Estimates of the impact of COVID-19 on poverty in Curaçao[*]

Central Bureau of Statistics Curaçao

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Abstract

This report presents estimates of the potential impact of COVID-19 on changes in national income-based poverty, income inequality, and on socio-economic stratification through the contraction of labour income for those individuals for whom their income-generating capacities are on hold as a result of the social distancing measures put in place since 15 March 2020 to contain and delay the spread of the SARS-Cov-2 virus. Three simulation scenarios are developed and their impacts on poverty headcount rates are estimated for both the official poverty line and the international poverty thresholds that classify individuals into destitution, extreme poverty, moderate poverty, vulnerability-to-poverty, middle class, and upper class. Estimates of short-run downward mobility and changes in unemployment rates are also discussed. The simulation of the overall welfare effects of the the shock that already has pushed 4.9 thousand individuals into unemployment and caused the incomes of above 2 thousand small business owners to collapse offers two results that are worth highlighting. First, as a direct result of the shock, the incidence of poverty could increase by 6.6 percentage points when measured at the household-level, and by 4.9 points when the assessment is applied on individuals. When the shock is combined with the cash benefits announced by the government, these increases in poverty could be mitigated significantly: at the household- and individual-level they could be, respectively, 2.7 and 2.2 percentage points lower than in the absence of benefits. Second, when using international standards to classify individuals into different segments below and above the poverty line, the results suggest that the share of individuals living in poverty could increase by 4.3 percentage points after the shock, with most of this increase occurring at the very bottom and resulting in an increase of 3.6 percentage points for the group living in *destitution*. When allocating the cash benefits, the share of poor would remain virtually unchanged relative to the status quo, thus mitigating these pernicious effects and leaving only a minority of middle-class population moving downwards to vulnerability.

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[*]This report is accompanied by the datasets and codes necessary to replicate the quantitative analysis.

1 Simulating the impact of income contraction on poverty

1.1 Data sources and scope

Two main data sources are exploited to estimate the effects that COVID-19, through the social distancing measures the disease motivated, can exert on labour income, and hence, on changes in the incidence of poverty and in the socio-economic stratification of the population. The first source corresponds to the Labour Force Survey (LFS)[1] from which the structure of employment is taken as the *status quo* for the simulations. The dataset used is a random sample covering 1,893 household-level and 4,919 individual-level observations that are, correspondingly, representative of 54,802 households and 156,726 individuals in the country. Of that total number of household-level observations, about 5.5 percent reports no income data at all, thus slightly reducing the total sample used in the simulations to 1,789 and 4,671 household- and individual-level observations, respectively.

The second source is the official registration of unemployment (RU-COVID from here onwards) set on-line by the Government of Curaçao both to track the number of jobs lost since the COVID-19 related social distancing measures were introduced by mid-March 2020 and to identify the potential population that could benefit from an unemployment compensation. As of 15 May 2020, a total of 4,886 individuals had been registered, 59.2 percent of whom are females. In addition to the unemployment status and sex, some relevant additional information could be extracted from this source, namely age, number of children, and the amount of last earned monthly net income, all of which allows for the implementation of the methodology described in the next section. Additionally, official information provided by the Central Bureau of Statistics Curaçao (CBS) indicates that as of 24 April 2020 about 2,770 small business owners, i.e., those employing less than 10 individuals, have observed their incomes to drop to zero, with no information on business bankruptcy yet.

The results shown in Section 2 come with the set of caveats one would expect. First, the estimates are based exclusively on the official information collected since the be-

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[1]The dataset for the year 2017 has been selected to take the structure of the labour market as the baseline for the simulations given that the most recent LFS 2019 is still under coding process. Once the latter process is completed and the final dataset includes the individual income levels, weights, household type and poverty lines matched to each household type, the analysis described in this report will be updated taking 2019 as the status quo. The implications and discussion correspond, however, to the current situation, and it is important to highlight that the focus should be on the size of the changes in poverty, inequality and stratification, and not on the initial levels, as such changes reflect the impact of the current crisis regardless of whether the status quo is the structure of 2017 or 2019.

ginning of the crisis, and hence, specific household-level responses to the shock and that are hidden from the official statistics are not captured. In this sense, the estimates are regarded as static as they omit behavioural changes as a result of COVID-19 (for instance, such as the possibility that some welfare dependants who usually are out of the labour force start looking for a job). Second, there are pernicious impacts of the crisis beyond changes in income levels that could leave long-lasting effects on human capital accumulation, chiefly health, education, and nutrition. These non-monetary dimensions are not captured in the potential outcomes. On the other hand, the estimates have the important advantage of being distribution-sensitive and capture the potential mitigating effects from an array of policy interventions announced by the government. In sum, while the *real* income-based poverty impacts will ultimately be determined by the precise per capita income shock in the country and how it distributes across the different sectors, the duration of the crisis, and what the government will do to mitigate the damaging economic consequences of the pandemic, the estimates provide useful indications of the likely effects and their orders of magnitude.

1.2 Methodology

The methodology for simulating the impact that the lost of jobs could exert on poverty rates, and the mitigating effects of the government's response, comprises three steps. In the first step, the information collected in the RU-COVID in terms of the characteristics of the *already* unemployed individuals who self-reported such status is used to construct a basic profile in terms of sex, age cohort, number of children, and individual net monthly income earned. Taking this profile as the baseline, exactly the same information is identified in the LFS and thus an equivalent profile is constructed in this dataset for all the individuals who satisfy such characteristics, regardless of their employment status or the main source of their income[2].

Using this common profile in both datasets, an individual-level matching is performed. Then, a filter requiring that individuals have reported to be employed and for whom the main source of income is labour is applied for both matched and unmatched individuals in the LFS. Using this latter subset, an indicator variable y_i is constructed by assigning a value of 1 to those individuals who satisfy the profile of those registered as unemployed in the RU-COVID —i.e., those who were matched and satisfy the filter

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[2]In order to make the income earned profile comparable between the RU-COVID and the LFS, reported incomes in this latter survey were expressed at February 2020 prices using the consumer price index published by the Central Bureau of Statistics Curaçao.

requirements— and a value of 0 to those unmatched individuals and who do satisfy the filter.

In the second step, this latter indicator y_i is used as the dependent variable in a model that estimates, for an individual i among the matched and filtered subset, the probability p_i of being unemployed. This probabilistic model, fitted through Lasso cross-validation, takes the following form

$$p_{it} = E\left(y_i = 1 \mid \boldsymbol{X}_i\right) = \Phi\left(\boldsymbol{\beta} \cdot \boldsymbol{X}_i\right)$$

where $\boldsymbol{X}_i$ is a vector of observable characteristics including demographic and socio-economic variables, as well as labour market indicators; $\boldsymbol{\beta}$ is a vector of the model parameters; and, Φ is the cumulative distribution function of the standard normal distribution.

The set of observable demographic characteristics include sex, age cohort, nationality, whether the individual is the household head, and a categorical variable being indicative of the household type according to the official classification based on household composition in terms of the number of adults and children. Regarding socio-economic characteristics, a set of binary variables indicating whether the individual is destitute, extremely poor, moderately poor, vulnerable, middle-class or upper-class is also included[3]. Finally, for labour market resources, the vector of observable characteristics includes individuals' level of education; individuals' main activity —i.e., permanent employee, temporary employee, self-employed or small business owner, or employer; whether individuals' are salaried workers in either public or private sectors, or are domestic workers; individuals' sector of activity and occupational status —i.e., managers, professionals, technicians, clerical workers, workers in services, sales, craft and manual occupations, and workers in elementary activities; whether individuals' occupation is stable; whether they have formal labour arrangements, are unionised, or receive labour benefits such as health and accident insurance, payment in case of injuries and illness, and paid vacations; and whether individuals have a secondary job. The education level serves as a proxy for human capital and includes nine categories: no schooling, incomplete and complete primary, incomplete and complete lower-secondary, incomplete and complete upper-secondary, post-secondary but non-tertiary, and tertiary education.

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[3]The specific criteria to identify these groups of the population is defined in the next subsection.

The estimated probabilities from this model are then used, in the third step, to construct three scenarios of unemployment in the LFS dataset from which new income distributions that account for the income contractions are derived:

- The **first scenario** takes the largest estimated probability of being unemployed and selects individuals moving downwards up to the point of covering the quota of observations that approximate the number of unemployed individuals registered in the RU-COVID. Specifically, a total of 153 observations with the largest probabilities of being unemployed were selected, which are representative of 4,973 individuals that match closely the total of 4,886 registered as unemployed as of mid-May 2020. For these individuals, their reported income in the LFS is thus replaced with a value of zero, as a direct result of the sudden unemployment shock. In addition to this, a total of 70 observations corresponding to small business owners were randomly selected and assigned an income of zero. This selection aims at capturing the about 2,770 small business owners who have observed their incomes to drop to zero and thus applied for a public compensation, according to official information, and who represent 44 percent of the 6,250 operational small businesses registered in 2019. The LFS dataset captures a total of 155 observations for these small proprietors, which are representative of 4,911 individuals. Since this latter number is significantly lower than the 6,250 recorded officially, the selection of observations to perform the simulation was thus made in relative terms in order to match the above proportion; that is, 44 percent out of the total employed small business owners in the LFS were selected, which are equivalent to the aforesaid 70 observations and represent 2,125 individuals.

- The **second scenario** takes the baseline of the previous one and adds the assumption of potential earnings loss among those who manage to remain employed but who at the same time face a very high probability of unemployment given their characteristics. In particular, the previous subset of 223 observations —i.e., 153 plus 70 observations corresponding to unemployed individuals and small business owners with zero income, respectively— is supplemented by an additional 605 observations, which are representative of 20,000 individuals who exhibit an estimated probability of 90 percent or more of being unemployed. For these additional individuals, their reported income in the LFS is not replaced with zero given that they avoid unemployment; however, as non-essential sectors of the economy are on hold, it is rather assumed that these individuals would experience a significant decline in their labour incomes of as

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much as 76 percent. This earnings contraction follows the recent projections by the International Labour Organization (ILO) that earnings could decline by such magnitude, on average, for workers in high-income countries as a result of COVID-19's social distancing measures[4].

- The **third scenario** takes an extreme stance. It follows exactly the same procedure as in the first scenario and assumes that the total number of unemployed in the RU-COVID continues to rise from the 4.9 thousand individuals already registered up to the point of affecting a staggering total of approximately 10,000 workers —this increase exclude workers in health and education services and those in the public sector, and is in addition to the affected number small business owners. This assumption of the current unemployment registration doubling in size would correspond to a worst-case possibility of an extended lock-down, or even repeated lock-downs depending on future waves of spread of the SARS-Cov-2 virus, and a sluggish recovery of the economic activity after reopening. This third scenario therefore increases the subset of selected observations in the first scenario to a total of 302 cases (372 including small business owners) that exhibit the largest probabilities of unemployment and replaces, for all of them, their reported income with a value of zero.

Finally, some interventions have been planned and introduced by the government in response to unemployment and earnings losses, most notably cash compensations to individuals who have lost their job. These interventions are captured in the estimates after accounting for the shocks described in each scenario, and hence to some extent the full impacts of the crisis on poverty could be mitigated. Two interventions in particular are simulated. First, a public transfer of a maximum of Nafl. 1,000 per month paid as unemployment benefit to individuals who have lost their job since the introduction of COVID-19's social distancing measures. The delivery of this transfer depends on the pre-crisis income earned: those individuals who earned above Nafl. 1,000 a month receive the maximum compensation, while those unemployed who earned an x amount that is less than Nafl. 1,000 a month receive that specific x amount. Second, a transfer of Nafl. 1,350 aimed to compensate the income decline among those small business owners who request such compensation.

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[4]International Labour Organization (2020) "ILO Monitor: COVID-19 and the World of Work." Third edition. Updated estimates and analysis, 29 April 2020.

1.3 Measuring welfare indicators

Based on the three simulation scenarios, a corresponding number of new, adjusted income distributions are consequently derived, which allow to quantify the effects that the simulated labour income losses can exert on poverty, income inequality, and socio-economic stratification in general. The measurement of poverty is done for both the official poverty lines and those thresholds typically used for international comparisons. The identification of poor and non-poor households using Curaçao's official poverty standards requires that individual incomes are aggregated at the household level and then such total is compared with the official poverty lines, which are based on equivalence scales that allow for differences in the composition of households[5].

The use of international standards, on the other hand, allows for a stratification of the country's population into five groups of individuals according to their level of household per capita income. In this case, all individual incomes are aggregated at the household level and then the total is divided by the household size to yield per capita figures. These per capita incomes are then converted into international dollars based on purchasing power parity (PPP) exchange rates from the 2011 International Comparison Program. This conversion implies dividing per capita incomes in Nafl. by a factor f_{ppp}^b derived as follows:

$$f_{ppp}^b = f_{ppp}^{11} \cdot \frac{CPI_b}{CPI_{11}}$$

where f_{ppp}^{11} is the conversion factor from Nafl. to international dollars in 2011 as published by the World Bank[6], equivalent to 1.43, while CPI_{11} and CPI_b represent, respectively, the consumer price indices for 2011 and the baseline used, which are equal to 117.0 and 125.5[7]. Using these values, the formula above yields a conversion factor from Nafl. to international dollars in the status quo or baseline of $f_{ppp}^b = 1.53$.

Once converted, household per capita incomes in international dollars can therefore be compared with the following thresholds to stratify individuals as: *destitute* if their per capita incomes are lower than \$1.90 a day; *extreme poor* if their incomes are lower than \$3.20 a day; *moderate poor* if they are lower than \$5.50 a day; *vulnerable*

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[5]The official poverty lines by type of household can be downloaded from the poverty tables section on the Central Bureau of Statistics Curaçao website

[6]PPP conversion factor, private consumption (LCU per international \$); World Development Indicators, World Bank (update 9 April 2020).

[7]These indices come from the Central Bureau of Statistics Curaçao, "Monthly consumer price index and inflation rates for the Netherlands Antilles since 1970". The baseline is the structure of the LFS 2017.

to poverty if individuals live on $5.50-13 a day; *middle-class* if they live on $13-70 a day; and, *upper-class* if per capita incomes are higher than $70 a day[8].

2   Results

2.1   Unemployment rates

A first relevant result from the simulations is the significant direct effect that the social distancing set in place to contain the spread of the COVID-19 disease have exerted —and could exacerbate if the lock-down is extended or repeated— on unemployment rates, as reflected in the official registration. Figure 1 shows that while 13.2 percent of the slightly above 77 thousand economically active individuals were unemployed in the status quo (pre-crisis), both the approximately 5 thousand new unemployed individuals registered since mid-March 2020 and the small business owners who have declared zero income, and thus requested compensations, are equivalent to pushing the pre-crisis unemployment rate upwards by 9 percentage points up to 22.4 percent under scenarios 1 and 2[9], and it could reach up to 29 percent if the unemployment record hits an additional 5 thousand individuals who lost their job (scenario 3).

2.2   Estimates of official poverty as a result of unemployment shocks

The direct effects of these changes in unemployment and labour income on the poverty rates at the household level, according to official standards, are shown in the panel a of Figure 2. In the status quo, 31.7 percent of total households are identified as living in poverty. As a result of the unemployment shock at the current levels, which implies that labour incomes dropped to zero for 4.9 thousand individuals plus the above 2 thousand small business owners who have declared zero income (scenario 1), the

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[8]According to the World Bank, the poverty line of $1.90 a day is equivalent to the median value of the national poverty lines among low-income countries; that of $3.20 a day equals the median value of the poverty lines among lower-middle-income countries; and, that of $5.50 a day is the median value of the poverty lines among upper-middle-income countries. The values of $13 and $70 a day are used by the World Bank to identify the middle-class across middle-income countries and correspond to the updated values of the thresholds proposed by López-Calva, L.F., and Ortiz-Juarez, E. (2014) "A Vulnerability Approach to the Definition of the Middle Class", *The Journal of Economic Inequality* 12(1): 23–47.

[9]Notice that the unemployment rate under scenarios 1 and 2 is the same because no additional unemployed individuals are being simulated in the latter, relative to the first scenario. The only difference between the two scenarios is that in the second one some income contractions were included among those individuals who remain employed but face a high probability of being unemployed —at or above 90 percent probability.

Figure 1: Unemployment rates, pre-crisis and simulated (% of the economically active population)
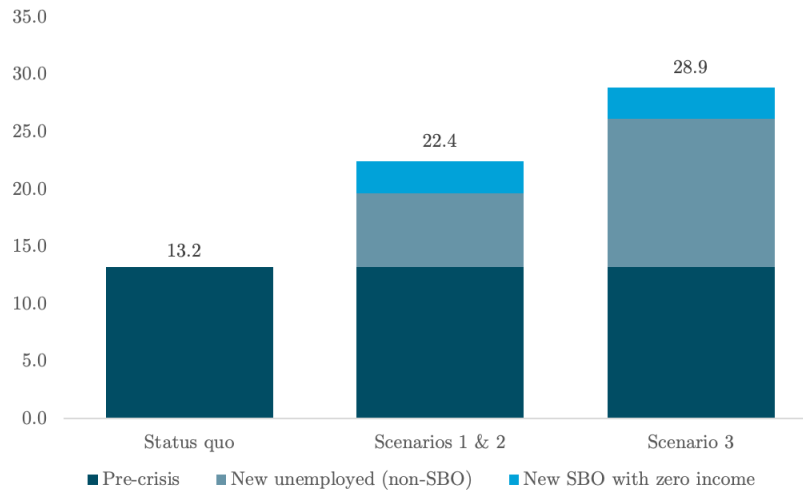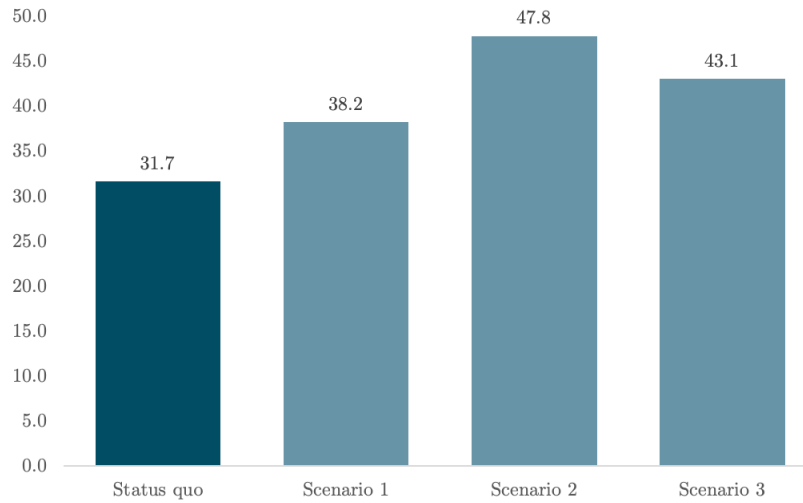

Note: SBO indicates small business owners. Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

poverty headcount ratio would increase, other things equal, by 6.6 percentage points thus reaching just above 38 percent of households —in absolute terms, this change is equivalent to 3.6 thousand households falling into poverty. If the unemployment shock exacerbates, thus doubling the number of currently affected workers recorded on the RU-COVID, without more small business owners being affected (scenario 3), then the poverty headcount rate would reach almost 43 percent, which is equivalent to an increase of 11.4 percentage points, or 6.2 thousand households, relative to the status quo.

The two previous scenarios assume that labour incomes for those who remain employed are unchanged and, therefore, are reflecting increases in poverty merely as a result of unemployment (scenario 1) and potential unemployment (scenario 3). Using the current numbers of registered unemployed workers and small business owners as a basis, if no additional unemployment occurs but earnings for those who remain employed and have a high probability of unemployment suffer a severe decline (scenario 2), then the poverty headcount ratio could startlingly increase, in comparison to the status quo, by above 16 percentage points, thus affecting almost half (47.8 percent) of the country's total number of households. This latter increase is equivalent to 8.9 thousand new poor households.

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Figure 2: Poverty headcount ratios, pre-crisis and simulated as a result of unemployment shock and income contraction (% of households)
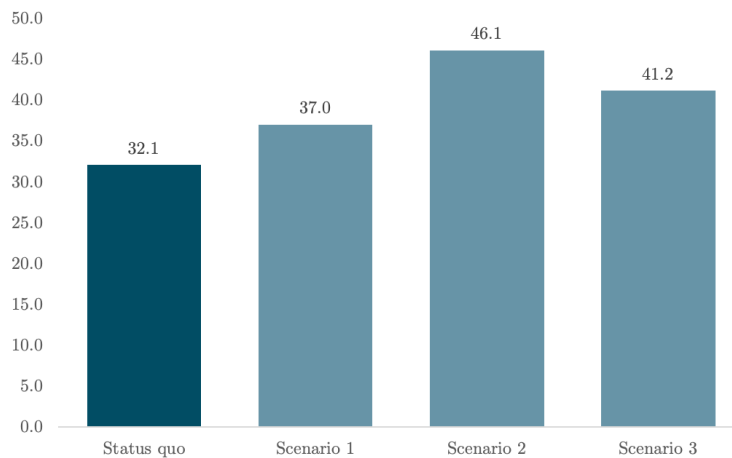

Notes: Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

The story is not different in terms of orders of magnitude when looking at the changes in poverty at the individual level. Figure 3 reveals that the incidence of poverty under scenario 1 could increase from just above 32 percent of total population in the status quo to 37 percent. This increase of about 5 percentage points is equivalent to 7.3 thousand individuals joining the ranks of poverty. Under scenario 2, in which the magnitude of unemployment remains as in scenario 1 but the earnings of those who remain employed —yet facing a high vulnerability of unemployment— are severely affected, the poverty headcount ratio could reach just above 46 percent, equivalent to a change of 14 percentage points or almost 21 thousand new poor individuals in comparison to the status quo. Finally, under scenario 3, in which unemployment increases in comparison to scenario 1, with no earnings contractions for those who remain employed, poverty could reach just above 41 percent, thus representing an increase of 9 percentage points or 13.4 thousand individuals falling into poverty, relative to the status quo.

2.3 Estimates of official poverty with compensating measures

The previous results are intended to capture the crude effect of unemployment and earnings contractions on poverty in the absence of compensating measures. Once the

Figure 3: Poverty headcount ratios, pre-crisis and simulated as a result of unemployment shock and income contraction (% of total population)
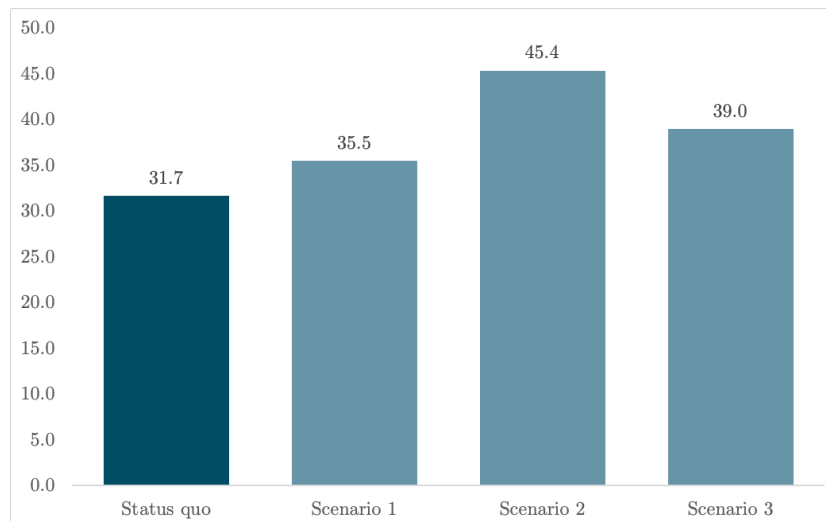

Notes: Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

cash benefits implemented by the government are included in the simulations, the results suggests that the pernicious effects of COVID-19's social distancing measures on the unemployed and on those small business owners whose income dropped to zero are somewhat ameliorated, as expected[10]. This is shown in Figure 4, which summarises the results at the level of households. After cash benefits are allocated to those unemployed people already recorded on the RU-COVID and to the small business owners who lost their incomes (scenario 1), the share of households living in poverty would increase, other things equal, from 31.7 percent in the status quo to 35.5 percent, which is equivalent to about 2.1 thousand households falling into poverty. Looking at the scenario 3, in which the number of registered unemployed doubles the current number and thus they all receive the cash transfer, the share of households in poverty could jump to 39 percent, equivalent to a rise of 4 thousand households in comparison to the status quo. Finally, under scenario 2, in which already unemployed individuals and small owners are compensated, while those vulnerable workers who remain employed experience a contraction in their earnings, the share of poor households could reach 45.4 percent; that is, an increase of just below 14 percentage points or 7.5 thousand new poor households relative to the status quo.

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[10]It is important to highlight that the results are sensitive to the duration of the cash transfer. For instance, if the unemployment benefit is delivered for one month only and no employment recovery takes place, then poverty rates could jump back to the levels estimated without compensation.

Figure 4: Poverty headcount ratios, pre-crisis and simulated as a result of shocks and after cash compensations (% of households)

As noted at the end of previous section, the story of increasing poverty headcount ratios is not different when looking at estimates at the individual level. Figure 5 reveals that the incidence of poverty as a result of shocks and after taking into account the compensating cash benefits would increase from just above 32 percent in the status quo to almost 35 percent of total population under scenario 1, to 44.1 percent under scenario 2, and to 37.6 percent under scenario 3, being these changes equivalent to an absolute increase of, respectively, 4.1, 17.8, and 8.1 thousand new poor individuals.

Figure 6 compares the increases in the incidence of poverty (in percentage points, relative to the status quo) before and after taking into account the cash compensating benefits for workers who experienced unemployment, as well as for small business owners who lost their income. Looking at the first scenario, in which no assumptions on additional unemployment and earnings contractions for those who remain employed are made, the shock per se could imply, as mentioned above, an increase in the poverty headcount ratio of 6.6 percentage points when measured at the household-level, and of 4.9 points when poverty is measured at the individual-level. The introduction of the cash benefits could imply that such increases are mitigated at a noticeable extent: at the household-level, the increase in poverty could be of 3.8 points instead,

Figure 5: Poverty headcount ratios, pre-crisis and simulated as a result of shocks and after cash compensations (percentage points)
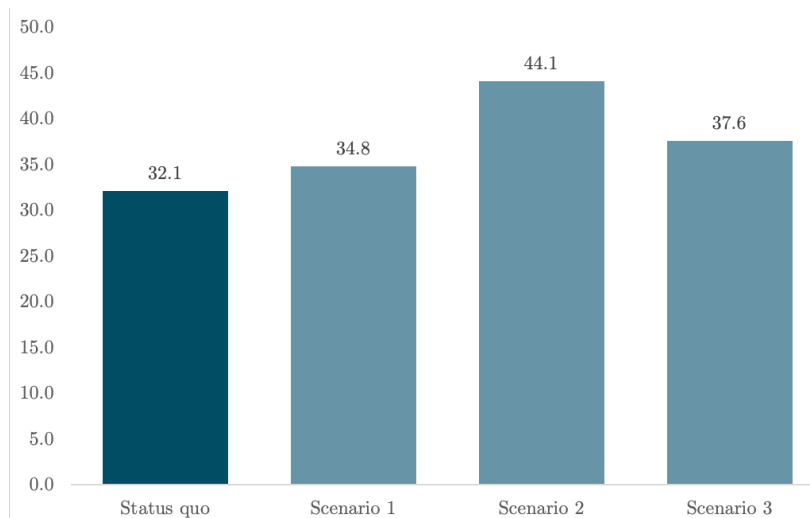
Notes: Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

whereas at the individual-level the increase could reach 2.7 points —i.e., respectively, 2.7 and 2.2 percentage points lower than in the absence of benefits. Regarding the increases in poverty when making some extreme assumptions, such increases could be mitigated by cash benefits at a magnitude of between 2 and 2.5 percentage points under scenario 2, and by around 4 percentage points under scenario 3.

Table 1 summarises all the results discussed above. In addition of presenting the relative and absolute incidence of poverty for both households and individuals in the status quo and in the different scenarios of simulation, it also shows the potential changes in the incidence of poverty in both percentage points and thousand of households and individuals, before (panel a) and after (panel b) cash compensations are taken into account.

2.4   Income inequality

As the three simulation scenarios performed provide additional income distributions that are adjusted by both the losses in labour income and cash compensations, then it is possible to quantify the potential changes in income inequality. Figure 7 reveal that as a result of unemployment and the consequent contractions in earnings, with no unemployment benefits delivered, the level of income inequality, as measured by

Figure 6: Changes in the incidence of poverty among households and individuals as a result of shocks and after cash compensations (% of total population)
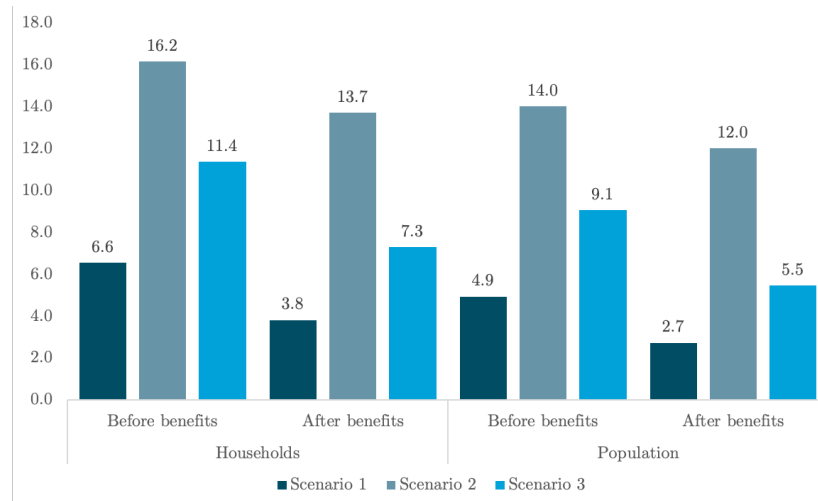
Notes: Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

the Gini coefficient for household per capita income, would increase from 0.425 in the status quo to 0.437 under scenario 1, and to 0.473 and 0.447 under scenarios 2 and 3, respectively. These changes are equivalent to a rise in inequality levels, relative to the status quo, of about 3, 11, and 5 percent, respectively. If cash benefits are delivered to unemployed individuals and small business owners to mitigate the negative effects that the COVID-19's social distancing measures could exert on their livelihoods, then the level of income inequality would also increase across the three scenarios, but at a lower rate than in the absence of such cash compensations. Specifically, the Gini coefficient would increase from 0.425 in the status quo to 0.429 in scenario 1 (an increase of 0.9 percent), to 0.458 in scenario 2 (an increase of 7.8 percent), and to 0.436 in scenario 3 (an increase of 2.5 percent). Contrasting both sets of results, the delivery of cash compensations could therefore mitigate the increase in inequality by 2 percentage points in scenario 1 in comparison to what could be expected in the absence of compensations, and by 3.4 and 2.6 points in scenarios 2 and 3, respectively.

2.5 Income group stratification based on international standards

Table 2 presents the results from applying the international standards to measure the extent of poverty, vulnerability and the middle- and upper-classes. In the status quo, the population in Curaçao is mainly concentrated at the upper part of the income

Table 1: Incidence of poverty and its changes, pre-crisis and simulated as a result of shocks and after cash compensations (% and thousands of households and individuals)

	Households				Population			
	Incidence		*Changes*		*Incidence*		*Changes*	
	%	*thous.*	*p.p.*	*thous.*	*%*	*thous.*	*p.p.*	*thous.*
Status quo	31.7	17.4	–	–	32.1	47.7	–	–
a. COVID-19's social distancing shocks with no compensation								
Scenario 1	38.2	20.9	6.6	3.6	37.0	55.0	4.9	7.3
Scenario 2	47.8	26.2	16.2	8.9	46.1	68.5	14.0	20.8
Scenario 3	43.1	23.6	11.4	6.2	41.2	61.1	9.1	13.4
b. COVID-19's social distancing shocks with cash compensation								
Scenario 1	35.5	19.4	3.8	2.1	34.8	51.7	2.7	4.1
Scenario 2	45.4	24.9	13.7	7.5	44.1	65.5	12.0	17.8
Scenario 3	39.0	21.3	7.3	4.0	37.6	55.8	5.5	8.1

Notes: Changes are shown in comparison to the figures in the status quo; *thous.* indicates thousand households or individuals; *pp* indicates percentage points. Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

distribution, with 68 and 8.6 percent of individuals in the middle- and upper-classes, respectively. Looking at the bottom part, only 6.7 percent of the population are identified as poor, i.e., living with less than \$5.50 a day, most of whom are located just below such threshold living on \$3.20-5.50 a day. Finally, about 17 percent are identified as vulnerable to poverty and thus face a relatively high risk of impoverishment in the face of adverse shocks —such as the current COVID-19 pandemic that has motivated the shut-down of non-essential sectors of the economy.

How this stratification would change as a result of the unemployment shock that has already affected about 4.9 thousand individuals and more than 2 thousand small business owners, thus making their earnings to drop to zero? The results are shown in the columns (1) of Table 2 for the first scenario without compensation and after the cash benefit has been allocated. If no compensation is yet considered, a first noticeable result is that the overall poverty rate would increase, in comparison to the status quo, by almost 4 percentage points, from 6.7 to 11.1 percent of the total population, and most of this increase would occur at the very bottom, pushing the share of individuals in destitution upwards from 1 to 4.7 percent as a result of incomes suddenly dropping to zero, while leaving the shares of extreme and moderate poor

Figure 7: Gini coefficient, pre-crisis and simulated as a result of shocks and after cash compensations
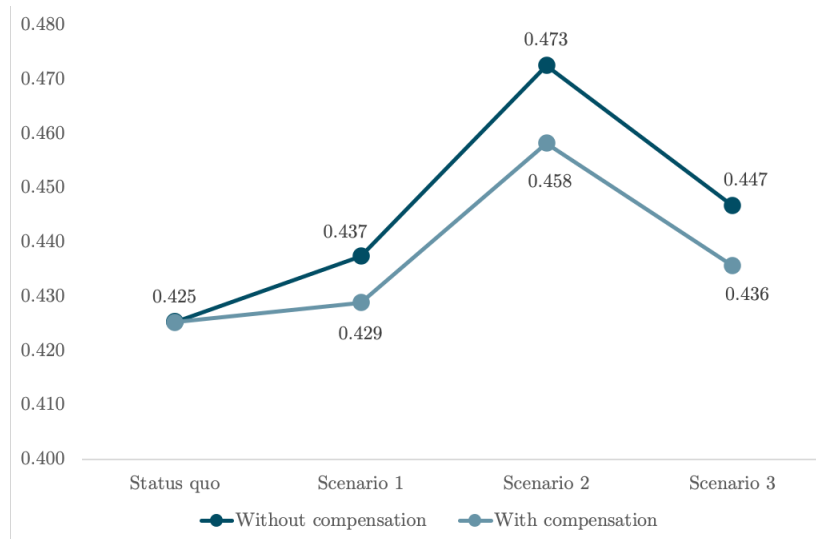
Table 2: Relative size of income groups, pre-crisis and simulated as a result of shocks and after cash compensations (% of total population)

| | | Scenarios | | | | | |
| | | Without compensation | | | With compensation | | |
	Status quo	(1)	(2)	(3)	(1)	(2)	(3)
Total poor ($< \$5.50$)	6.7	11.1	16.3	14.7	6.8	11.3	7.2
· *Destitute ($< \$1.90$)*	*1.0*	*4.7*	*6.3*	*7.9*	*1.2*	*2.5*	*1.2*
· *Extreme poor ($\$1.90$-$3.20$)*	*1.0*	*1.1*	*2.6*	*1.3*	*1.0*	*2.5*	*1.0*
· *Moderate poor ($\$3.20$-$5.50$)*	*4.7*	*5.3*	*7.4*	*5.5*	*4.6*	*6.4*	*4.9*
Vulnerable ($\$5.50$-$13$)	16.8	18.3	21.4	18.5	18.6	21.7	19.9
Middle-class ($\$13$-$70$)	67.9	62.6	55.8	59.0	66.3	60.4	64.9
Upper-class ($> \$70$)	8.6	8.1	6.5	7.9	8.2	6.7	8.0

with only minor changes. A second result is that most of the increase in poverty, but also a slight increase in the share of individuals in vulnerability, is the result of middle-

class workers in particular experiencing a sudden deterioration of their livelihoods, as evidenced by the 5-percentage point decline in the relative size of the middle-class from 68 percent in the status quo —notice that the share of those identified as upper-class are only moderately affected by the drop in earnings. The latter result is confirmed in the panel a of the transition matrix shown in the annex (Table A1), which presents the downward movement of individuals who lost their jobs as a result of the unemployment shock under scenario 1, relative to the status quo. As can be seen below the main diagonal of the matrix, 7 percent of the total population could experience downward mobility, with the vast majority moving from the middle-class: 3 percent to destitution, 0.7 percent to either extreme or moderate poverty, and 2.1 percent to vulnerability.

When taking cash compensations into account, the results reveal that the hard impact at the very bottom of the income distribution could be almost entirely avoided, leaving the share of total poor virtually unchanged (6.7 percent in the status quo versus 6.8 percent after shocks and compensations are considered) and, crucially, preventing an important 3.4 percent of individuals from falling into destitution: from 4.7 percent that could be in the absence of compensation to 1.2 percent after the shock is compensated with cash benefit, i.e., the share of destitute after compensating for the shock could be just slightly above that in the status quo. The most noticeable change after considering both the shock and its compensation is that the share of vulnerable individuals could increase by about 2 percentage points in comparison to the status quo, thus reaching 18.6 percent of the population and with much of the increase being explained from individuals moving downwards from the middle- and upper-class (see the panel a of Table A2 in the annex).

Moving to the more extreme scenario 2 —in which a share of those who remain employed experience a contraction in their incomes, in addition to those individuals already unemployed— the results shown in the first column (2) from Table 2 above suggest that, when no compensation is in place, the poverty headcount rate would increase by 9.5 percentage points up to 16.3 percent, relative to the status quo. In this scenario, all the subgroups of poor would increase in size, although again the largest relative increase would occur among the destitute, whose share would move upwards from 1 to 6.3 percent. As Table 2 suggests and the panel b of the transition matrix in the annex confirms (Table A1), the lion's share of the increase in poverty would occur as a result of vulnerable and middle-class workers and small business owners experiencing a significant deterioration of their livelihoods. Below the main diagonal of the matrix, it can be verified that almost 21 percent of the total popula-
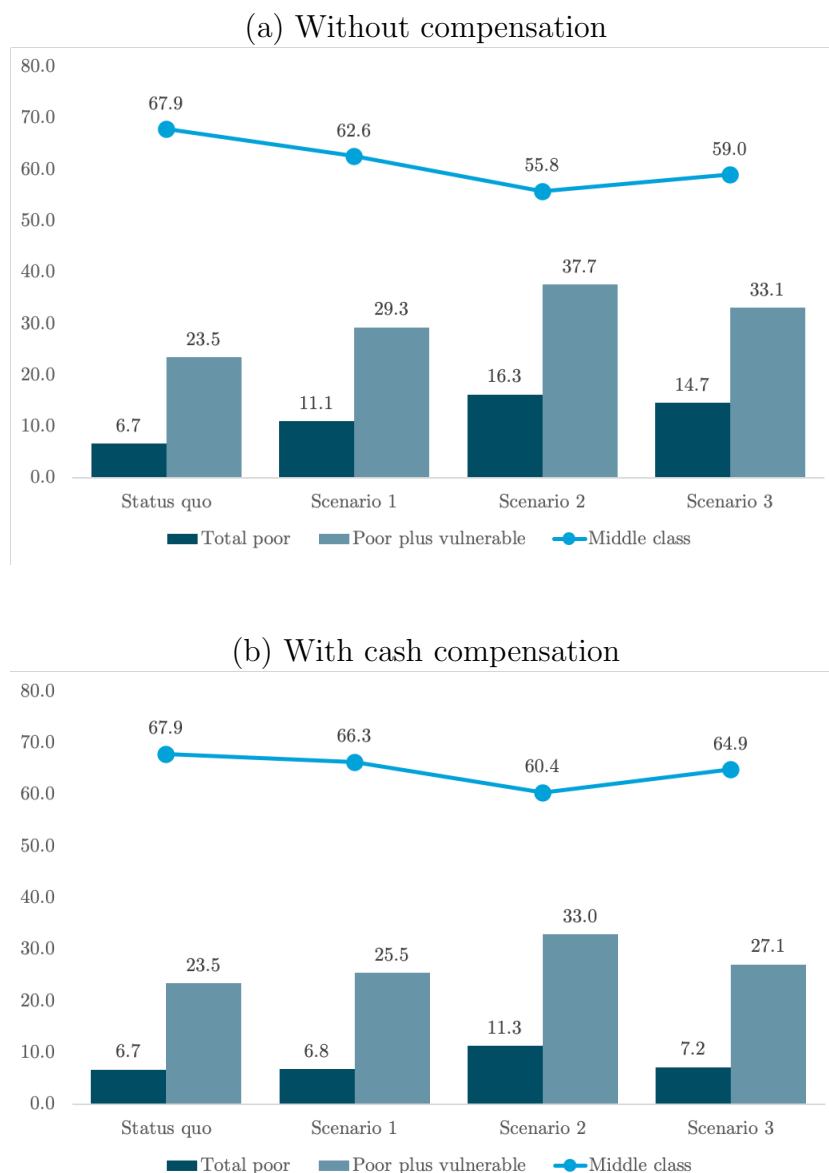
tion could experience downward mobility, with 3.2 percent moving from vulnerability to poverty, 6.2 percent doing so from middle-class, and about 1.2 percent suffering impoverishment by moving from moderate poverty to either extreme poverty or destitution. The remaining 10 percent corresponds basically to middle-class individuals moving to vulnerability (7.8 percent) and, at a lesser extent, from upper-class to middle-class positions (1.9 percent). The allocation of cash compensations would significantly mitigate the increase in poverty at the magnitude described for scenario 1. The fact that the second column (2) in Table 2 is still showing an important increase in poverty —although much lower than when cash benefits are not included— is a direct consequence of those workers who remain employed but potentially face contractions in their earnings without receiving compensating measures.

Finally, in scenario 3, in which the total number of unemployed whose earnings suddenly drop to zero doubles in relation to the current number recorded in the RU-COVID, and without assuming earnings contraction among those who remain employed, the poverty headcount rate would double from 6.7 percent in the status quo to just under 15 percent. Consistently with previous results, the largest increase in poverty would concentrate among the destitute as shown in the first column (3), again mostly as a result of vulnerable and middle-class individuals moving downwards as their earnings fade out (see also the panel c of Table A1 in the annex). When considering the cash benefits for the unemployed, such poverty increases would then be mitigated, keeping the incidence virtually in the same levels recorded in the status quo and with the most important changes occurring among the non-poor; that is, as in scenario 1, the combined effect of unemployment and compensating measures would be a slight increase in the share of vulnerable individuals moving downwards from the middle- and upper-classes (see Table A2 in the annex).

Summing up, Figure 8 shows how social stratification in the country could change when the adverse shocks hit without compensating measures in place and when such shocks are mitigated though cash transfers. The recent increase in the number of unemployed individuals and small business owners whose incomes dropped to zero as a result of COVID-19 is likely to increase the share of the population living in poverty by about 4 percentage points, from 6.7 percent observed in the status quo to 11.1 percent after the unemployment shock and with no compensation in place, with most of the increase due to middle-class individuals falling into poverty. When allocating the cash benefits announced by the government, the share of poor would remain virtually unchanged relative to the status quo, thus mitigating the poverty effects of the pandemic and with only a minority of middle-class population moving

downwards to vulnerability. If non-essential economic activities continue to be shut down, then the likelihood that more individuals experience unemployment (scenario 3) would imply a dramatic exacerbation of both poverty and vulnerability levels, although again, such exacerbation could be mitigated through cash assistance. If the lock-down measures are extended and in addition to unemployment some of those who remain employed suffer earnings contractions (scenario 2), poverty indicators could reach high levels that could be mitigated only if cash benefits are available to compensate such earnings losses.

Figure 8: Poverty, vulnerability, and middle class, pre-crisis and simulated as a result of shocks and after cash compensations (% of total population)

(a) Without compensation

(b) With cash compensation

Notes: Scenario 1 simulates the unemployment shock and earnings decline of the number of individuals and small business owners already registered. Scenario 2 adds the assumption that those workers who remain employed but face a high vulnerability of unemployment given their characteristics face earnings contractions. Scenario 3 assumes that the number of unemployed individuals already registered doubles (with no more small business owners being affected and without the assumption of earnings contraction among those who remain employed). See subsection 1.3.

Table A1: Transition matrices, status quo and simulation scenarios without compensation (% of total population)

a. Scenario 1

		Destitute	Extreme poor	Moderate poor	Vulnerable	Middle-class	Upper-class	Total
Status quo	Destitute	1.0	–	–	–	–	–	1.0
	Extreme poor	0.0	1.0	–	–	–	–	1.0
	Moderate poor	0.1	0.0	4.6	–	–	–	4.7
	Vulnerable	0.5	0.0	0.2	16.2	–	–	16.8
	Middle-class	3.0	0.1	0.6	2.1	62.1	–	67.9
	Upper-class	0.1	0.0	0.0	0.0	0.4	8.1	8.6
	Total	4.7	1.1	5.3	18.3	62.6	8.1	100.0

b. Scenario 2

		Destitute	Extreme poor	Moderate poor	Vulnerable	Middle-class	Upper-class	Total
Status quo	Destitute	1.0	–	–	–	–	–	1.0
	Extreme poor	0.1	1.0	–	–	–	–	1.0
	Moderate poor	0.9	0.3	3.5	–	–	–	4.7
	Vulnerable	0.8	1.2	1.2	13.6	–	–	16.8
	Middle-class	3.4	0.2	2.7	7.8	53.8	–	67.9
	Upper-class	0.1	0.0	0.0	0.1	1.9	6.5	8.6
	Total	6.3	2.6	7.3	21.4	55.8	6.5	100.0

c. Scenario 3

		Destitute	Extreme poor	Moderate poor	Vulnerable	Middle-class	Upper-class	Total
Status quo	Destitute	1.0	–	–	–	–	–	1.0
	Extreme poor	0.0	1.0	–	–	–	–	1.0
	Moderate poor	0.1	0.0	4.6	–	–	–	4.7
	Vulnerable	1.3	0.1	0.2	15.2	–	–	16.8
	Middle-class	5.3	0.2	0.8	3.2	58.4	–	67.9
	Upper-class	0.1	0.0	0.0	0.0	0.6	7.9	8.6
	Total	7.9	1.3	5.5	18.5	59.0	7.9	100.0

Table A2: Transition matrices, status quo and simulation scenarios with cash compensation (% of total population)

a. Scenario 1

		Destitute	Extreme poor	Moderate poor	Vulnerable	Middle-class	Upper-class	Total
Status quo	Destitute	1.0	–	–	–	–	–	1.0
	Extreme poor	0.0	1.0	–	–	–	–	1.0
	Moderate poor	0.0	0.0	4.6	0.1	–	–	4.7
	Vulnerable	0.0	0.0	0.0	16.8	–	–	16.8
	Middle-class	0.1	0.0	0.0	1.8	65.8	0.1	67.9
	Upper-class	0.1	0.0	0.0	0.0	0.4	8.1	8.6
	Total	1.2	1.0	4.6	18.6	66.3	8.2	100.0

b. Scenario 2

		Destitute	Extreme poor	Moderate poor	Vulnerable	Middle-class	Upper-class	Total
Status quo	Destitute	1.0	–	–	–	–	–	1.0
	Extreme poor	0.1	1.0	–	–	–	–	1.0
	Moderate poor	0.8	0.3	3.5	0.1	–	–	4.7
	Vulnerable	0.3	1.2	1.0	14.2	–	–	16.8
	Middle-class	0.1	0.0	1.8	7.4	58.3	0.1	67.9
	Upper-class	0.1	0.0	0.0	0.0	2.0	6.6	8.6
	Total	2.5	2.5	6.4	21.7	60.4	6.7	100.0

c. Scenario 3

		Destitute	Extreme poor	Moderate poor	Vulnerable	Middle-class	Upper-class	Total
Status quo	Destitute	1.0	–	–	–	–	–	1.0
	Extreme poor	0.0	1.0	–	–	–	–	1.0
	Moderate poor	0.0	0.0	4.6	0.1	–	–	4.7
	Vulnerable	0.0	0.0	0.3	16.5	–	–	16.8
	Middle-class	0.1	0.0	0.1	3.4	64.2	0.1	67.9
	Upper-class	0.1	0.0	0.0	0.0	0.7	7.9	8.6
	Total	1.2	1.0	4.9	19.9	64.9	8.0	100.0