

# Welfare and Distributional Impacts of Inflation and the COVID-19 Outbreak in the Islamic Republic of Iran

*Laura Rodriguez*

*Aziz Atamanov*



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## Abstract

This paper simulates the welfare and poverty impacts of the COVID-19 pandemic in the Islamic Republic of Iran, emphasizing the role of inflation, which lowered the purchasing power of households and had heterogeneous impacts across the distribution and in different regions of the country. First, income losses are estimated with a microsimulation analysis based on shock scenarios. Second, combining data on price changes with expenditure baskets for various groups of households, group-specific price

indices are calculated. These are then applied to the post-shock income changes to assess the deterioration of living standards associated with inflation. Poverty substantially increases, by up to 21 percentage points, as a combined result of the fall in household incomes and high inflation through the pandemic. Iranians in the bottom half of the welfare distribution, those working in services and high-contact economic sectors, and those in rural areas are disproportionately affected.

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# Welfare and Distributional Impacts of Inflation and the COVID-19 Outbreak in the Islamic Republic of Iran

Laura Rodriguez and Aziz Atamanov<sup>1</sup>

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<sup>1</sup> [lrodriguez@worldbank.org](mailto:lrodriguez@worldbank.org) ; [aatamanov@worldbank.org](mailto:aatamanov@worldbank.org). World Bank, Poverty and Equity Global Practice. The findings and conclusions in this paper are those of the authors and do not represent the views of the World Bank and its affiliated organizations.

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# Welfare and Distributional Impacts of Inflation and the COVID-19 Outbreak in the Islamic Republic of Iran

## I. Introduction

Recent macroeconomic trends and the economic shock from the COVID-19 outbreak raise concerns about the welfare of Iranians. The purpose of this paper is to assess the impacts of the pandemic on household welfare and poverty in the Islamic Republic of Iran, emphasizing the role of cost of living changes that intensified through the pandemic. The paper also highlights the heterogeneity of impacts occurring for households at different points in the welfare distribution and in different parts of the country.

The main channels through which the COVID-19 outbreak has impacted household welfare in many countries are through reductions in income and through cost of living increases. Incomes for self-employed workers in the services and high-intensity contact sectors that are difficult to do from home have been hit the hardest. Problems with supply chains, restrictions on labor mobility and lower global demand have been reflected in rises in agricultural prices and food price inflation in many countries. This inflation, especially rising prices for food and other basic commodities, has further deteriorated the living standards of households, with particularly worrisome implications for the cost of living of the poor and vulnerable. This paper examines in detail these impacts.

The Islamic Republic of Iran entered its third year of economic contraction following the reintroduction of US sanctions in 2018 and the COVID-19 crisis in 2020. The growth rate of GDP per capita was -7.0 percent in 2018/19,<sup>2</sup> -7.7 percent in 2019/20 and is expected to be -5.4 percent in 2020 (World Bank 2020a). Meanwhile, inflation, which had started to come down from the 2018 spike, resurged in 2019/20 as the rial sharply depreciated. The exchange rate passed IRR 220,000 per USD in the parallel market and the depreciation rate in April-June 2020 was equal to that of the entire previous year. This increased import prices, which in turn pushed the domestic price of goods. Among the top five imported products in the Islamic Republic of Iran are maize, rice and soybeans; vegetables are 15 percent of total imports.<sup>3</sup> As many key staples are imported, food prices are especially exposed. The COVID-19 pandemic—which reached

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<sup>2</sup> Yearly figures in the paper are based on the Persian calendar, which bridges two years in the Gregorian calendar starting and ending in March.

<sup>3</sup> Data for 2017 from the World Integrated Trade Solution (WITS) <https://wits.worldbank.org/>.

the Islamic Republic of Iran early in 2020—heightened these pressures. The Consumer Price Index (CPI) increased by 10 percentage points to 41.2 percent in 2019/20 and inflation has continued to accelerate in 2020 through the pandemic, reaching the highest month-to-month increase in almost two years in October 2020.

The paper uses a partial-equilibrium analysis to simulate the first-order effects of the pandemic economic shock on household income using micro-level data from the 2018/19 Household Income and Expenditure Survey (HEIS). In the context of the global pandemic, where health concerns and mobility restrictions may limit traditional data collection by national statistical offices, micro-simulations are a useful tool to understand how the shocks are affecting people's welfare. This micro-simulation analysis is based on shock scenarios where various sources of household income are reduced depending on the degree of affectation by the pandemic. The income change is then applied to the welfare aggregate (consumption per capita and income per capita) to determine its change. The second step of the simulation addresses the added impact of inflation, providing an estimate of how much households can now afford given the new prices. For this, group-specific price indices are created; they account for different consumption baskets of subgroups of households defined by their location (by province and rural-urban location). Rising living costs are strongly connected to declining socio-economic well-being, but not everyone is equally affected. The degree to which purchasing power declines with inflation depends on the items consumed as well as spatial variations in price increases; the group-specific price indices allow to capture such variation in the estimation of welfare impacts.

The economic shock of the COVID-19 pandemic will push more Iranian households into poverty. The analysis shows that it will substantially increase, by up to 21 percentage points, as a combined result of the fall in household incomes and high inflation through the pandemic. Iranians in the bottom half of the welfare distribution, working in services and high-contact economic sectors, and those in rural areas are disproportionately affected. Inequality will rise by 2 points as a result.

These estimates focus on the short-run impacts of shocks. While the long-run outcomes might be smaller, as households find ways to cope and make adjustment to their employment, production and consumption patterns, it is highly relevant for policy to analyze the short-run impacts. Such an assessment can be used to better direct resources to assist households during a crisis and prevent the emergence of hard-to-escape poverty traps. In response to the pandemic, the Iranian government unveiled new rounds of cash transfers and consumption loans for lower income deciles and households without a permanent source of income. Using the micro-simulation to estimate the impact of these measures, they are found to help

compensate for the income shocks, mitigating much of the poverty impact. While they partly ease pressures on the poor, they place additional burden on fiscal balances and can be better targeted.

The rest of the paper is organized as follows. Section II briefly introduces some related works. Section III provides a description of the methodological details. Section IV discusses the results, and section V concludes.

## **II. Literature Review**

The World Bank estimates that given the most recent growth prospects, the COVID-19 pandemic will increase the number of poor people around the world by between 119 million and 124 million. Reductions in labor incomes and rising unemployment have put welfare at risk for many. Phone surveys conducted by the World Bank across developing countries have shown that income losses in IDA countries were more prevalent than in non-IDA countries, but households in IDA countries were less likely to suffer job stoppages during COVID-19 than those in non-IDA countries (Yoshida, Narayan, and Wu 2020). Within countries, there is empirical evidence that workers were more likely to stop working in services and industry sectors than in agriculture (Khamis et al. 2021). Incomes for self-employed workers in the services and high-intensity contact sectors that are difficult to do from home have been hit the hardest. This is consistent with findings from skills surveys from 53 countries which reveal that workers in hotels and restaurants, construction, agriculture, and commerce are less likely to be able to work from home (Hatayama, Viollaz, and Winkler 2020). Phone surveys in developing countries show that women and lower educated workers have been more likely to lose their jobs, especially in industry and services sectors (Sanchez-Paramo and Narayan 2020). Similar findings have been echoed in the United States, the United Kingdom and Germany (Adams-Prassl et al. 2020).

Further, prices have increased in many countries owing to supply chain disruptions, labor mobility limitations, and weak demand. There is a considerable literature assessing the impact of price changes, particularly food and agricultural prices, on poverty. Ivanic et al. (2012) estimate the first-order impacts of the 2006-08 food price crisis for a large number of developing countries and find an overall poverty increase of 1.1 and 0.7 percentage points in low- and middle-income countries, respectively. Similarly, de Hoyos and Medvedev (2011) find that rising food prices can increase poverty by 1.7 percentage points at the global level, even after accounting for the rise in incomes of agricultural producers, and by 0.6 points when incorporating potential higher wages in the bio-fuel industry. Various country level

studies also attest of the severity of large food price increases for households (e.g. de Janvry and Sadoulet 2010; Fujii 2013; Rodriguez-Takeuchi and Imai 2013; Vu and Glewwe 2011).

This study is also related to a few studies which focus on the heterogeneous impact of depreciation-driven inflation on households' living standards. Kraay (2007) and Alazzawi and Hlasny (2016) estimate the impact of two Egyptian currency depreciation episodes on household welfare. They start by estimating the pass-through of the depreciation to consumer inflation and then focus on the welfare impacts via household consumption. Kraay (2007) finds that the average welfare loss is 7.4 percent of initial household expenditure, and that most of it is accounted by the direct effect, that is before households make substitutions to their consumption patterns. Similar direction but stronger impacts are found by Alazzawi and Hlasny (2016) for the most recent depreciation of 2016. The work by Cravino and Levchenko (2017) focuses on the Mexican hyperinflation episode of 1994. They highlight how inflation is felt heterogeneously across the income distribution depending on two aspects of households' consumption patterns. Firstly, poorer households spend more on tradable goods, which makes them more exposed to price fluctuations associated with a devaluation. Consumers in the lower deciles of the distribution consequently experience increases in their cost of living that are 1.25 times the rise experienced by higher-income households. Secondly, within products, low-income households spend more on lower quality (and thus lower priced) items, the prices of which the authors also find disproportionately rose in Mexico compared to high quality varieties.

The literature distinguishes between the immediate and the later impacts of shocks. In the medium and long-run, households might be able to adjust by purchasing more cheaper goods, switching household production to crops with higher returns, and further derive higher labor incomes if wages in certain production sectors rise. Ivanic and Martin (2014) compare the short and long-run impacts of food price increases in a sample of developing countries and find that while the estimated long-run impacts are in fact smaller, there are still some groups of households (low-educated, female-headed and urban households) for whom poverty increases even after accounting for second-order effects. It is not surprising that the urban poor are more vulnerable to price surges and less likely to benefit from increases in agricultural household production, as they tend to do little of this activity. But even most rural households, especially the poorest, are net consumers of food items and are likely to be negatively affected by price changes (de Janvry and Sadoulet 2010; Barrett and Dorosh 1996).

Moreover, it is relevant for policy to analyze the short-run impacts, especially of large shocks. The COVID and inflation shocks occurred in the context of a pre-existing prolonged crisis in the Islamic Republic of

Iran, thus the ability of households to adjust or use coping mechanisms was already constrained. Even short-lived shocks can compromise dietary diversity and nutrition intake (Skoufias, Tiwari, and Zaman 2012), for instance, push households into hard to escape poverty traps, and the use of coping strategies in the short-run might be less than fully effective and bring later negative consequences (Paxson and Alderman 1992), for instance if households accumulate debt or deplete their savings.

### **III. Methodology**

#### **a. Data**

The data come from the 2018/19 Iranian Household Expenditures and Income Survey (HEIS), an annual nationally representative survey collected by the Statistical Center of Iran (SCI). HIES is stratified by province and by urban and rural areas. This survey contains detailed information of a household's sources of labor and non-labor income as well as consumption across a range of goods and services. Additionally, consumption shares derived from the 2016/17 HEIS are used to build price indices. The structure and content of both survey rounds is similar.

Official price data are collected by SCI to construct the CPI. Prices are reported for the 31 provinces and 12 large categories of goods and services, which are matched to those in HEIS.<sup>4</sup> Prices are also available for 10 sub-categories of food expenditures<sup>5</sup> and three sub-categories of housing expenditures.<sup>6</sup> SCI reports CPI for deciles and provinces. Unlike these, the group-specific indices constructed here are further disaggregated for intersections of those groups (e.g. rural areas in a specific province) allowing a more detailed analysis. Further, they are adapted to the welfare aggregate used for the poverty measurement, excluding durable items and health expenditures.

The poverty measurement follows the well-established international standards. This requires firstly to define an indicator to measure welfare or living standards. The paper uses both household consumption and household income (expressed per person), following standard procedures to construct the aggregates and implementing price adjustments to ensure comparability within survey years and across them (see Deaton and Zaidi 2002; Houghton and Khandker 2009). In particular, the consumption aggregate excludes

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<sup>4</sup> Food and Beverages; Education; Tobacco; Clothing and footwear; Housing, water, electricity, gas; Furnishings, household equipment and maintenance; Health; Transport; Communication; Recreation and culture; Restaurants and hotels; Miscellaneous.

<sup>5</sup> Bread and cereals; Red meat and poultry; Fish and seafood; Dairy products and eggs; Oils and fats; Fruits and nuts; Vegetables and pulses; Sugar, jam, honey, chocolate, confectionary; Other food products; Beverages.

<sup>6</sup> Rent; Maintenance and repair services; Water, electricity and other fuels.



expenditure on health and durables and is inter-temporally and spatially deflated to account for changes in prices during the survey period and spatial variation in prices.<sup>7</sup> Detailed explanation of the methodology to construct consumption is in Atamanov et al. (2016). In the absence of an official national poverty line, the poverty threshold—the minimum level below which a person is considered to be poor— is the international upper middle-class poverty line of USD 5.50<sup>8</sup> expressed in 2011 Purchasing Power Parity (PPP) terms for household final consumption expenditure (Jolliffe and Prydz 2016).<sup>9</sup> PPP rates correspond to the May 2020 ICP revision.<sup>10</sup>

## **b. Micro-simulation Analysis**

The micro-simulation analysis is a partial-equilibrium assessment that captures the first-order effects of the shock on various sources of household income. Welfare changes through the COVID-19 pandemic can result from changes in labor and non-labor incomes (such as remittances and transfers), consumption changes resulting from cost of living increases or increased health care and other expenses, and service disruptions, particularly to health and education. The paper is focused on the short-term impacts of the shock and assesses changes to monetary welfare. As such, it omits possible long-term impacts on household welfare arising from human capital shocks and service disruptions. Further, the monetary impacts are running primarily through labor and some sources of non-labor income. Finally, while the paper emphasizes the impacts generated by changes in prices, it omits other changes to consumption patterns, for instance, those potentially derived from increased health care costs.

Labor incomes may suffer due to restrictions to work or loss of earnings and working hours associated with declines in aggregate demand, direct illness, caring needs within the household, quarantines or social distancing behaviors. The impacts are likely to be starker in certain sectors such as construction; retail; transport; hotels and restaurants; communications; real estate; administrative and support activities; entertainment and art. Moreover, within sectors, individuals gaining income from self-employment are more vulnerable to lay-offs or income reductions than those with a salary. On the other hand, the income of public sector workers is much less volatile. Finally, remittances, which typically increase during crises,

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<sup>7</sup> The CPI rates used to convert figures to 2011 values come from SCI.

<sup>8</sup> The most common USD 1.90 poverty line is not used because extreme poverty at this level is almost inexistent in the country.

<sup>9</sup> The levels of poverty are slightly different than those reported by the World Bank for global poverty monitoring. The main difference comes from the way the welfare aggregate is created.

<sup>10</sup> As in many other countries and the global estimates, poverty increased with the revised 2011 PPP figures (Atamanov et al. 2020).

will most likely be a limited source of consumption smoothing this time as the effects of the pandemic are felt across the country and globally.<sup>11</sup>

As a first-order approximation, the micro-simulation does not account for potential increase in labor incomes arising from the possibility of switching jobs to activities less affected by the pandemic. For example, there was a shift in employment from services and industry to agriculture in Uganda during the pandemic (World Bank 2020b). However, in the recessionary context of the Islamic Republic of Iran, such impacts are likely limited. Also, when accounting for price changes, the assumption is that households are affected by increases in prices as consumers but not as producers, who could benefit from higher prices. This means that the assessment is a potential higher-bound estimate of the long-run impacts but likely a better approximation of short-run impacts.

Following the above discussion, the income effects modeled vary for wage and self-employment income and by sector of employment. Table 1 displays the parameters, with 1 indicating no change in income after the shock. For instance, self-employment income is assumed to decline to 80% of the pre-shock annual level. We could think of this as a fall in this type of income for two-and-a-half months of the year. Labor income changes are adjusted by province of residence to account for some regions of the country being more heavily affected by the disease than others.<sup>12</sup> There is an additional small shock to private household transfers (domestic and international remittances), which have fallen through the pandemic.<sup>13</sup> These income changes (as a share of initial household income) are then applied to the welfare aggregates used to estimate poverty: total consumption per capita per day (in 2011 PPP dollars) and total income per capita per day (in 2011 PPP dollars).

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<sup>11</sup> Household savings and borrowing are also likely to be a limited source of consumption smoothing. Because of the prolonged economic deterioration in the Islamic Republic of Iran, not only are most households likely to have few liquid assets they can use to cushion the impact of income losses, but many had already borrowed before the current shock, limiting their ability to do so now.

<sup>12</sup> The province-specific parameters are calibrated between 0 and 1 from the intensity of COVID cases in March 2020 when the latest official sub-national estimates were available. Since then, the Government of the Islamic Republic of Iran has released a list of 'red', 'orange' and 'yellow' provinces, without specifying the provincial case-loads. The parameters consider this classification system from October 2020 to further adjust the province parameters.

<sup>13</sup> Ratha et al. (2020) estimate a 5 percent fall in international remittance inflows to the Islamic Republic of Iran in 2020 compared to 2019. It is not possible to distinguish domestic from international remittances in HEIS.

Table 1. Parameters by type of income and economic sector of occupation

Income source	Scenario Parameters
% of initial income (months without income)	
Self-employment general	0.80 (2.4 months)
Self-employment selected sectors*	0.50 (6 months)
Salary - public sector	1 (no change)
Salary- private sector general	0.90 (1.2 months)
Salary-private sector selected sectors*	0.70 (3.6 months)
Household transfers (remittances)	0.95 (1 month)
Pensions	1 (no change)

Note: \*Selected sectors are construction; retail; transport; hotels and restaurants; communications; real estate; administrative and support activities; entertainment and art; other services.

Finally, the last step of the micro-simulation is to account for the effect of inflation on household welfare. This is done by deflating the resulting household welfare aggregate with the inflation rate in the year. Instead of using the general CPI, households are matched to group-specific price indices, by region and rural/urban location of the household.<sup>14</sup>

Since the data used in the micro-simulation are from the 2018/19 HEIS, they need to be updated to the beginning of the pandemic period. The welfare aggregates are nowcasted to March 2020 (the beginning of the Iranian calendar year) by applying nominal private consumption per capita growth, deflated with the group-specific price indices to obtain their value in the same baseline year. With these updates, the baseline poverty rates are 15.2 percent (consumption per capita poverty) and 20.4 percent (income per capita poverty).

### c. Group-specific Price Indices

A group-specific price index reflects the change in the cost of living for a subgroup of households, for instance by location (rural/urban), or place in the welfare distribution. Unlike a generic price index, like the national CPI, which weights price increases for different goods and services using a common basket for the whole country, a group-specific price index instead accounts for variations in consumption

<sup>14</sup> An alternative would be to use household-specific shares of each consumption category and shock households using a household-specific price increase. In the absence of panel data starting in a baseline period before the inflationary episode began, the household shares of consumption would already incorporate some substitution effect and the resulting welfare change would likely be underestimated. Although they would be more detailed, the overall results are unlikely to be substantially different if the consumption patterns of households within groups are similar.

baskets, incorporating, for instance, the higher share of expenditures on food by poorer households, or higher rent expenses by urban ones.

The Laspeyres indices<sup>15</sup> are calculated by weighting price indices for disaggregated expenditure categories  $g$ , with the shares of expenditure on such items  $\omega$  in the baseline period ( $t_0$ ), for each subgroup of households  $h$ . The expenditure categories included are 10 large groups of goods and services, 10 sub-categories of food expenditures and 3 sub-categories of housing expenditures. The baseline period is chosen to be 2016/17 since it predates the inflationary pressures in the Islamic Republic of Iran.

$$\hat{P}_t^h = \sum_g \omega_g^h * \hat{P}_{g,t}^h$$

Where,  $\omega_g^h = \frac{P_{g,t_0}^h * q_{g,t_0}^h}{\sum_g P_{g,t_0}^h * q_{g,t_0}^h}$ .

## IV. Results

### a. Cost-of-Living Increases Across the Distribution and by Region

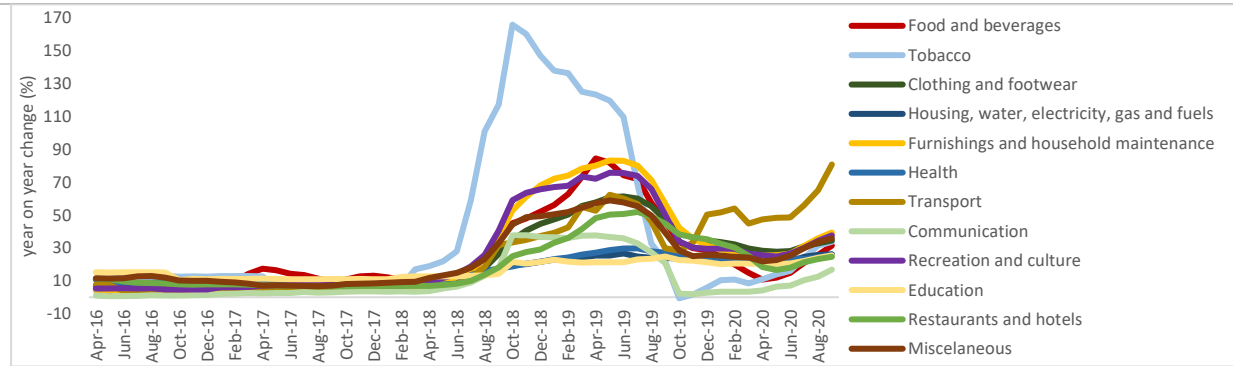
The highest increases in the overall CPI in the Islamic Republic of Iran have been for food, beverages and tobacco (Figure 1). Prices for many other items, such as furnishings and household equipment, recreation and culture and transportation have also been high. Rising living costs are strongly connected to declining socio-economic well-being, but not everyone is equally affected. The degree to which purchasing power declines with inflation depends on the items consumed as well as spatial variations in price increases. For instance, tobacco expenditures are only 1 percent of the total household budget,<sup>16</sup> so a large price increase would be minimally felt by most. Rising food costs have deeper implications, especially for the poor. Food shares are as high as 46 percent of the household budget in rural areas and for households in the lowest welfare decile (Figure 2). Rent inflation affects more heavily the middle-class and even the more affluent urban households as housing costs shares are large in urban areas (32

<sup>15</sup> This follows closely Cravino and Levchenko (2017) but due to data limitations, only the changes in welfare attributed to the variation of prices for households that consume different types of goods (across variation) are identified but not those owing to the within variation.

<sup>16</sup> Budget shares are for 2016/17 before the inflationary pressures began in the Islamic Republic of Iran. Shares exclude durables and health expenditures. See Figure 9 in the Appendix for shares including all health expenses.

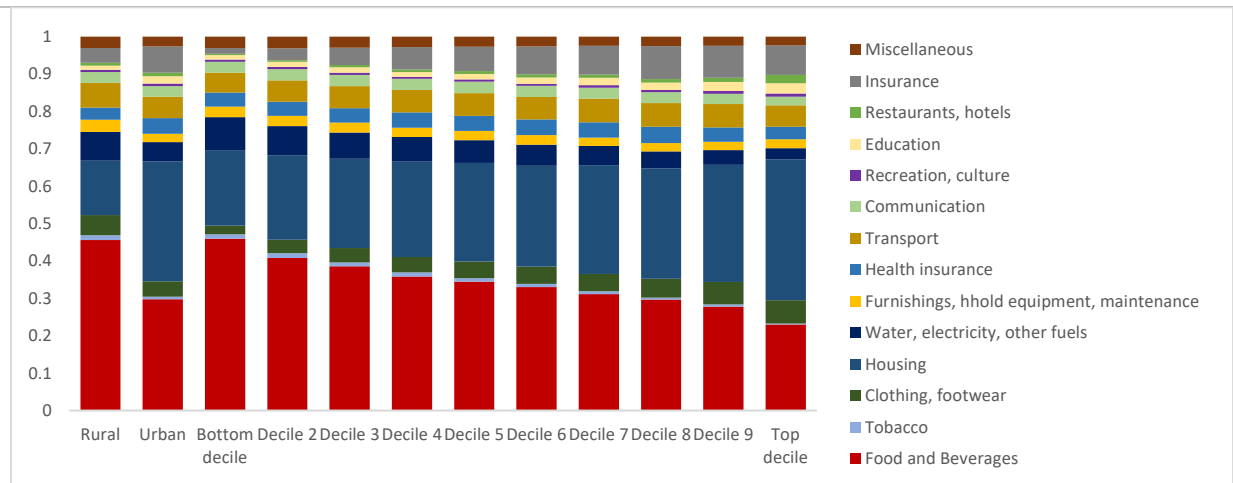
percent of total expenditure) and in the top decile (38 percent). Transport costs represent around 5-6 percent of expenditure without much variation across the distribution.

Figure 1. National CPI by type of goods and services (% change YoY)



Source: Authors' calculations based on SCI

Figure 2. Expenditure shares by type of goods and services (%). By Rural/Urban and welfare decile

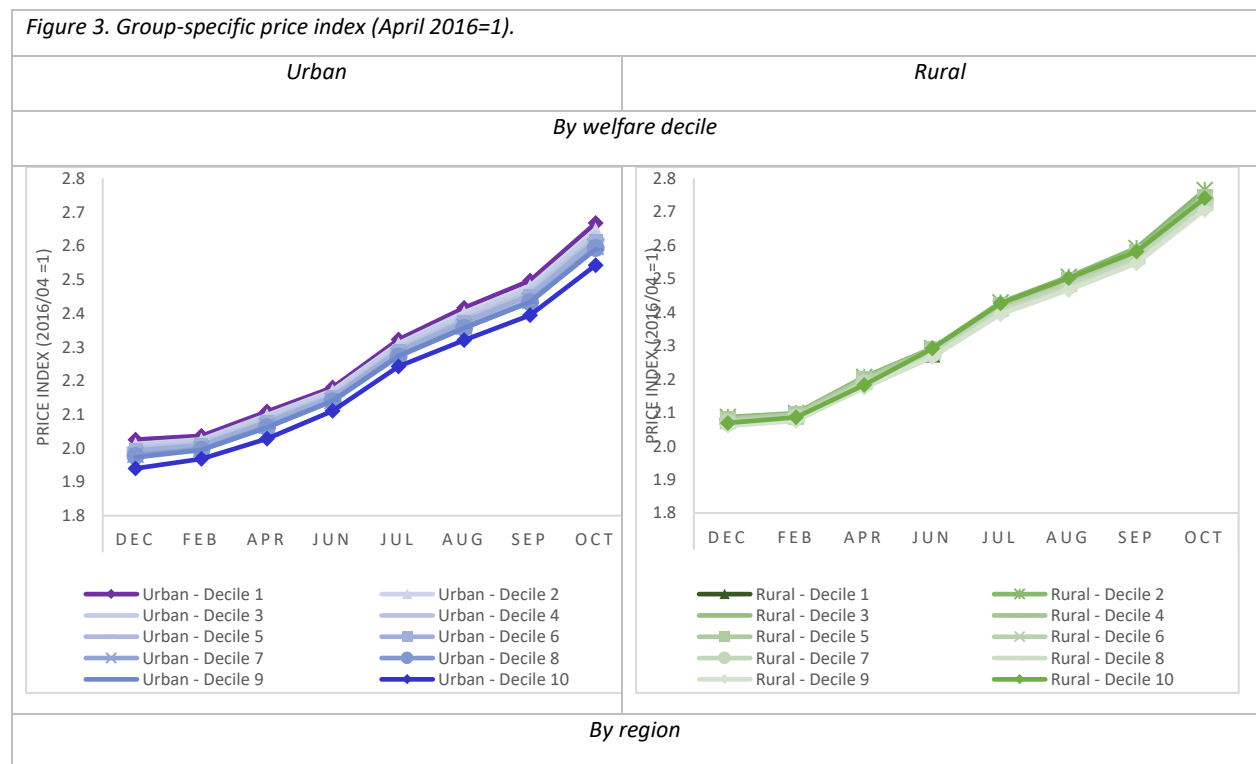


Source: Authors' calculations based on HEIS 2016/17.

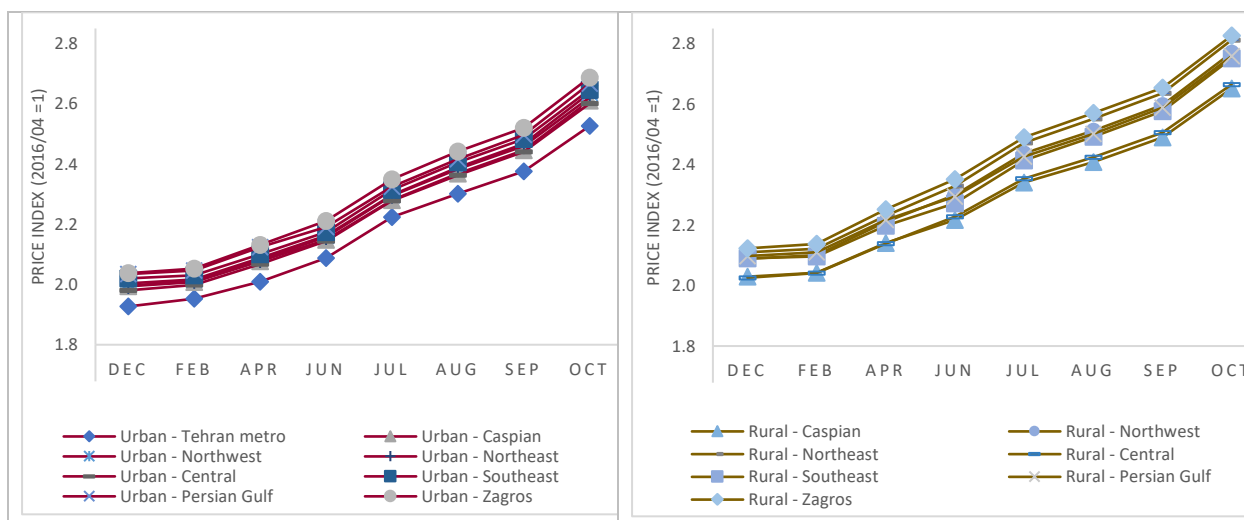
Notes: Deciles based on consumption per capita in the base period. Excluding health expenditures other than health insurance.

On average nationally, by October 2020, the consumption basket was 2.6 times more expensive compared to April 2016. Rural households across the distribution saw the highest rise in the price of their consumption basket (Figure 3). The rural poor experienced the highest increase— 2.8 times by October 2020, but richer rural households also experienced similar increases. The cost of living increase for urban households was overall smaller, but with variations across the welfare distribution; a 2.7 times increase for urban households in the poorest welfare decile and a 2.5 times increase for the richest urban households, the lowest cost of living increase for any group and lower than the national average.

Some parts of the country were also more heavily affected. Households in rural Zagros<sup>17</sup> (Kermanshah, Kurdistan, Hamadan, Bakhtiari, Lorestan, Ilam and Kohkiluyeh) experienced the largest price increases (2.8 times increase), and households in the urban parts of the region also felt high inflation (2.7 times). Households in Tehran metropolitan area saw the lowest price rise in their consumption basket (2.5 times increase). Among urban households, those in the Persian Gulf (2.6 times) and the Southeast (2.6 times) parts of the country saw relatively high inflation compared to those in other regions. From a poverty perspective, particularly worrisome are the provinces of South Khorasan, and Sistan, which had high initial poverty at the beginning of the pandemic and where households experienced price increases of over 2.7 times by October 2020 (see Figure 13 in the appendix).



<sup>17</sup> Provinces are grouped in regions. See note in Figure 5. Province price indices are in the Appendix.



Source: Authors' calculations based on HEIS 2016/17 and CPI from SCI.

Notes: Deciles based on consumption per capita in the base period.

Provinces are grouped in the following regions: Tehran metro ( Urban parts of Tehran and Alborz); Caspian (Golestan, Gilan, Mazandaran); Northwest (East and West Azarbaijan, Zanjan, Ardebil); Northeast (Khorasan Razavi, Semnan, North and South Khorasan); Central (Rural parts of Tehran and Alborz, Qom, Qazvin, Markazi, Fars, Isfahan); Southeast (Kerman, Sistan, Yazd); Persian Gulf (Khuzestan, Bushehr, Hormozgan); Zagros (Kermanshah, Kurdistan, Hamadan, Bakhtiari, Lorestan, Ilam, Kohkiluyeh).

## Robustness

The above analysis estimates the change cost of living increases for households if they were to keep their consumption habits constant. But as a response to high inflation, households may change the composition of their budgets, choosing to consume cheaper goods. Hence, the method overestimates the potential welfare impact as such possibility of consumption substitution is not incorporated. The welfare effect after substitution is approximated in a robustness analysis by calculating the price index using the expenditures shares calculated from the end line survey (2018/19), after households have adjusted their consumption patterns (Paasche Index).

The consumption shares in the end line period are in the Appendix Figure 11, but they reveal only minimal differences in consumption patterns compared to the baseline period.<sup>18</sup> Consequently, the price indices also show similar magnitudes to those in the main results (Figure 12 in the Appendix),

<sup>18</sup> Although it is possible that the aggregate nature of the consumption groups hides some variation within categories of goods. Estimating weights based on consumption patterns *during* the pandemic would be more accurate but is complicated as consumption patterns might be fluctuating (see Reinsdorf 2020) and data collection efforts are stalled or disrupted.

suggesting that the ability to substitute consumption was not large enough to offset the differences in the experienced inflation across households in different parts of the country.

## b. Impacts on Household Welfare and Poverty

The impact of the Covid-19 shock depends upon the pre-existing exposure of households to shocks, given by their income sources and where they are across the welfare distribution. Sixty percent of workers in the poorest 20 percent of the population are employed in the sectors expected to be affected the most during the pandemic, a large proportion of them because they work in the construction sector. The poorer are also less likely to work in the public sector and rely more on private earnings, while those in the middle of the distribution rely more on self-employment income (Table 2).

Table 2. Household income sources by welfare decile (% of total household income)

<i>Income source</i>	<i>Lowest decile</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>Highest decile</i>
Self-employment	18.6	25.8	29.5	29.8	28.5	25.3	23.9	24.0	22.0	20.4
... Self-employment: hard-hit sectors	9.3	14.2	18.1	18.7	19.0	16.5	16.1	16.0	14.8	13.0
Salaries	39.9	41.6	40.1	40.4	41.4	43.4	43.8	42.8	44.2	41.4
... Salaries (public sector)	0.8	2.1	3.4	4.4	7.6	8.4	12.1	15.6	18.7	20.1
... Salaries (private sector)	39.1	39.6	36.7	36.1	33.8	35.0	31.7	27.2	25.6	21.2
... Salaries (private): hard-hit sectors	26.2	25.3	22.3	20.4	20.3	18.3	16.2	13.6	11.2	9.6
Social assistance	26.2	16.1	13.2	11.7	10.5	9.2	8.0	6.5	5.1	3.1
Private transfers	9.7	7.2	5.9	3.9	4.8	3.7	3.3	3.8	3.0	3.0
Pension	3.2	6.6	8.5	10.8	11.7	14.6	17.0	19.2	21.4	26.1
Other incomes	2.4	2.6	2.7	3.3	3.2	3.8	4.0	3.7	4.3	6.0

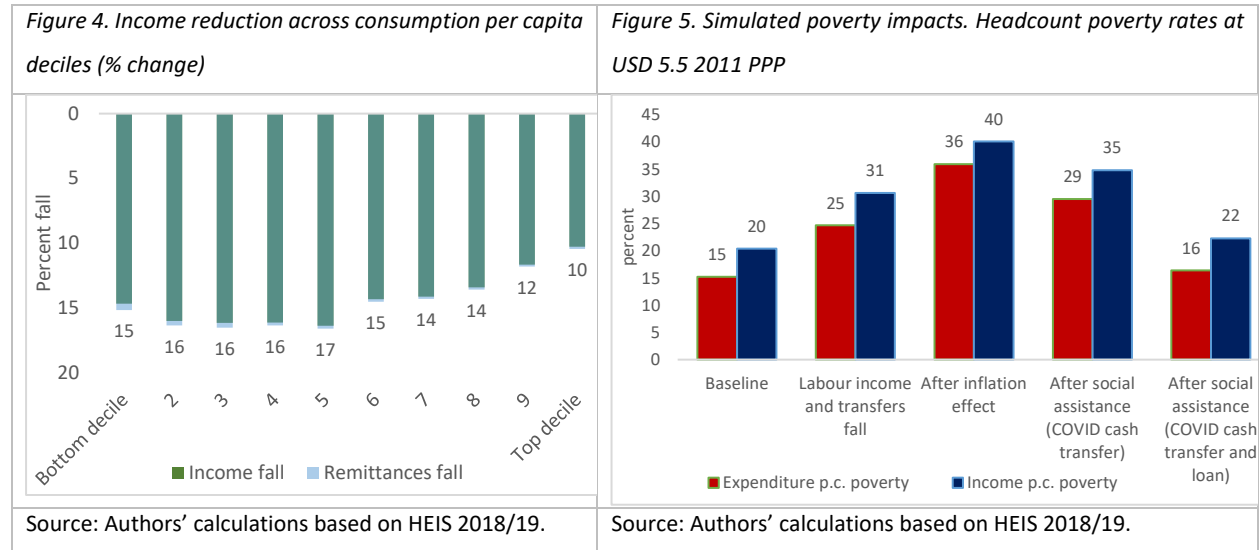
Source: Authors' calculations based on HEIS 2018/19.

Notes: Hard-hit sectors are construction; retail; transport; hotels and restaurants; communications; real estate; administrative and support activities; entertainment and art; other services.

Under the simulation, the labor income and remittances shocks result in an average reduction of 14.5 percent in total household income. Households in the bottom half of the welfare distribution face a loss ranging from 15 to 17 percent, while the total income loss for those in the top 50 percent ranges from 10 to 14 percent (Figure 4). The larger falls for poorer households are associated with their greater reliance on self-employment and being in sectors such as construction, retail, transport and hotels and restaurants, which are the most affected by the economic shock and the restrictions imposed to curve the pandemic. As a result of these income losses, poverty rises by 10 percentage points from the baseline when measured with the consumption aggregate and by a similar magnitude when measured



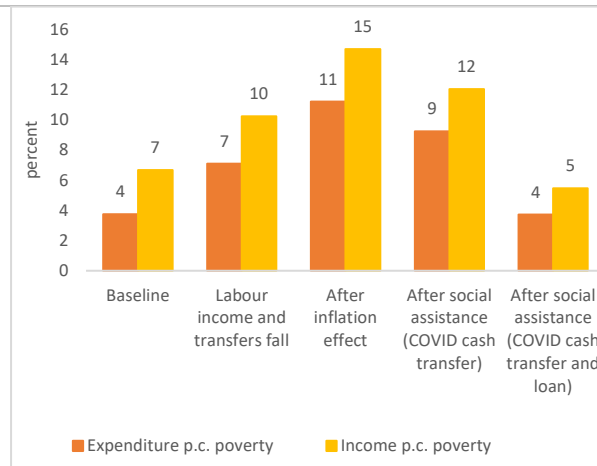
with the income aggregate (Figure 5). Since the mode of the welfare distribution is close to the poverty line (Figure 8 in the Appendix), the poverty gap also rises significantly (Figure 6), from 7 to 11 percentage points as a result of the income shock. Inequality, measured by the Gini index, rises by 2 points (Figure 7).



The fall in incomes through the pandemic is exacerbated by high inflation. Because inflation reduces how much households can afford with a given income, accounting for the rise in the cost of living further increases poverty: by 11 percentage points in the case of the consumption poverty measure and by 9 points using the income poverty measure. The 2020 inflation does not alter inequality, but this is because the gaps in purchasing power emerged earlier (in late 2018/early 2019) and did not change much in 2020.<sup>19</sup>

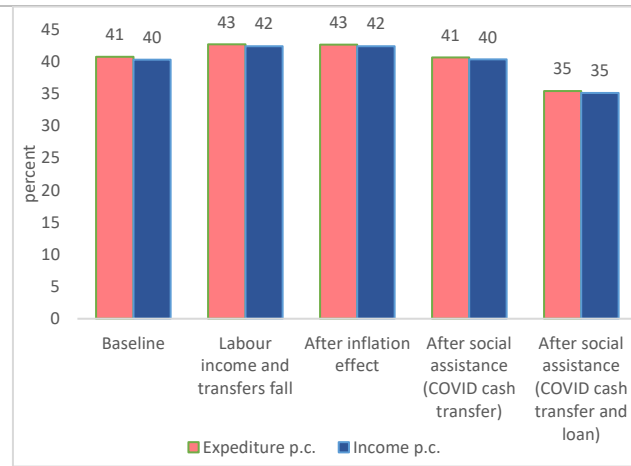
<sup>19</sup> For instance, the ratio in the price indices of the groups with the lowest and highest inflation were 1.09 in January and 1.12 in October 2020, respectively.

Figure 6. Simulated poverty impacts. Poverty gap at USD 5.5 2011 PPP



Source: Authors' calculations based on HEIS 2018/19.

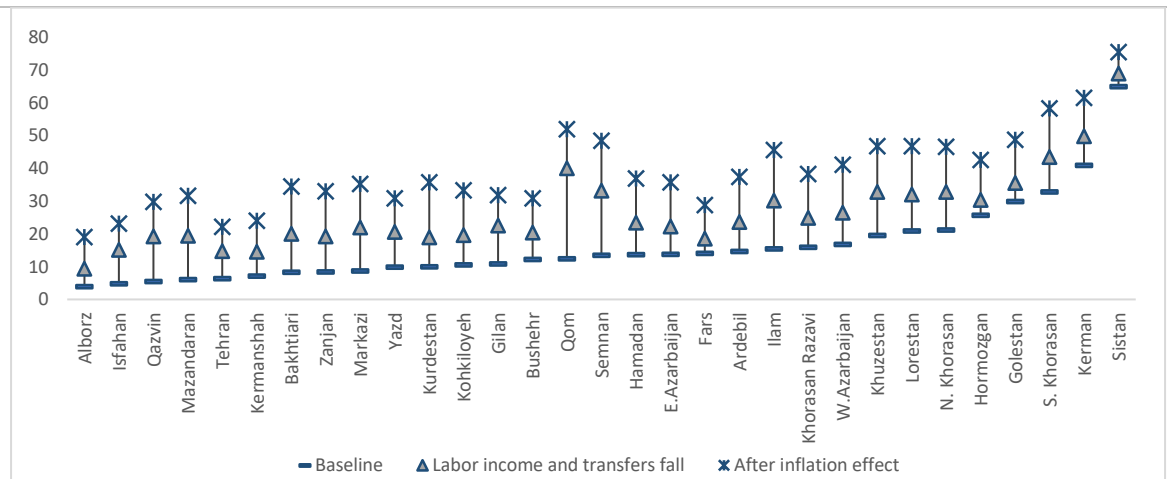
Figure 7. Simulated inequality impacts. Gini index



Source: Authors' calculations based on HEIS 2018/19.

There is considerable geographic variation in the impacts (Figure 8). The increase in poverty in provinces such as Qom and Semnan happens primarily because of the fall in incomes, but, especially in the provinces with higher baseline poverty rates, the inflation effect is the dominant one. This is consistent with the fact that poorer households spend more on food and other goods that had higher inflation.

Figure 8. Simulated poverty impacts by province. Headcount poverty rates at USD 5.5 2011 PPP



Source: Authors' calculations based on HEIS 2018/19.

Despite a tight fiscal space, the Government of the Islamic Republic of Iran adopted a series of measures to mitigate the negative impacts of the shocks. Two social assistance measures have been adopted so far to respond to the crisis: a cash transfer to 3 million poor households<sup>20</sup> without a formal income

<sup>20</sup> Distributed in four rounds between April and June 2020.

before the pandemic, and a low or no-interest loan to about 21 million households across the country.<sup>21</sup> These responses are simulated to assess their potential impact (Table 3). Despite being a relatively small program, the first measure can mitigate about 6 percentage points or about a third of the increase in consumption poverty because of its narrower targeting at the bottom of the distribution.<sup>22</sup> The consumption loan adds 13 percentage points of mitigation, bringing poverty closer to the pre-COVID baseline. Since the loan is intended to be repaid as lower future subsidy reform cash handouts, its mitigation impact might be somewhat reversed if the crisis is prolonged.

*Table 3. COVID-19 social assistance response scenarios*

Social assistance	Scenario Parameters	
	Recipient allocation in survey	Amount (IRR per household/ year)
COVID cash transfer (4 rounds)	Approx. 3 million households without formal wage, pension or property income and in the bottom 7 deciles of the household consumption distribution.	IRR 2 million plus IRR 1 million for each additional household member up to IRR 6 million for households with 5 or more members.
Consumption loan	Approx. 21 million households receiving existing social assistance transfers excluding those in the top decile of the household consumption distribution.	IRR 10 million. No interest repayments.

## V. Conclusion

The Islamic Republic of Iran has been hit hard by the COVID-19 pandemic, claiming so far more than 49,000 lives and more than one million people contracting the virus (as of December 2020). In the context of economic contraction and high inflation, the economic consequences for households have been severe. In this paper the impact on household welfare and poverty is estimated using household survey data and a micro-simulation approach.

The analysis is based on simulating scenarios, whereby household incomes, primarily employment incomes, are shocked depending on the source, sector and type of work (formal/informal). Households in the poorest half of the welfare distribution, who mostly work in sectors highly affected by the pandemic, have the highest resulting fall in incomes. These losses increase poverty by 10 percentage points and inequality by 2 points. The Islamic Republic of Iran is also experiencing high inflation associated with the sharp fall in the currency value. Although inflation has been widespread, and

<sup>21</sup> The loan was available for households who were receiving the existing energy subsidy reform compensation transfer. Of the eligible households, about 21 million households applied for it.

<sup>22</sup> It can mitigate almost a fifth of the increase in income poverty.

depending on their baseline consumption patterns, some households have experienced larger rises in their living costs. For instance, the cost of the consumption basket rose by 2.5 times in the Tehran metropolitan area and by 2.8 times in the provinces of rural Zagros. Inflation reduces how much households can afford for a level of income. Incorporating these welfare effects into the micro-simulation, the depreciation in the real value of the household consumption basket is found to increase poverty by another 11 percentage points.

Even if in the long-run these impacts are mitigated by households finding ways to cope and adjusting their employment, production and consumption patterns, it is relevant for policy to analyze the short-run impacts, especially of such large shock, to identify those in greatest need and better target resources to prevent hard-to-escape poverty traps. The analysis estimates the potential effect of two social assistance mitigation measures adopted by the Government of the Islamic Republic of Iran. A cash transfer aimed at informal poor workers can mitigate about a third of the increase in consumption poverty; a broader targeted consumption loan has potentially larger mitigating effect on poverty, but at a higher fiscal cost.

As the COVID-19 pandemic continues to unfold in a harsh economic environment, protecting households from further deterioration of their economic well-being is paramount. In late November 2020, the parliament approved an additional, broadly targeted social assistance transfer to further help mitigate the economic impact of the pandemic on households. At an estimated cost of IRR 300 trillion (USD 7.1 billion), it is intended to reach 60 million Iranians. These mitigation measures will further help to offset the strain on household incomes, but as happened with previous cash transfers in the Islamic Republic of Iran (Hayati et al. 2018), the strength of social assistance measures to halt the poverty increase will be limited if cost of living increases deteriorate the real value of the transfers.

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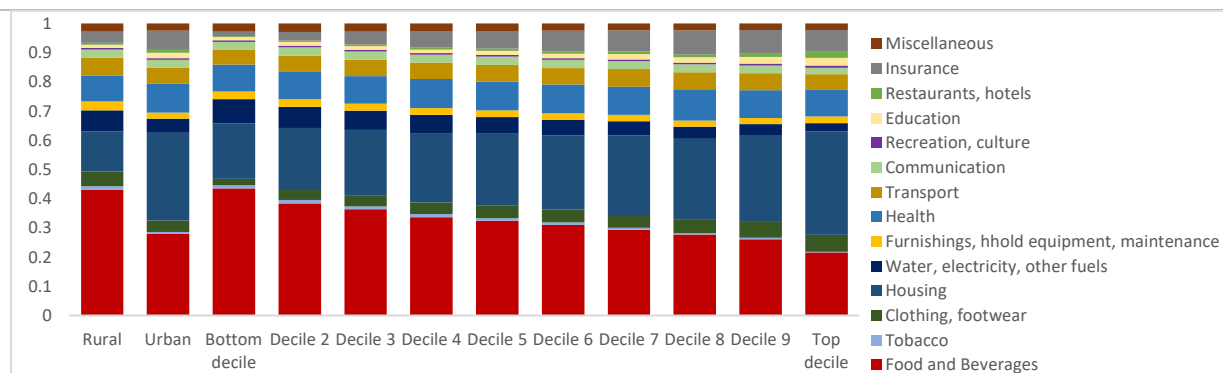
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## VI. Appendix

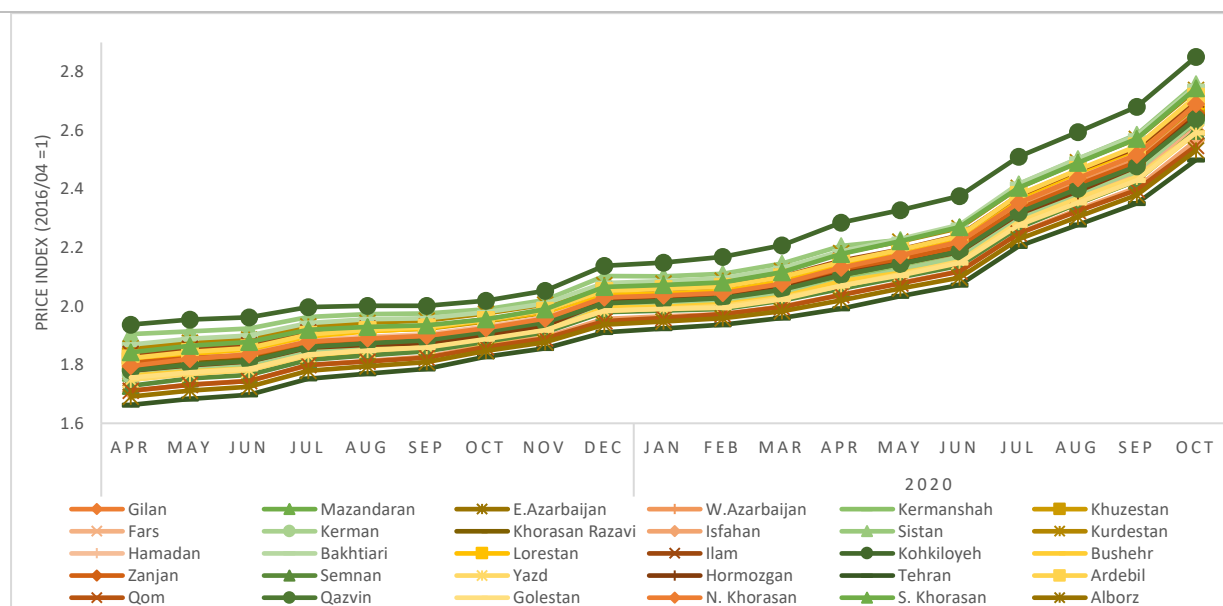
Figure 9. Expenditure shares including health by type of goods and services (%). By Rural/Urban and welfare decile



Source: Authors' calculations based on HEIS 2016/17.

Notes: Deciles based on consumption per capita in the base period.

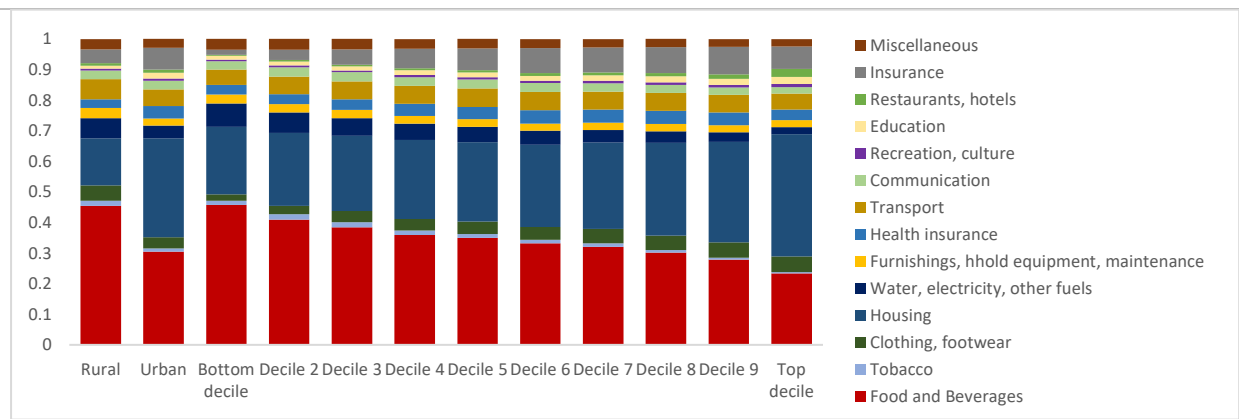
Figure 10. Group-specific price index (April 2016=1) by province.



Source: Authors' calculations based on HEIS 2016/17 and CPI from SCI.



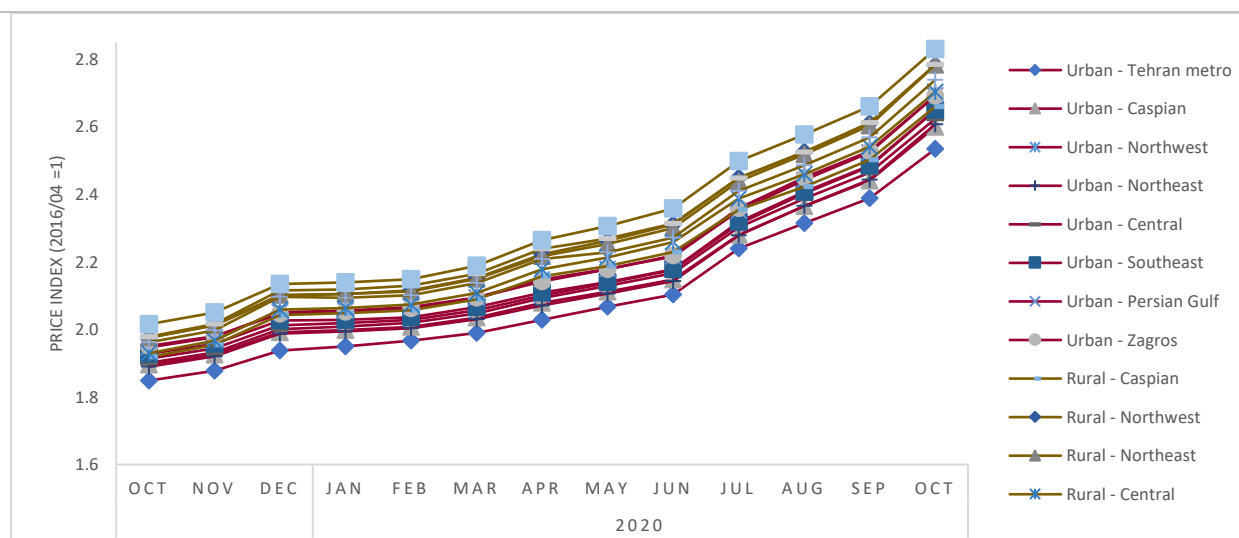
Figure 11. Expenditure shares in end line period by type of goods and services (%). By Rural/Urban and welfare decile



Source: Authors' calculations based on HEIS 2018/19.

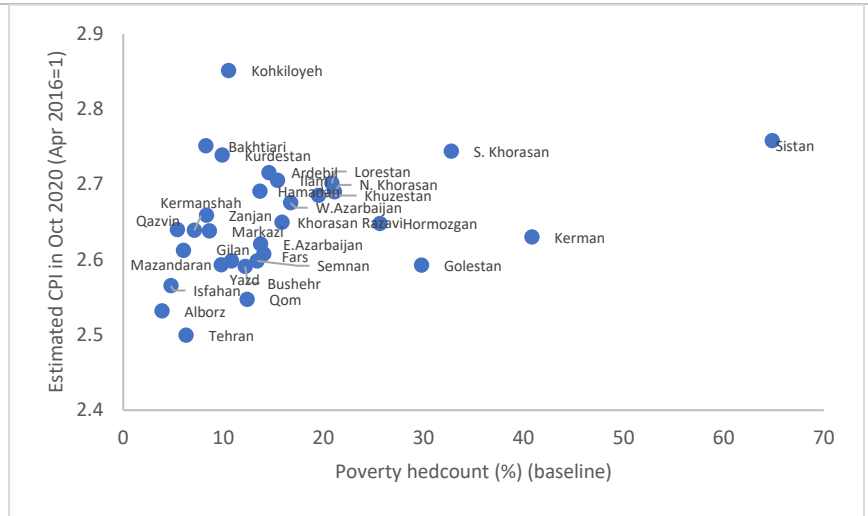
Notes: Deciles based on consumption per capita in the end line period.

Figure 12. Group-specific price index (April 2016=1) by region and rural/urban with substitution effects



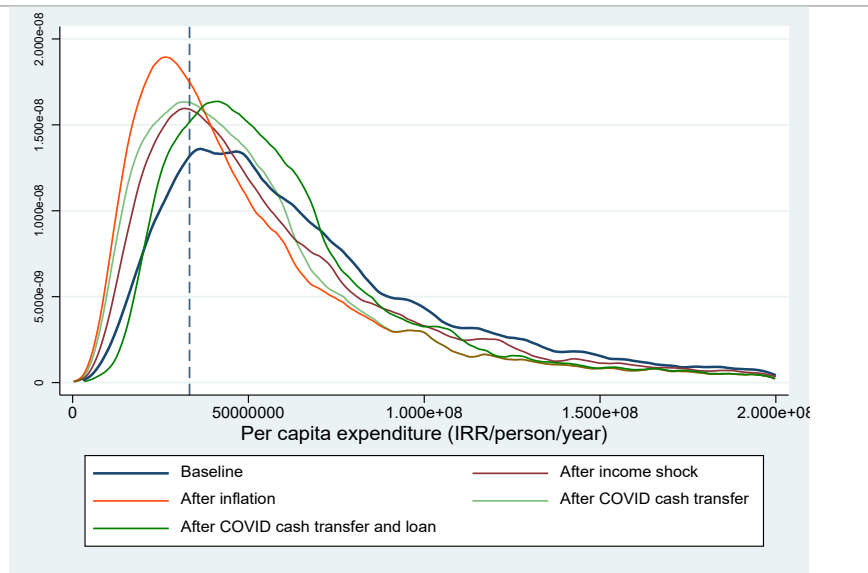
Source: Authors' calculations based on HEIS 2018/19 and CPI from SCI.

Figure 13. Province baseline poverty rates and price index by October 2020 (April 2016=1).



Source: Authors' calculations based on HEIS 2016/17, 2018/19 and CPI from SCI.  
 Notes: Poverty headcount based on consumption per capita (PPP)

Figure 14. Welfare distributions before and after the shocks and mitigation measures



Source: Authors' calculations based on HEIS 2018/19.