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COVID-19 and its impact on poverty in Ecuador: Scenario approach

La COVID-19 y su impacto en la pobreza de Ecuador: método de escenarios

Ronny Correa-Quezada[1], Diego García-Vélez[1], José Álvarez-García[2*], María del Cisne Tituaña-Castillo[1]

[1]Departamento de Economía, Universidad Técnica Particular de Loja, Ecuador
[2]Departamento de Economía Financiera y Contabilidad, Facultad de Empresa, Finanzas y Turismo, Universidad de Extremadura, España

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Abstract

Government action taken to combat the pandemic paralyzes economic activities and affecting the working condition that is the main source of income for the population. Therefore, the objective of this research is to estimate and analyze the impacts of COVID-19 on Poverty in Ecuador using the scenario method. For this reason, based on data from the 2019 National Employment, Unemployment and Underemployment Survey (ENEMDU), six scenarios were built that they consider alternatives in terms of reducing household income and poverty rates were calculated, taking into account the monetary approach and under the methodology used by the National Institute of Statistics and Census (INEC). The main results show that poverty in Ecuador could increase to 27.2%, 29.2% or 34.7%, if household incomes decrease by 5%, 10% or 20% respectively.

JEL Code: I32, H53, E24
Keywords: COVID-19; monetary poverty; scenario method; Ecuador

*Corresponding author.
E-mail address: pepealvarez@unex.es (J. Álvarez-García).
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Resumen

Las medidas gubernamentales adoptadas para combatir la pandemia paralizan las actividades económicas y afectan los ingresos de la población. Por lo tanto, el objetivo de esta investigación es estimar y analizar los impactos de la COVID-19 en la pobreza de Ecuador utilizando el método de escenarios. Para lo cual, a partir de los datos de la Encuesta Nacional de Empleo, Desempleo y Subempleo (ENEMDU) de 2019, se construyó siete escenarios que consideran alternativas en cuanto a la reducción de ingresos de los hogares y se calculó las tasas de pobreza, considerando el enfoque monetario y bajo la metodología utilizada por el Instituto Nacional de Estadísticas y Censos (INEC). Los principales resultados muestran que la pobreza en Ecuador podría incrementarse hasta el 27.2%, 29.2% o 34.7% si los ingresos de los hogares disminuyen en un 5%, 10% o 20% respectivamente.

Código JEL: I32, H53, E24
Palabras clave: COVID-19; pobreza monetaria; método de escenarios; Ecuador

Introduction

Since December 2019, with the appearance of COVID-19 (Coronavirus) in China, all countries have been on the alert against the possibility of a pandemic, as the virus spread in several continents, affecting the health of a considerable part of the population. On March 11, 2020, these fears were realized when the World Health Organization (WHO) declared the coronavirus outbreak a global pandemic.

The entire world is affected by this pandemic; according to data from Johns Hopkins University (as of August 13, 2020), 20,706,396 people have been infected. The countries with the highest number of infections are the United States, Brazil, India, Russia, and South Africa. According to data from the Ministry of Public Health (MSP, as of August 13, 2020), 89,387 people have been infected in Ecuador. Their regional geographical distribution is heterogeneous: of the total number of confirmed positive cases, 21.9% are in Pichincha, 20.2% in Guayas, and 8.2% in Manabí, while the remaining percentage is distributed more evenly in the other provinces. The potential effects of this disease are risky and regrettable, especially because of the loss of human lives and because it may cause the national health system to collapse, which are sensitive and severe issues for Ecuadorian society.

No country was prepared to face this pandemic, although, in the case of Ecuador, the number of doctors per 1,000 inhabitants is higher than the world average. The same is not true in terms of hospital beds. An important issue to consider is the significant number of personnel linked to the health sector infected with COVID-19, which according to Carrasco (2020), was 43.8% of the total infected in the first month of the pandemic. Figures 1 and 2 present the two indicators for some countries, considering some of the nations where COVID-19 has had a strong impact (United States, China, Italy, Spain), Ecuador, and its neighbors (Colombia and Peru).

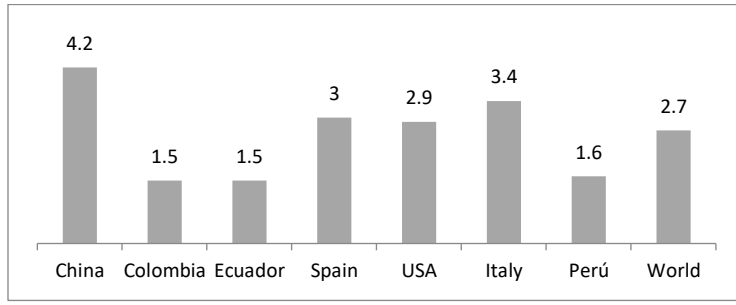

Figure 1. Number of hospital beds per 1,000 inhabitants.
Source: World Bank (2020).

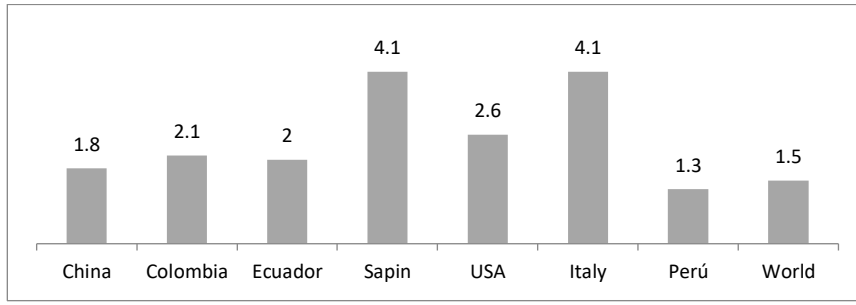

Figure 2. Number of physicians per 1,000 inhabitants
Source: World Bank (2020).

In response to the pandemic, all countries, including Ecuador, have taken measures to curb the spread of the disease. The measures taken by the Ecuadorian government to protect the health of the population could have three types of consequences: i) increased spending to meet needs above budgetary allocations; ii) contraction of the economy; and iii) increased unfavorable conditions for the vulnerable population.

According to the Ministry of Economy and Finance (MEF, 2020), the budget allocated for the health sector is 3,067 million USD for 2020. This amount will necessarily have to be increased due to the health emergency issues (diagnosis, treatment, and surveillance costs) and increased attention to the population caused by the Coronavirus pandemic. While interventions by the authorities to reduce contagion and spread of the disease, such as closing borders and other "social distancing" activities to avoid mass gatherings, will have an impact on various sectors of economic activity, among the most affected will be tourism, commerce, transportation of people, restaurants, and bars, and a minor but significant impact on health, education, and provision of services.

It is considered that the vulnerable population could be adversely affected in two ways. First, due to the effects on the elderly and vulnerable people (people with catastrophic diseases, asthma, and

diabetes), they are more sensitive to the virus due to their weak immune systems. Second, there is the subject of this research. It is considered that, in the face of a contraction of the economy and the paralysis of activities, a large part of the population will see their income decrease (or will not receive it), which in turn will cause these people (and their households) to remain in or become part of the population in poverty or extreme poverty. This will result in a wider and more accelerated expansion of conditions of inequality in the country.

Regarding the contraction of the economy, the World Bank (WB) estimates that Ecuador's economy, together with Mexico's, would have the largest slump (fall) in Latin America, with a 6% drop in GDP by 2020. If this scenario were to occur, the crisis for Ecuador in 2020 would have the greatest impact on its economy since the 1960s. Its impact would be even more severe than the 1999 crisis, which caused a 4.7% drop in GDP.

The presence of COVID-19 has worsened the labor situation. The estimate is that if this crisis has a short-term duration (six months), 138,000 formal jobs (employed with a registered contract) would be lost in Ecuador; if this recession lasts nine months, 249,000 jobs will be lost. Meanwhile, 460,000 people would lose their jobs in the most negative scenario if the crisis is prolonged. However, these scenarios and figures will depend on how the pandemic evolves and the mitigation measures taken by the government. These conditions in the labor market and employment are a consequence of the global health emergency that contracted global demand, the social distancing measures within the country, and other factors, such as the collapse of oil prices, reduction of exports, the decrease in international tourist arrivals, and the decrease in remittances from abroad (Correa-Quezada et al., 2020).

Before COVID-19, according to data from the National Institute of Statistics and Census (INEC, 2020), the poverty rate in Ecuador in December 2019 was 25%, and the extreme poverty rate was 8.9%. In other words, 1 in 4 Ecuadorians was in poverty, and 1 in 10 in extreme poverty, which reflects the fact that Ecuador had already been going through problems in this indicator, even more so when data indicate that poverty increased by 3.5 percentage points and extreme poverty 1 percentage point from 2017 to 2019. In this framework, this research aims to estimate the possible impacts that COVID-19 will have on poverty in Ecuador, for which scenarios are constructed according to several assumptions related to household income.

The results of this research are useful and can serve as inputs for the different levels of government to design and implement public policies that contribute to the protection of the vulnerable population affected by COVID-19. Furthermore, they contribute vital information that can be used by academia, the private sector, and civil society in the different economic reactivation projects for the country.

Following this brief introduction, the second part reviews the literature on poverty approaches and empirical evidence on impacts in other countries. The third part describes the data and methodology applied. The fourth section presents the estimated results, and, finally, the conclusions are outlined.

Approaches to poverty measurement

Poverty can be understood as the lack of basic opportunities and options for human development and the lack of basic capabilities to fulfill oneself (Hernández Martínez et al., 2015). However, it is difficult to establish a single conceptualization of this problem due to its subjectivity (Dos Santos, 2017). What can be agreed upon is that poverty has been present throughout history and has not been eradicated, given the complexity of addressing it.

Understanding the problem of poverty depends on the approach taken to study it. Accordingly, the literature review reveals several approaches to the study of poverty, such as the biological approach proposed in 1901 by Rowntree, cited by Malpass (2012), in which families whose income is insufficient to cover certain minimum needs for the maintenance of simple physical efficiency are considered poor. According to Townsend (1962), the relative deprivation approach places in poverty those people whose resources fall below the resources received by the average individual in the community.

The unsatisfied basic needs approach, developed by the Economic Commission for Latin America and the Caribbean (ECLAC), also stands out. According to Feres and Mancero (2001), households that cannot satisfy certain previously established basic needs are considered to be in a situation of poverty. Another approach is that of capabilities; Sen (2000) proposes considering poverty as the deprivation of the basic capabilities of a person, not only as of lack of income. However, there are currently two approaches that are constantly used in poverty reports worldwide: the multidimensional approach (in developing countries) and the monetary approach.

The multidimensional approach has gained strength thanks to the contributions of the capabilities approach and the development of methodologies such as those proposed by Bourguignon and Chakravarty (2003), Alkire and Santos (2010), and Alkire and Foster (2011), among others. This approach considers poverty as multidimensional since it affects different aspects of life, such as health, education, work, basic services, and other needs that the population must satisfy to improve their quality of life.

The monetary approach is one of the oldest that prevails in the measurement of poverty since income continues to be one of the main determinants of the quality of life of a population. There are several initial contributions to this approach, such as those proposed by Townsend (1962), Watts (1967), and Atkinson (1970), among others. However, according to Nuñez-Velázquez (2009), in Amartya Sen's publication of 1976, "An Ordinal Approach to Measurement," the foundations for the study of economic

poverty were laid. Since then, there has been a significant development of indicators to measure monetary poverty, such as those proposed by Kakwani (1980), Chakravarty (1983), and Foster et al. (1984).

In the monetary approach, people who do not have sufficient income to meet certain needs considered basic are deemed to be in a situation of poverty. The per capita income is compared with the poverty line. Those who have incomes below that line are categorized as being in a situation of poverty. This is the approach followed by the poverty reports of the World Bank (2018) and ECLAC (2019).

According to Sen (1976), it is necessary to work on two key steps in measuring monetary poverty. The first is the identification of the poor. The second is the aggregation of the information on the poor into an indicator that makes it possible to measure the problem. For the identification of the poor in the monetary approach, the poverty line is usually used, which, according to Ravallion (1998), "is the monetary cost of a reference level of welfare for a given person, at a given time and place" (p. 117).

On the other hand, Camberos Castro and Bracamontes Nevárez (2015) understand the poverty line as the minimum social welfare recommended for a person to acquire food containing the minimum nutritional requirements. In contrast, Jäntti and Danziger (2000) define it as a point in the resource space that separates the poor from the non-poor and involves choices on many issues that can be resolved through objective methods. The method used to obtain the poverty line is to calculate the cost of a basic food basket with a food and a non-food component. This is precisely the approach followed by the National Institute of Statistics and Census-INEC to measure monetary poverty in Ecuador, also incorporating an extreme poverty line, which considers only the food component of the basic basket.

As for the second step, which corresponds to aggregation, the monetary approach traditionally uses the H index, which measures the proportion of people below the poverty line z. It is known as poverty incidence or can also be interpreted as the poverty rate in a given population and is expressed as follows:

$$H(x, z) = \frac{q}{n} \tag{1}$$

Where: H is the incidence of poverty, q the number of people below the poverty line, and n the total population

Empirical evidence

As these are facts and circumstances that began recently at the end of 2019, few studies and contributions still address this issue. Sumner et al. (2020), in research prepared for the United Nations World Institute for Development Economics Research (UN-WIDER), estimate the impact of COVID-19 on global monetary poverty, for which they use scenarios of 5%, 10%, and 20% reduction of household income per

capita. The main results indicate that, in the most negative scenario, which is a 20% reduction in income, the population living in poverty could increase by between 420 and 580 million, which would result in a poverty rate of 15.7% worldwide.

Meanwhile, regarding Latin America, ECLAC (April 2020a), in its report "Latin America and the Caribbean and the COVID-19 pandemic," mentions that the increase in unemployment will disproportionately affect the poor and middle-income people. It estimates that if the income of the economically active population is reduced by 5%, the poverty rate could increase by 3.5 percentage points from 30.3% to 33.8%, and extreme poverty from 11.0% to 13.3%, increasing by 2.3 percentage points. These estimates would indicate that approximately 209 million people would be living in poverty in Latin America by 2020, indicating an increase of more than 23 million poor people compared to 2019.

However, by July 2020, ECLAC (2020b) projects that the number of people living in poverty will increase by 45.4 million in 2020, so that the total number of people living in poverty will increase from 185.5 million in 2019 to 230.9 million in 2020, representing 37.3% of the Latin American population. Within this group, the number of people living in extreme poverty would increase by 28.5 million, from 67.7 million people in 2019 to 96.2 million people in 2020, equivalent to 15.5% of the total population.

The same source also refers to the expected impact on the region's countries, indicating that it is diverse. Thus, the greatest increase in the poverty rate (at least 7 percentage points) will occur in Argentina, Brazil, Ecuador, Mexico, and Peru. Extreme poverty will increase in Brazil, Colombia, Ecuador, El Salvador, Mexico, and Nicaragua (at least 4 percentage points).

In a study for Mexico, Salas et al. (2020) find that, as a result of the pandemic, in the most severe scenario, poverty would increase in the country from 44.3% of families to 59.8%, which implies an increase of 5.5 million families in poverty. In the case of Mexico City, the proportion of low-income families has increased slightly higher than the national one, which entails an increase of 469 thousand new families in poverty, that is, a 49% increase in the number of low-income families.

For the specific case of Ecuador, the only contribution on the subject is that made by Correa-Quezada and García-Vélez (2020), which serves as the basis for this article.

Data and methodology

Estimates of poverty and extreme poverty using the monetary approach were made based on the National Survey of Employment, Unemployment, and Underemployment (ENEMDU) database as of December 2019 and consider the poverty line and rate explained in the second section. Furthermore, the scenario methodology was used, which consisted of positing seven scenarios that consider different alternatives in

terms of reducing labor income and total household income. The methodological process applied was as follows:

1) Three assumptions were considered:

- The 2019 poverty line remains unchanged, i.e., it remains at USD 84.82 for poverty and USD 47.80 for extreme poverty.[1]
- The reduction in income affects all households. The decision was to affect total income[2] and labor income[3] by 5%, 10%, and 20%, taking the estimates of ECLAC and the United Nations World Institute for Development Economics Research (UNU-WIDER) as references.
- Labor income is affected, but not the activity status of the Economically Active Population (EAP).

2) The allocation of a monetary contribution of USD 60.00 per month, as an approximate assumption of the Family Protection Bonus[4] (BPF, Spanish: Bono de Protección Familiar), was considered for households that meet the following criteria:

- No member of the household receives the Human Development Bonus (BDH, Spanish: Bono de Desarrollo Humano)
- No member of the household receives the Joaquín Gallegos Lara Bonus (BJGL)
- The household is considered to be in monetary poverty

3) The measurement of monetary poverty was replicated considering the methodology used by INEC but applying the conditions of the seven scenarios presented in Table 1. Data processing and poverty indicators were calculated using SPSS 18 and Stata 14.

[1]Because the poverty line has not presented significant variations during the last 8 semesters.
[2]This is the sum of income from labor, income derived from capital or investments, and income from transfers and other benefits received.
[3]Income from dependent work (salaried employees) and independent work (self-employed or as an employer), which can be monetary or non-monetary.
[4]On March 27, 2020, through Executive Decree 1022, the Ecuadorian Government established the Emergency Family Protection Bonus for the presence of COVID-19 in Ecuador. The amount of this transfer is USD 120.00 to be paid in two equal parts, during the months of April and May. Those eligible for this transfer are members of the Seguro Social Campesino and members of the Unpaid Work at Home Regime, whose income is less than USD 400.00 per month. Furthermore, no member of the family group should receive any of the Monetary Transfers granted by the Ministry of Economic and Social Inclusion (MIES, Spanish: Ministerio de Inclusión Económica y Social).

Table 1
Proposed scenarios for the measurement of monetary poverty

Scenario	Description
1	Total household income decreases by 5%
2	Total household income decreases by 10%
3	Household labor income decreases by 5%
4	Household labor income decreases by 10%
5	Household labor income decreases by 5%, and the BPF of USD 60.00 is allocated to families that meet the criteria
6	Household labor income decreases by 10%, and the BPF of USD 60.00 is allocated to families that meet the criteria
7	Total household income decreases by 20%

Source: created by the author

Results of the impact of COVID-19 on poverty in Ecuador

The following are the estimated results for the seven proposed scenarios; it should be noted that the figures were prepared to illustrate the scenarios; therefore, the bars do not correspond to a real scale.

Scenario 1

A 5% reduction in total income will increase poverty by 2.2 percentage points. This will translate into 101,288 new poor households and 374,765 new people in poverty (Figure 3).

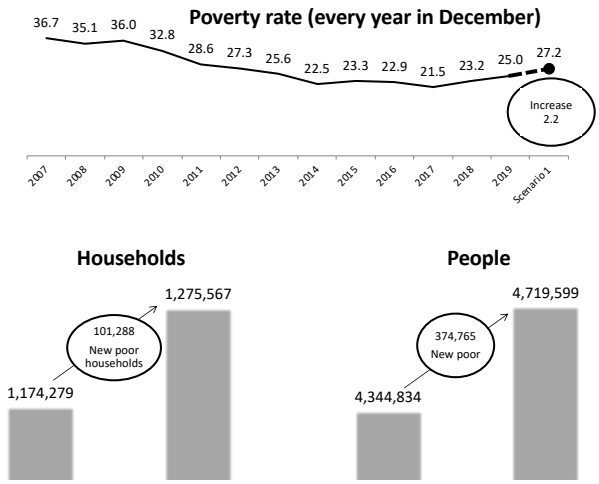

Figure 3. Impact of COVID-19 on poverty under scenario 1.
Source: created by the author based on data from ENEMDU 2019.

A 5% reduction in total income will increase extreme poverty by 1.5 percentage points. This will translate into 68,921 new poor households and 255,007 new people in extreme poverty (Figure 4).

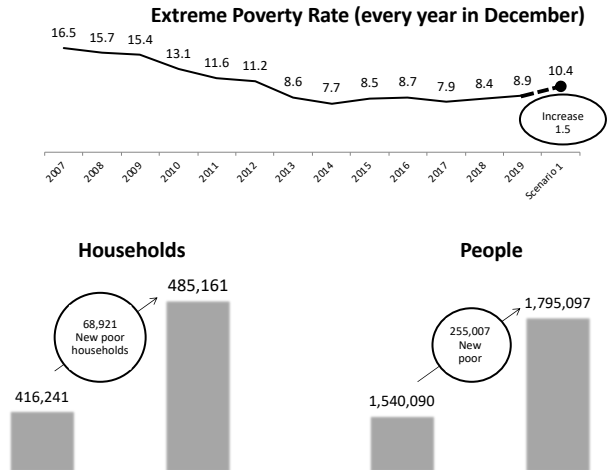

Figure 4. Impact of COVID-19 on extreme poverty under scenario 1.
Source: created by the author based on data from ENEMDU 2019.

Scenario 2

A 10% reduction in total income will increase poverty by 4.1 percentage points. This will translate into 193,645 new poor households and 716,485 new people in poverty (Figure 5).

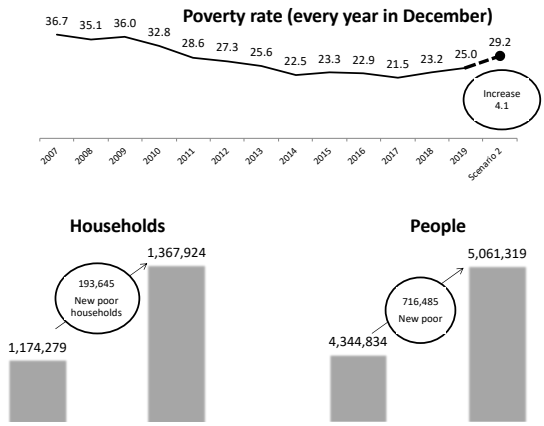

Figure 5. Impact of COVID-19 on poverty under scenario 2.
Source: created by the author based on data from ENEMDU 2019.

A 10% reduction in total income will increase extreme poverty by 2.2 percentage points. This will translate into 103,695 new poor households and 383,673 new people in extreme poverty (Figure 6).

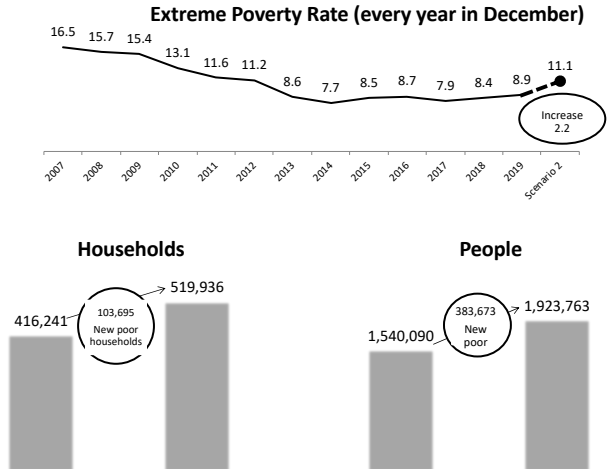

Figure 6. Impact of COVID-19 on extreme poverty under scenario 2.
Source: created by the author based on data from ENEMDU 2019.

Scenario 3

A 5% reduction in labor income will increase poverty by 1.9 percentage points. This will translate into 87,557 new poor households and 323,962 new people in poverty (Figure 7).

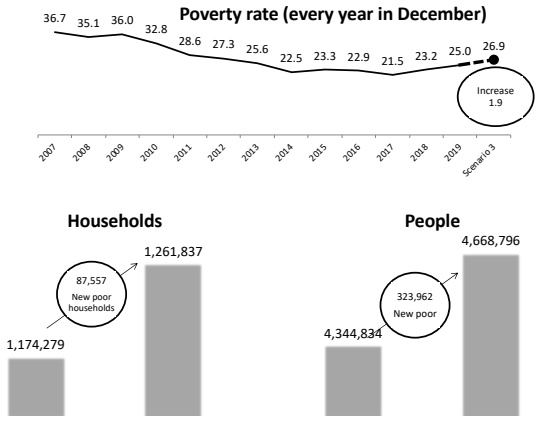

Figure 7. Impact of COVID-19 on poverty under scenario 3.
Source: created by the author based on data from ENEMDU 2019.

A 5% reduction in labor income will increase extreme poverty by 1.1 percentage points. This will translate into 51,264 new poor households and 189,678 new people in extreme poverty (Figure 8).

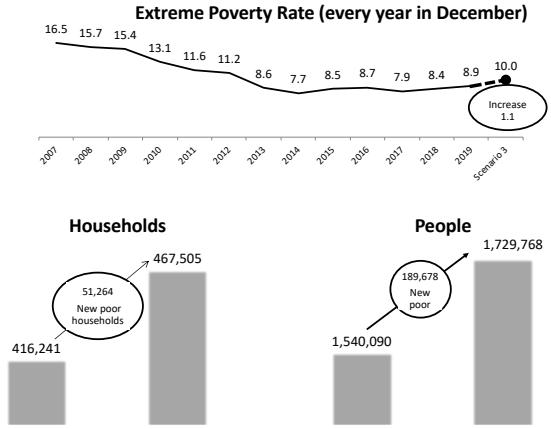

Figure 8. Impact of COVID-19 on extreme poverty under scenario 3.
Source: created by the author based on data from ENEMDU 2019.

Scenario 4

A 10% reduction in labor income will increase poverty by 3.5 percentage points. This will translate into 162,416 new poor households and 600,940 new people in poverty (Figure 9).

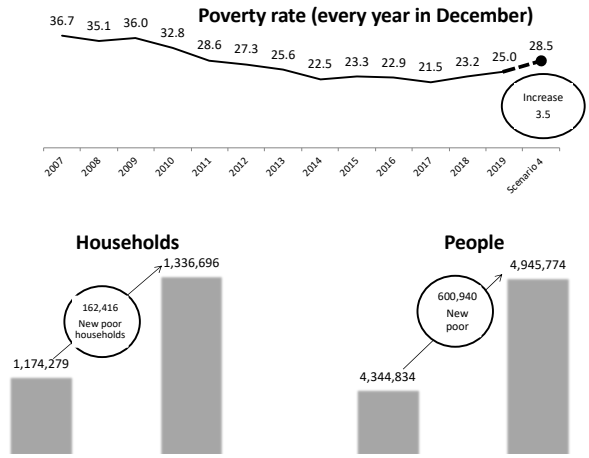

Figure 9. Impact of COVID-19 on poverty under scenario 4.
Source: created by the author based on data from ENEMDU 2019.

A 10% reduction in labor income will increase extreme poverty by 1.9 percentage points. This will translate into 89,218 new poor households and 330,105 new people in extreme poverty (Figure 10).

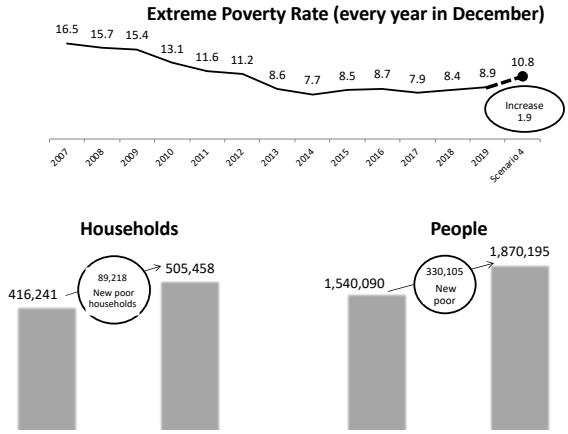

Figure 10. Impact of COVID-19 on extreme poverty under scenario 4.
Source: created by the author based on data from ENEMDU 2019.

Scenario 5

A 5% reduction in labor income of households receiving the BPF will increase poverty by 0.1 percentage points. This will translate into 4,123 new poor households and 15,255 new people in poverty (Figure 11).

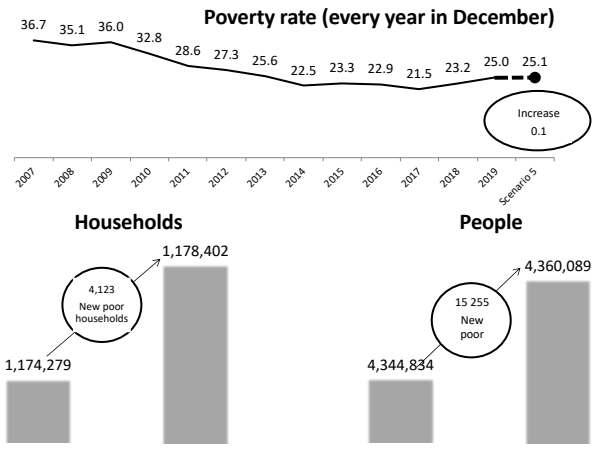

Figure 11. Impact of COVID-19 on poverty under scenario 5.
Source: created by the author based on data from ENEMDU 2019.

A 5% reduction in the labor income of households receiving the BPF will reduce extreme poverty by 0.3 percentage points. As a result, 13,054 households will no longer be poor, and 48,298 people will no longer be poor (Figure 12).

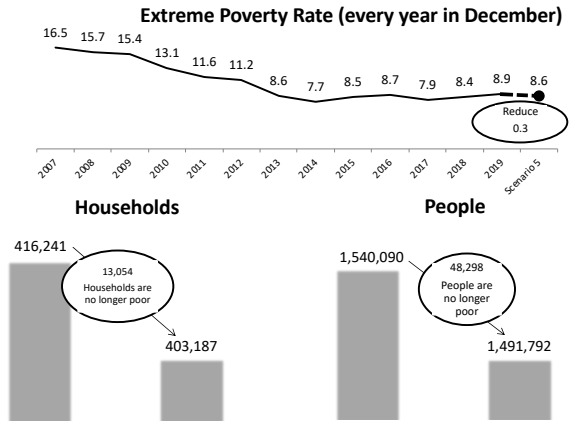

Figure 12. Impact of COVID-19 on extreme poverty under scenario 5.
Source: created by the author based on data from ENEMDU 2019.

A 10% reduction in labor income of households receiving the BPF will increase poverty by 2.3 percentage points. This will translate into 105,619 new households in poverty and 390,789 new poor people (Figure 13).

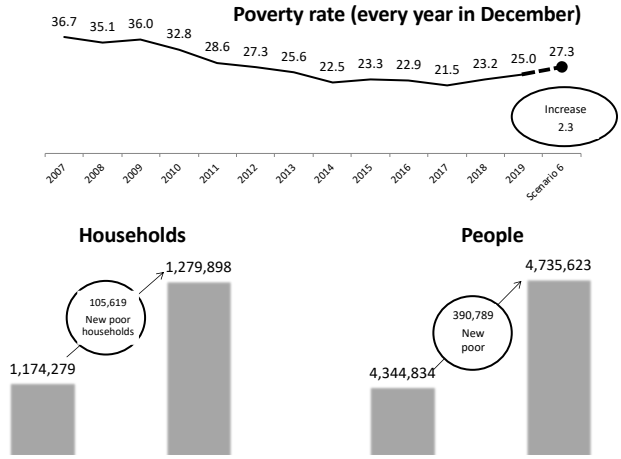

Figure 13. Impact of COVID-19 on poverty under scenario 6.
Source: created by the author based on data from ENEMDU 2019.

A 10% reduction in the labor income of households receiving the BPF will increase extreme poverty by 0.5 percentage points. This will translate into 24,464 new poor households and 90,517 new people in extreme poverty (Figure 14).

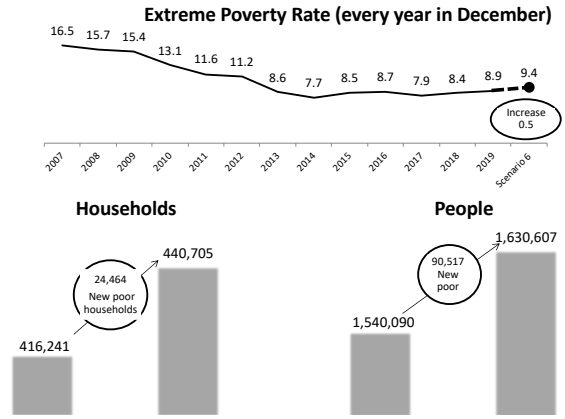

Figure 14. Impact of COVID-19 on extreme poverty under scenario 6.
Source: created by the author based on data from ENEMDU 2019.

Scenario 7

A 20% reduction in total income will increase poverty by 9.7 percentage points. This will translate into 454,815 new poor households and 1,682,816 new people in poverty (Figure 15).

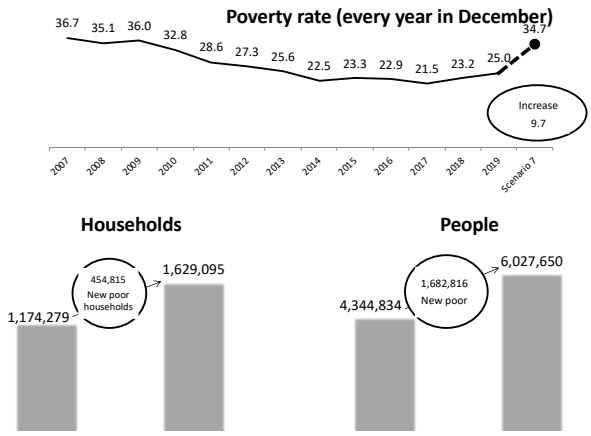

Figure 15. Impact of COVID-19 on poverty under scenario 7.
Source: created by the author based on data from ENEMDU 2019.

A 20% reduction in total income will increase extreme poverty by 5.1 percentage points. This will translate into 238,963 new poor households and 884,165 new people in extreme poverty (Figure 16).

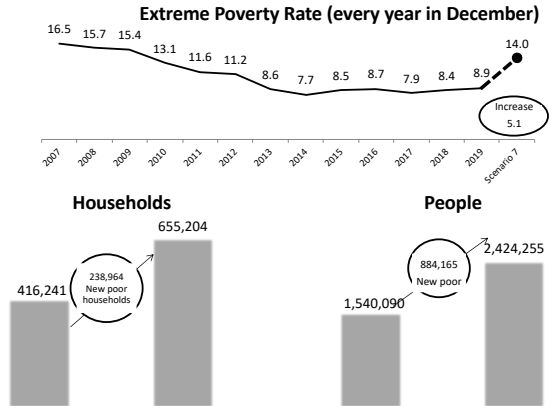

Figure 16. Impact of COVID-19 on extreme poverty under scenario 7.
Source: created by the author based on data from ENEMDU 2019.

Overall, Figure 17 presents the impacts of COVID-19 on poverty rates according to the scenarios proposed in the research, indicating that scenario 7 would be the most negative, with an increase of 9.7 percentage points in poverty and 5.1 percentage points in extreme poverty. In contrast, the most optimistic scenario would be scenario 5, in which there would be no significant changes.

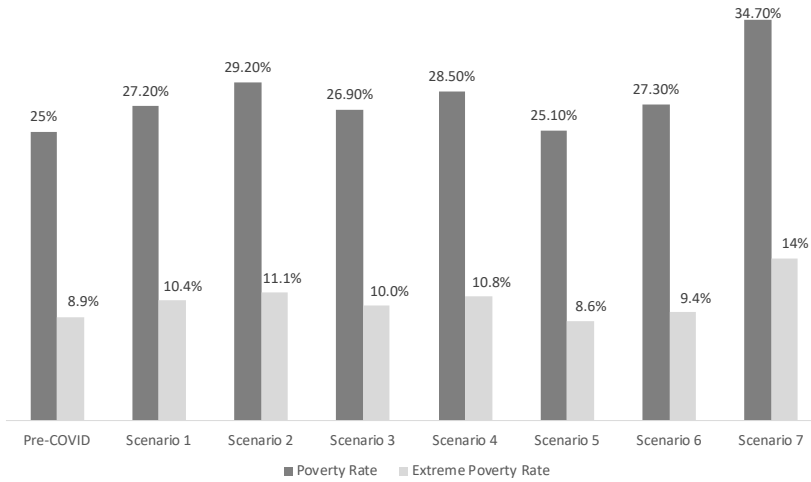

Figure 17. Impact of COVID-19 on poverty and extreme poverty.
Source: created by the author based on data from ENEMDU 2019.

Given all these scenarios, it is necessary to mention that the effects presented are made under the assumption of "ceteris paribus" without considering other variables and facts that could affect[5] the situations of poverty or extreme poverty in Ecuador.

Conclusions

During the first quarters of 2020, the economic and social impacts of the global pandemic began to be felt. It is still too early to predict the long-term effects, especially considering the possibility of further coronavirus outbreaks in the future. In this situation of uncertainty, it is also possible that, although the economic consequences will be substantial at an early stage, they could also be transitory.

The scenarios described here make it possible to approximate what could happen in the future if the income of Ecuadorian families decreases due to the partial or total interruption of productive activities due to the health emergency. However, labor income is directly affected; scenarios with a reduction in total income were also considered since there is no doubt that the money transfers of households receiving remittances from abroad will also be affected.

In the most optimistic scenario (scenario 5), the application of the BPF would be sufficient to counteract the effects of the paralysis of economic activities. However, in the case of scenario 2, the government would have to consider increasing the BPF to USD 150.00 (the value that some households already receive from the BDH) and extending payments until the country overcomes the health emergency. In the most negative scenario (scenario 7), poverty could increase to 34.7%, which would imply a setback of about a decade concerning the improvement achieved in Ecuador in terms of poverty reduction.

In this context, the fiscal policy objectives established at the beginning of the year should not be a priority since there is a need for targeted measures (some temporary, some permanent) that can be applied immediately and are effective in strengthening the health system and attending to the most affected and disadvantaged groups of people.

One of the policies suggested by international organizations to alleviate the effects of this pandemic is the transfer of cash and salary subsidies to poor and extremely poor population groups. To this end, the Ecuadorian government established the BPF.

Although cash transfers (subsidies, vouchers, and others) are usually the subject of much debate over their application, they are currently one of the best policy options for counteracting the effects of the

[5]The trend of declining incomes in Ecuador, the contraction of the economy, and poverty conditions before the pandemic were related to the zero growth of the pandemic during 2019, and the drop in the price of oil, the growing eternal debt, and the decrease in the amount of population receiving subsidies, among others.

pandemic on poverty. On their own, they do not solve the whole problem, so it is necessary to complement them with other measures that guarantee the satisfaction of people's basic needs in situations of need and vulnerability.

Although this study focused on the issue of income and poverty within a national context, it is necessary to study the consequences of the pandemic at the regional level in the future. This would make possible a more complete perspective from a spatial point of view, given the heterogeneity of the regions. Furthermore, other consequences under the unmet basic needs approach should be considered since income is part of this measurement, and poverty traps (Correa-Quezada et al., 2018) could be exacerbated given the context of the pandemic.

Finally, the main limitations of this research are the lack of information and official statistics that would allow for more precise estimates. This is in addition to the uncertainty of the behavior of the pandemic and the constant decisions and public policy measures to mitigate the impacts of the crisis, which make the political, social, and economic scenarios changeable.

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