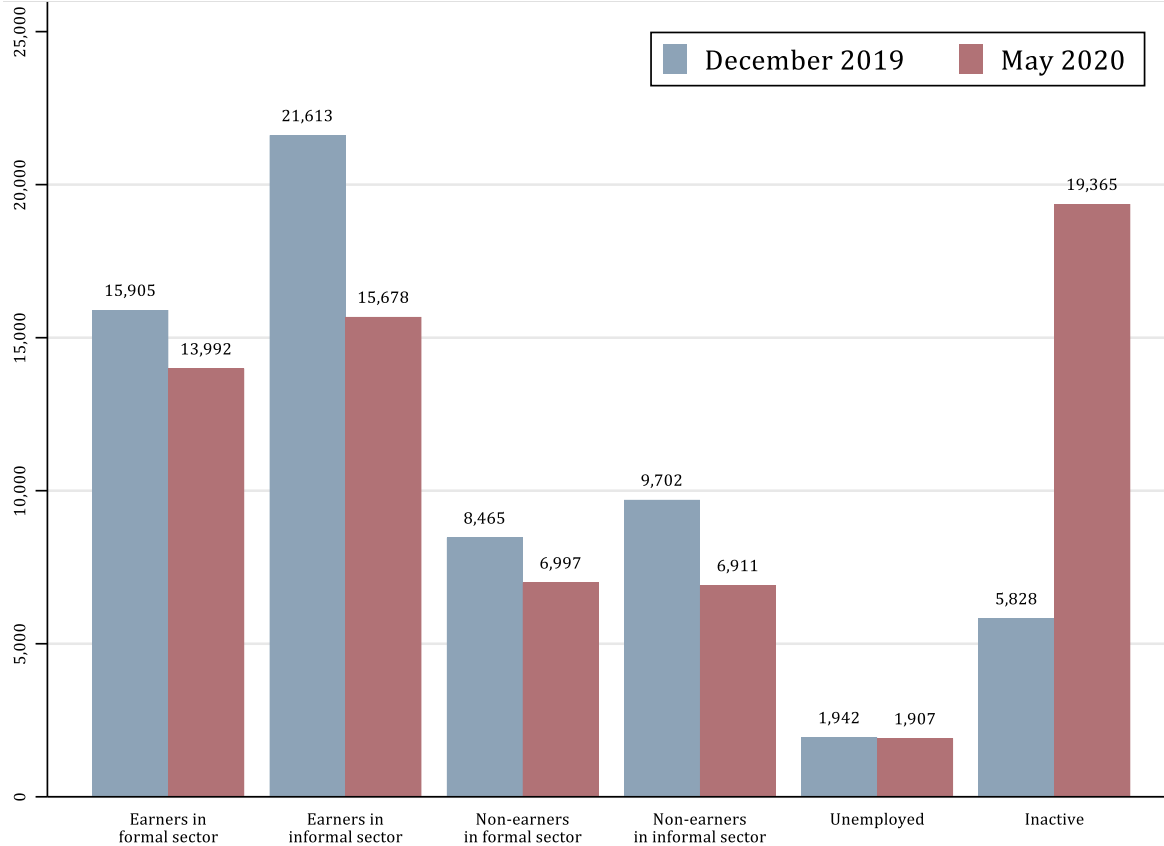
Source: Own work based on ENOE 2019-4 and ETOE 2020.

Figure 2 shows the change in the number of formal and informal earners between December 2019 and May 2020. A substantial fall is noted in the number of income earners, both for formal and informal workers, with the latter subject to the greatest change; the chart shows how the informal market absorbs much of the impact. The heaviest losses in income earners in both markets (formal and informal) can be found in the construction sector (-39.6 % and -41.3% respectively), hotels and restaurants (-38% and -33%), and commerce (-36% and -36.2%). In the formal sector, further substantial declines were observed in mining and manufacturing (-18.5%) and transport and communications (-18.3%). These results are consistent with the drop in consumption by sector calculated by Campos-Vázquez and Esquivel (2020) for the first semester of the year, with consumption in tourism, transportation, and food services at the end of July reported to be between 60% and 70% of what would have been expected were it not for COVID-19.

Figure 2. Number of formal and informal earners in December 2019 and May 2020 (in thousands of workers).
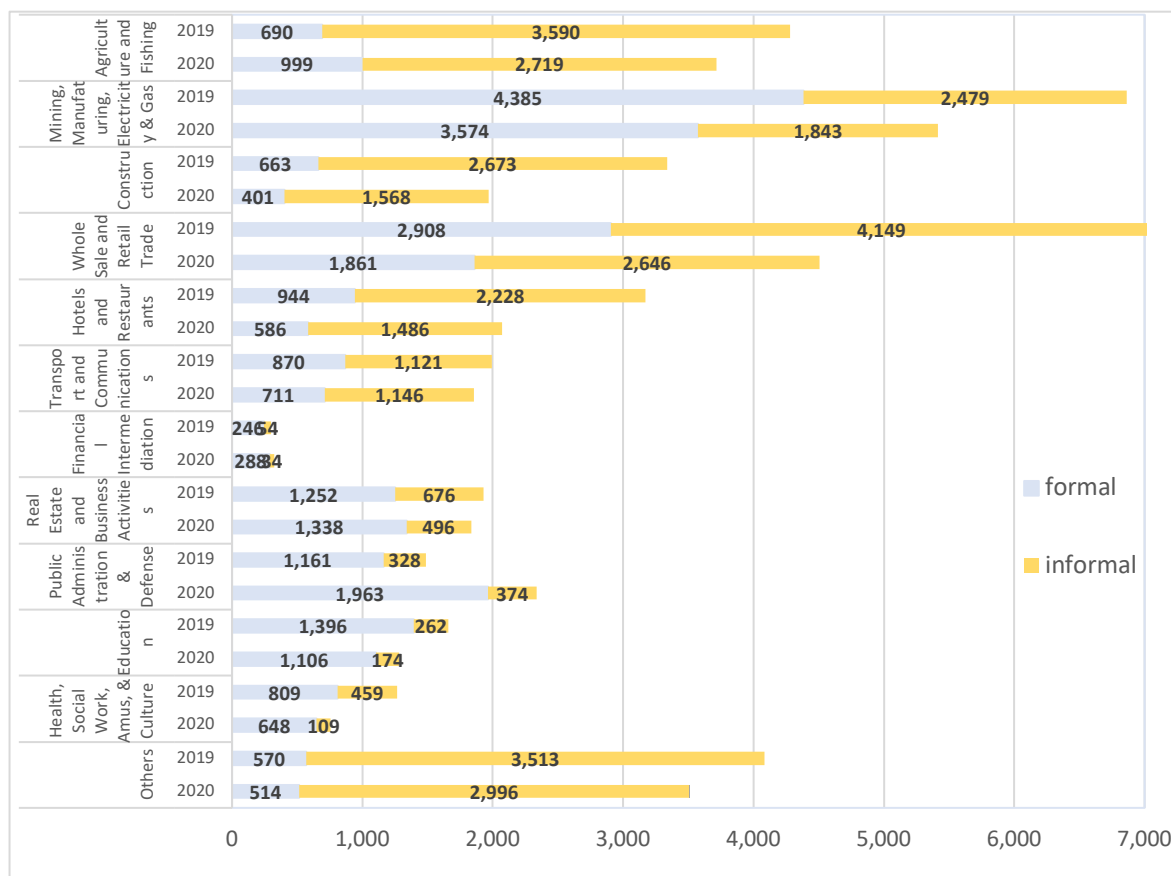
Source: Own work based on ENOE 2019 Q4 and ETOE May 2020.

In contrast, the greatest changes in the informal market were found in the leisure and culture sector (-76%) and financial intermediation (-37%). Agriculture exhibited two-way behavior, in that income earners fell by 24% in the informal sector while formal income earners rose by 44%. Financial intermediation also performed well in the formal market, with an increase of 16.9%, as did real estate (6.9%). Lastly, government was the only sector to respond dynamically, with an increase of almost 70% (formal sector) and 14% (informal sector). In sum, as noted above, the greatest change in income earners occurred in the informal market, which no doubt serves to cushion the most adverse effects on the labor market and paves the way for a faster recovery, as has been recorded in the final months of 2020.

Simulating changes in income, poverty, and inequality due to COVID-19

The drop in mean income is shown in Figure 3 (white circles), which classifies households by disposable per capita income decile prior to the pandemic.[8] A general downward trend in disposable income following the shutdown of the economy can be observed across all deciles, with an average change of -22%. However, this decline is not evenly distributed, with a greater

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[8] The disposable per capita income figure employed (ils_dispy) is the sum of gross market income (ils_origy) and transfers (ils_ben), minus taxes (ils_tax), employees' social security contributions (ils_sicee), and employers' social security contributions (ils_sicse), divided by the total number of members.

drop observed in the middle and top deciles. This is somewhat similar to results found in Ecuador (Jara et al., 2020) and Argentina, Brazil, Colombia, and Mexico (Lustig et al., 2020), where the middle strata experienced the greatest loss of income.

Figure 3. Change in average disposable per capita income by income decile
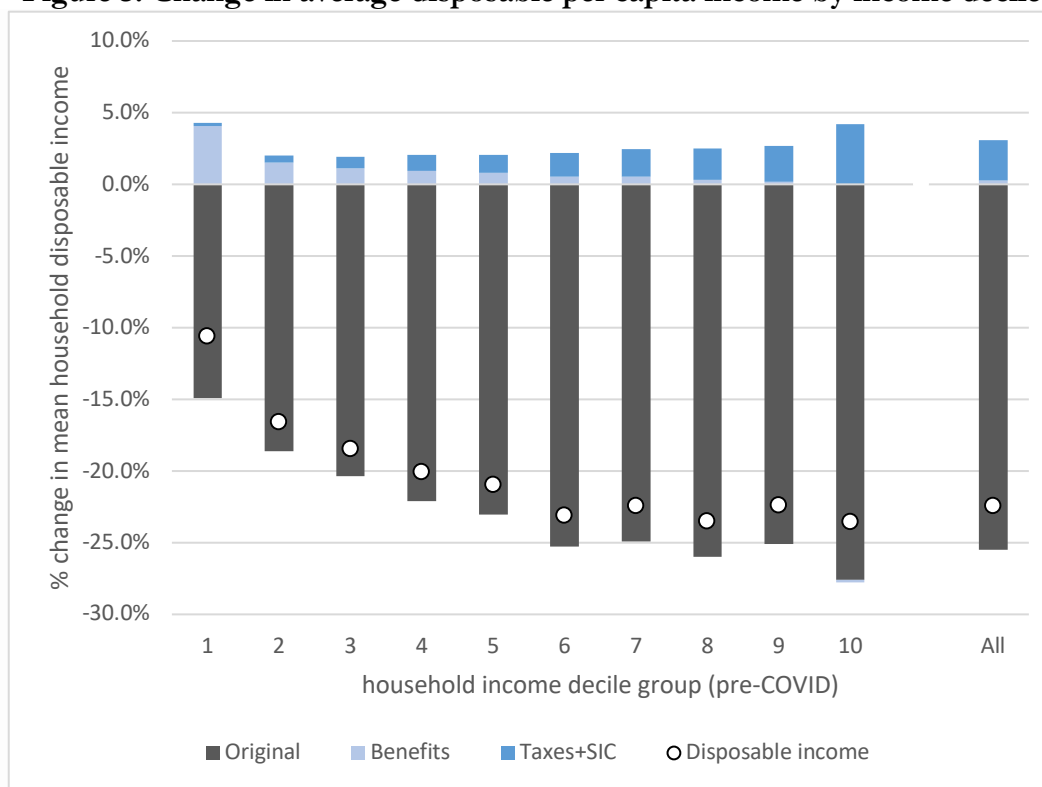
Source: Own work based on ENIGH 2019, 2020, and MEXMOD v1.1.

Although the other four countries mentioned above put in place social programs in response to COVID-19 that aimed to soften the impact on income for the lower deciles, there was no such program in Mexico. Three factors can be put forward to hypothesize why deciles 1 and 2 saw a decline of 10.5% and 16.6% respectively: 1) Before COVID-19 emerged, the new administration had promoted a recovery of the minimum wage, one of the lowest in Latin America. This led to a cumulative real increase in the minimum wage of 41% in the two years of the current administration nationwide, and 104% for cities in the northern border region[9], with positive effects on the first quintile, which includes workers earning between one and two minimum wages; 2) Agricultural activities have a substantial impact on the first quintile and did not shut down; 3) A new program, Crédito a la Palabra, which began in 2020, was taken up more widely in the lower deciles, which had an impact on small-scale family businesses and self-employed workers.

Table 1 presents the results of the impact of COVID-19 on poverty and shows that poverty fell in 2019 and, without the pandemic, would have continued to drop from 45.5% to 40.3% in 2020[10]. Extreme poverty, meanwhile, would have fallen from 12.5% to 12.1% without COVID-

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[9] CONASAMI. National Minimum Wage Commission. (https://www.gob.mx/conasami)

[10] The differences between the results of the simulation and official data on poverty are inherent to the MEXMOD model, because despite the fact that the official CONEVAL methodology is employed, our model takes into account the effect of taxes and transfers on measurements and these are more sensitive to calculations. However, although

19. However, when the impact of COVID-19 is taken into account, total poverty exceeds initial levels, reaching 56.1%, and extreme poverty rebounds to more than double the level recorded in 2018, at 26.4% of the population, well over the initial level of 12.4%.

Table 1. Microsimulation of the impact of COVID-19 on poverty in Mexico (percentages).

	MEXMOD		CONEVAL		RATIO	
Year	Extreme poverty	Poverty	Extreme poverty	Poverty	Extreme poverty	Poverty
2018	12.46	45.45	16.8	48.8	0.74	0.93
2019	11.65	39.69	n.d	n.d	-	-
2020	26.44	56.07	n.d	n.d	-	-
2020 without COVID-19	12.06	40.28	n.d	n.d	-	-

Note: The results for 2020 are given for a scenario taking into account the declines in employment and income observed between December 2019 and May 2020. The results for 2020 without COVID-19 show the trends had there been no economic crisis due to the pandemic.
Source: Own work based on MEXMOD v1.1 and figures by CONEVAL (2019).

The chart shows how social policy has been beneficial in the 2018-2020 period, but the pandemic has reversed all the progress achieved in the two years of the current administration. As far as inequality is concerned, the MEXMOD calculations follow the trend of the official CONEVAL figure. The indices in Table 2 show how inequality has behaved since the last official year of reference, 2018.

Table 2. Microsimulation of the impact of COVID-19 on inequality in Mexico

Year	MEXMOD Inequality (Gini Coefficient)	CONEVAL Inequality (Gini Coefficient)	Inequality ratio
2018	0.487	0.469	1.038
2019	0.483	n.d	n.d
2020	0.520	n.d	n.d
2020 without COVID-19	0.479	n.d	n.d

Note: The results for 2020 are given for a scenario taking into account the declines in employment and income observed between December 2019 and May 2020. The results for 2020 without COVID-19 show the trends had there been no economic crisis due to the pandemic.
Source: MEXMOD v1.1 and CONEVAL (2020).

While in the short term inequality is not subject to such a marked charge due to the fact that it is a structural phenomenon, with the pandemic we have found that inequality exceeds even the

there are differences in levels between the simulations and official data, percentage changes between scenarios are normally well captured by the models. The official figure is 48.8% and the MEXMOD figure is 45.4% for 2018, and the poverty lines used are $1,516.62 per capita in urban areas and $1,073.69 in rural areas (Mexican pesos per month).

initial level of 0.487 in 2018, with a Gini index of 0.52 in 2020, in what is without a doubt an alarming step backwards.[11]

Conclusions and policy recommendations

The COVID-19 pandemic in Mexico will worsen wellbeing indicators, causing a substantial increase in extreme poverty and inequality. This will stall the social progress achieved under the current administration with an increase of 3.5 points in the Gini index, bringing it to 0.52.

Unlike in other countries, in Mexico no action plan was implemented to tackle the economic crisis and stabilize the negative impact on the population and on businesses. Also notable is the lack of a contributory unemployment insurance in Mexico that would serve as an automatic stabilizer of household income in adverse shocks like job losses. The current administration based its support on a set of social policies designed in 2019, and one new policy in 2020 called Crédito a la Palabra, which have, to some degree (and without having been designed to that effect), served to alleviate the negative impacts of the economic shutdown this year. This has undoubtedly prevented a decline in income and poverty levels much greater than the figures reported in this study. Nonetheless, the lack of benefits acting as automatic stabilizers is patently clear and leaves the poor vulnerable, together with the middle income distribution deciles, who have been hard hit by the crisis.

Extreme poverty will increase most from 2019 to 2020, jumping from 12% to 26.4%, over 14 percentage points, while the total poverty level will increase from 40.2% to 53% of the population, almost 13 points.

This shows that social policy needs to be bolstered with funding to achieve greater redistribution potential and reduce poverty, as was observed during the first two years of the López Obrador administration, which should go hand in hand with improvements in raising direct taxes, as the procedure to raise additional revenue starts to become worn down from budget cuts and the fight against corruption. This will equip the government with stronger social protection from within, enabling it to make use of automatic stabilizers in fiscal policy, in addition to welfare programs, and accelerate the improvement of human capital and the employability of the poorest segments of the population. This would need to occur alongside redistributive fiscal measures conducive to a formalization of jobs in the current context of the health crisis, which would in turn help to strengthen the social security system in the country, improving access for all.

Our evidence highlights the fact that the increase in poverty and inequality due to COVID-19 is not the result of unemployment caused by the pandemic per se, but rather two factors: 1) the substantial decline in the number of income earners, who have become inactive; and 2) the drop in earnings, which amounts to around 25% of disposable household income.

Based on the findings from MEXMOD, without the pandemic, there would have been no descent into extreme poverty or general poverty between 2019 and 2020; rather, poverty would have stagnated. This surely compels us to revisit the country's social policy to understand the factors that have prevented further positive results.

Lastly, the Mexican state has announced that it will not resort to public debt to promote infrastructure and short-term social development, as many countries around the world have

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[11] The Gini index simulated by MEXMOD for 2018 was 0.487, just higher than the official figure of 0.469. The major advantage offered by the simulator is that it becomes possible to obtain indices for the years in which no ENIGH survey was conducted. One interesting finding is that without COVID-19, the Gini index would be 0.479.

done, in a desire to boost domestic demand and revive the economy sooner. This shows that, no matter how much social policy is strengthened, if this is not accompanied by the necessary resources and improved working conditions, the path to recovering economic growth and reducing inequality will be slower, and without redistribution under a progressive fiscal policy, the Mexican treasury will remain one of the worst-performing collectors of tax revenue in Latin America.

References

Brewer, M., & Tasseva, I. (2020). Did the UK policy response to Covid-19 protect household incomes? *EUROMOD Working Paper* EM12/20, Colchester: University of Essex.

Campos-Vázquez, R., & Esquivel G. (2020). Consumption and geographic mobility in pandemic times: Evidence from Mexico. *Covid Economics*, Issue 38. CEPR PRESS. July 16, 2020.

Diario Oficial de la Federación, Gobierno de México, March 31, 2020.

Esquivel, G. (2020). Los efectos económicos de la pandemia en México [The economic effects of the pandemic in Mexico]. *Economía UNAM*, *17*(51). September-December 2020.

Huesca, L., & Llamas, L. (2020). MEXMOD Reporte País: MEXMOD v1.1, 2014-2020 [MEXMOD Country report: MEXMOD v1.1, 2014-2020]. El Centro de Investigación en Alimentación y Desarrollo, A.C. (CIAD), January 2020.

Jara, H. X., Montesdeoca L., & Tasseva, I. (2020). The role of automatic stabilizers and emergency tax-benefit policies during the COVID-19 pandemic in Ecuador. *Mimeo, WIDER* Working Paper, October 2020.

Lustig, N., Martinez V., Sanz F. & Younger, S. D. (2020). The Impact of COVID-19 Lockdowns and Expanded Social Assistance on Inequality, Poverty and Mobility in Argentina, Brazil ECINEQ 2020 58, *CEQ Working Paper 92*, August 2020.

Ortiz-Hernández L., & Pérez-Sastré M. (2020). Inequidades sociales en la progresión de la COVID-19 en población mexicana [Social inequities in the progression of COVID-19 in the Mexican population]. *Revista Panamericana de la Salud*, *44*. September 2020.

Sutherland, H. and F. Figari. (2013). 'EUROMOD: The European Union Tax–Benefit Microsimulation Model'. *International Journal of Microsimulation*, 1(6): 4–26.

University of Essex. EUROMOD software v 3.2.4. ISER, August 2020.

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www.ciad.mx/mexmod