The distributional impact of inflation in Ethiopia

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- High inflation is currently one of Ethiopia's biggest policy concerns, with the general rate of inflation at 33.6% in February 2022.
- An analysis of inflation using price indices computed across three income groups for the period 2016-2022 has shown that periods of high inflation in Ethiopia are mainly skewed by the high rate of inflation in food prices. This means that households who spend a larger proportion of their income on food are affected more severely than households who allocate a larger portion of their income on non-food items.
- With such disparities in the share of food consumption expenditure between income groups, a rise in food inflation is expected to affect poor households more adversely than rich households.
- The study also identified that price rises in only few commodities accounted for most of the headline inflation. Bread and cereals, oils and fats, vegetables, and spices accounted for 87% of food inflation and 64% of the headline inflation in the low-income group in 2021.
- This policy brief highlights that consumption subsidies, support to production, and other policy interventions to deal with major supply bottlenecks need to assess the varied impact inflation has across different income groups.

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Overview of the research

Price indices have been constructed across income groups using the 2016 Ethiopian Household Income, Consumption and Expenditure (HICE) survey data to estimate consumption weights. The income groups are categorised into three clusters based on the level of consumption where the bottom 20% of households are labelled low-income group, the middle 60% constitute the middle-income group, and the upper 20% form the high-income group.

Analysis of inflation using price indices computed across the three income groups for the period 2016 – 2022 has shown that high food inflation affected households in the low-income group more adversely than households in both the middle and high-income groups. Households in the low-income group experienced a 7 to 9 percentage point difference in headline inflation above the inflation experienced by high income group during periods of high rate of food inflation between 2020 and 2022 in the country.

Such differences in inflation rates among income groups are mainly attributed to a proportionally higher share of food consumption in the total household consumption expenditure of low-income groups compared to the share of food consumption in the total consumption expenditure of households in the high-income group.

The study also revealed that price rises in only few commodities accounted for the majority of headline inflation. Price rise in food items such as bread and cereals, oils and fats, vegetables, and spices accounted for 87 percent of food inflation and 64 percent of the headline inflation in the low-income groups in 2021. Such patterns are not different across the middle-income groups.

It has also been found that households in the low-income group have less potential to drive high inflation due to their limited effective demand. The share of food consumption expenditure by low-income group in the total national income group is only 13.2%.

Policymakers may find it useful to consider the distributional aspects of inflation across household income groups in its interventions in the form of stabilisation policies to curb high inflationary pressure. Regular reports on CPI by concerned government agencies may also include indices by relevant income groups. Since distributional aspects of inflation are expected to vary across regions in the country, future studies may consider such variations. While price hikes appeared to have been limited to few commodities as evidenced by this study, the structural drivers that emanate from the demand as well as supply side need to be further investigated.

Introduction

High inflation in Ethiopia is currently one of the biggest policy concerns and has had a notable impact on households since mid- 2000s. Following the highest rate of inflation recorded in recent memory in 2008, the period between 2013 and 2017 was characterised by a single digit non-accelerating rate of inflation. The rise in non-food prices that was observed in 2018 was further strengthened by the upsurge in food prices the following years. Food and non-food inflation rates in February 2022 reached 41.9% and 22.9% respectively, amounting to a general rate of inflation of 33.6%. With domestic and global incidences mostly affecting the supply of goods, there is good reason to believe that prices in Ethiopia may continue to rise at higher rates. Leaving aside the debate on the potential of such upsurge in the general price level to derail economic growth in the country, even a modest rise in prices deserves to be a policy concern on two grounds.

First, such rates are high enough to cause welfare loss among consumers. Secondly, the price levels that have been accumulated for almost 17 years is believed to have forced households spend much of their income on basic items such as food.

An important consequence of rising inflation is its redistribution effects on consumers. Non-food inflation in Ethiopia is relatively stable and usually lower than that of food inflation. In contrast, periods of high inflation in Ethiopia are mainly associated with a high rate of inflation in food prices. This may imply that inflation impacts households who spend a larger proportion of their income on food more severely than households who allot a larger portion of their income on on-food items. The report by the Central Statistical Services (CSS) of Ethiopia of the consumer price index (CPI) is based on the aggregate share of commodities in the total consumption expenditure as a weight. Based on the 2016 Ethiopian Household Income, Consumption and Expenditure (HICE) survey, the share of households' expenditure on food and non-alcoholic beverages out of their total expenditure is estimated to have been 53.5%. In the capital, Addis Ababa, household expenditure on food and non-alcoholic beverages is estimated to have accounted for 43.2% of their total consumption expenditure. A CPI that is constructed based on such aggregate shares has limitations in representing different groups among consumers and hence limits appropriate policy interventions.

Most often, traditional consumer price indices (CPI) are used to measure the change in expenditures required by a household to purchase a fixed weight basket of goods and services following changes in relative prices. This in a sense represents cost of goods index (COGI). The traditional CPI or the COGI is plutocratic index in the sense that the weight of each consumer's consumption

pattern in the overall index is proportional to that specific consumer's total consumption expenditure. This approach gives more weight to the prices paid by the rich than the prices paid by the poor. It is generally expected that there is heterogeneity in the purchasing patterns of consumers with consequences on the construction of price indexes. Such heterogeneity in purchasing pattern of households might be caused by idiosyncratic behaviours of households such as taste or emanates from differences among households in income, demographic characteristics, and geographic locations. Thus, rates of inflation can significantly vary among households across such heterogeneity groups (National Resource Council, 2002).

In principle a democratic price index can be constructed as an alternative to the plutocratic price index. In this case, individual cost- of- living indexes that are constructed for a representative sample of the population are averaged with equal weight regardless of the magnitude of their total consumption expenditure. While such an approach requires detailed information on consumers' transactions, middle ground price indexes can be estimated across income groups.

Key findings

In an economic environment where households face similar prices for similar consumer goods and services, some household groups may still bear the brunt of high prices more disproportionately than other groups in the form of high inflation measured by group specific consumer price indices. This occurs when prices of commodities on which a segment of consumer households spend a larger proportion of their income rise by higher margins than prices of other commodities. In such a case, inflation compromises the welfare of those segments of households disproportionately by consuming into a larger proportion of their income compared to other groups.

In this study, it has been found that food consumption expenditure accounts for 65.2% of the total consumption expenditure of the bottom 20% of households by level of income (low-income group) in Ethiopia. In contrast, the share of food consumption expenditure among the upper 20% of households (high-income group) is 45.4%. The share of food consumption expenditure for the middle-income group (the middle 60%) is estimated at 56.2%. The CSS estimate for the national average of share of food consumption expenditure in the total consumption expenditure based on the 2016 HICE survey is 53.5%. With such disparities in the share of food consumption expenditure between income groups, a rise in food inflation is expected to affect poor households more adversely than rich households.

Since 2019, food inflation measured by a month-to-month annualised rate has exceeded non-food inflation. Food inflation for all income groups averaged 23.2%, 31.3%, and 40.9% in 2020, 2021, and during the first two months of 2022, respectively. Non-food inflation was lower than the food inflation by a margin of about 6, 10, and 16 percentage points during similar periods. As expected, the rates of headline inflation for the low and middle-income groups were faster than the rates in the high-income group. Headline inflation in the low-income group accelerated from 13.4% in 2018 to 34% in 2021 and further to 46.4% in the first two months of 2022. Similarly, headline inflation in the high-income group accelerated from 12.9% to 31.2% and 39.8% during similar periods [See Table 1]. This exhibits a disproportionate rise in inflation between the low and high-income groups to the disadvantage of low-income groups largely due to, but not limited to, the high share of food consumption expenditure in the total consumption expenditure among low-income households compared to that of high-income households.

> **The share of food consumption expenditure in the total household consumption expenditure was 65.2% for low-income, 56.2% for middle-income, 45.4% for high-income and 53.5% for all groups.**

Table 1: Rate of inflation by income group (per cent)

	Inflation rate	2018	2019	2020	2021	2022 Jan - Feb
Income group						
All groups	Headline	13.9	15.7	20.4	26.5	34.0
	Food	12.6	18.8	23.2	31.3	40.9
	Non-food	15.6	12.2	17.0	20.3	25.1
Lower 20%	Headline	14.6	16.4	21.3	30.1	40.5
	Food	13.4	19.5	23.6	34.0	46.4
	Non-food	17.1	10.3	16.6	21.5	27.6
Middle 60%	Headline	13.6	15.6	20.7	30.7	38.7
	Food	12.7	19.5	23.3	36.0	46.4
	Non-food	15.0	10.4	17.1	22.5	27.0
Upper 20%	Headline	14.4	15.6	19.9	25.6	33.2
	Food	12.9	20.0	24.1	31.2	39.8
	Non-food	15.8	11.8	16.2	20.1	26.7

Sources: Authors' computations using data from CSS.

The faster rate of food inflation compared to non-food inflation led to a difference in inflation rates between income groups to the disadvantage of not only low-income groups but also against middle income groups. The difference between headline inflations that were observed in middle and high-income groups

averaged to 5.1, and 5.6 percentage points in 2020, and the first two months of 2022 against the middle-income group. During similar period, the difference between headline inflations of low and high-income groups were, on average, 4.5 and 7.3 percentage points disfavouring low-income groups (see Table 2). At times, such differences in headline inflation reach as high as 9 percentage points (see Figure 2).

The first seemingly obvious reason for such differences in general (headline) inflation among income groups accrues to differences between income groups in their share of consumption expenditure on food vis-à-vis non-food items. Nevertheless, there are two other factors reflected in the difference in headline inflation between groups which may reinforce or lessen the impact of high food inflation through differed shares of food consumption expenditure. In one of the two cases, poor and rich households tend to have different shares of consumption expenditure on some of food items over the others. For instance, the share of consumption expenditure on bread and cereals accounts for 37%, and 30% of the total food expenditure for low and high-income groups, respectively. In contrast, the share of meat consumption expenditure in the total food expenditure of low and high-income groups was 0.23%, and 17.4%, respectively. Similar differences between income groups within non-food items constitute the second factor that contributes to the difference in headline inflation. To sum up, differences between income groups in headline inflation can be decomposed into a difference in the share of consumption expenditure between income groups on (1) food items vis-à-vis non-food items, (2) some food items vis-à-vis other food items, and (3) some non-food items vis-à-vis other non-food items.[1]

[1]The difference in inflation between two income groups *i* and *j* for two periods where one of the periods is a base year can be decomposed into the three sources of variations according to:

$$\Delta\pi_{i,j} = \left[(\alpha - \beta)(\pi_{if} - \pi_{in})\right] + \beta\Delta\pi_{i,jf} + (1 - \beta)\Delta\pi_{i,jn}$$

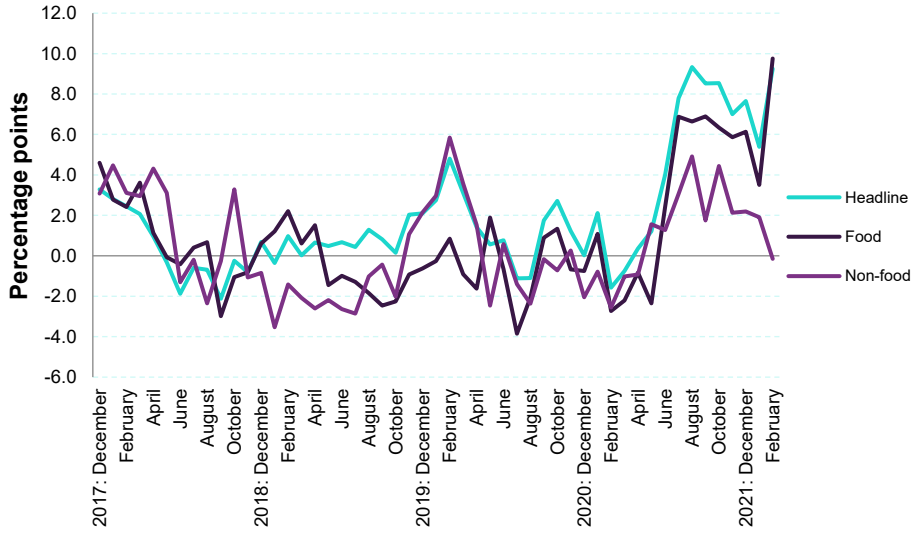
where α and β are the shares of food consumption expenditure in the i^{th} and j^{th} groups, respectively, π_{if} and π_{in} are food inflation and non- food inflation in the i^{th} income group, $\Delta\pi_{i,jf}$ = difference in food inflation between the i^{th} and j^{th} income groups, and $\Delta\pi_{i,jn}$ = difference in non-food inflation between the i^{th} and j^{th} income groups. The term in the square bracket measures the difference in inflation between the i^{th} and j^{th} income groups due to differences in the share of food consumption expenditure compared to expenditure on non-food items. The second and third terms measure differences in inflation between two income groups due to difference in the share of consumption expenditure within food items, and within non-food items, respectively. Precise estimation of the components for more than two periods requires adjustment for base variations. [See the report for the detailed derivation].

Table 2: Differences between inflations of different income groups

	Differences in:	2018	2019	2020	2021	2022 Jan - Feb
Lower 20% versus Middle 60%	**Headline inflation**	**1.0**	**0.8**	**0.6**	**-0.6**	**1.8**
	Due to differences in weight:					
	Between food and non-food items	-0.3	0.8	0.6	1.1	1.7
	Between food items	0.4	0.0	0.2	-1.1	0.0
	Between non-food items	0.9	0.0	-0.2	-0.4	0.2
Middle 60% versus Upper 20%	**Headline inflation**	**-0.8**	**0.0**	**0.8**	**5.1**	**5.6**
	Due to differences in weight:					
	Between food and non-food items	-0.2	0.9	0.6	1.4	2.0
	Between food items	-0.1	-0.2	-0.4	2.2	3.1
	Between non-food items	-0.4	-0.8	0.5	1.2	0.2
Lower 20% versus upper 20%	**Headline inflation**	**0.2**	**0.8**	**1.4**	**4.5**	**7.3**
	Due to differences in weight: Between food and non-food items	-0.7	1.8	1.3	2.4	3.6
	Between food items	0.2	-0.2	-0.2	1.3	3.1
	Between non-food items	0.7	-0.8	0.3	0.7	0.5

Sources: Authors' computations using data from CSS.

Figure 1: Trends of differences in inflation between the low- and high-income groups

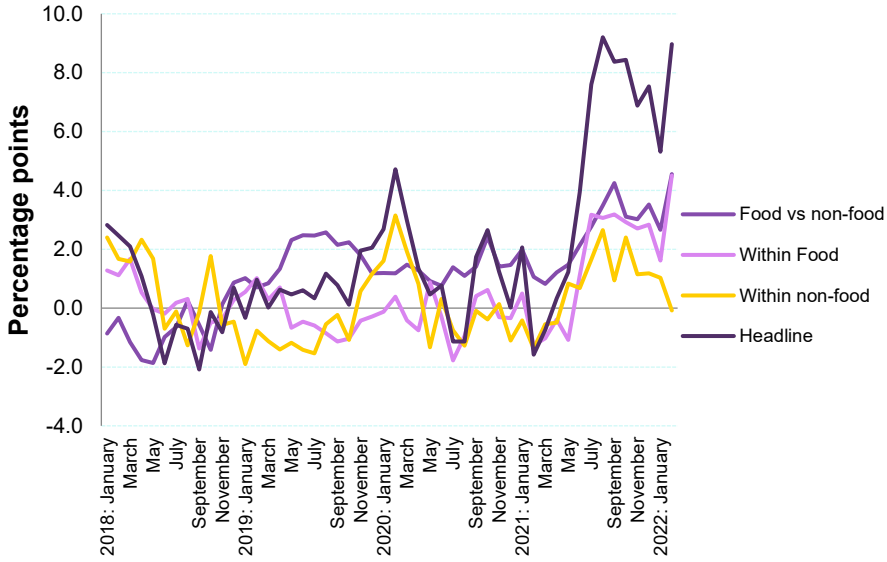


Source: Authors' computations using data from CSS.

Differences in headline inflation between the lower and high-income groups were mainly explained by differences between the two income groups in their share of food consumption expenditure in comparision to non-food consumption expenditure (See Table 2). In 2021, out of the 4.5 percentage point difference in headline inflation observed between low- and high-income groups, 2.4 percentage points or about 53% of the difference was explained by the difference

in the share of food expenditure among income groups. The contributions of differenes in shares within food items and non-food items were 1.3 and 0.7 percentage points, respectively. This implies that at least for the kind of inflation observed over the last three years, prices were relatively higher for food items in general, for food items on which low-income groups spend most of their income, and for non-food items on which low-income households spend more proportionally than high-income households (see Table 2 and Figure 2).

Figure 2: Difference in headline inflation between low- and high-income groups by components



Source: Authors' computations using data from CSS.

> **Price rise in food items such as bread and cereals, oils and fats, vegetables, food products (mainly spices), and non-alcoholic beverages accounted for 95% of food inflation and 70% of the headline inflation in the low-income group.**

Another finding of this study is that price rises in only few commodities accounted for the major part of headline inflation. Price rise in food items such as bread and cereals, oils and fats, vegetables, food products mainly spices, and non-alcoholic beverages accounted for 95% of food inflation and 70% of the headline inflation in the low-income groups in 2021. These food items accounted for 60% of the total consumption expenditure among the low-income group. Housing, furniture and equipment, electricity, gas, and other fuels are items that contributed to the high rate of inflation in this income group.

Such patterns are not different across the middle-income group and only slightly different in the high-income groups. Unlike the low and middle-income groups, meat accounted for 2.7 percentage points of the headline inflation in the high-income groups. Other two category items which contributed to the headline inflation by more than 2 percentage points in the high-income group are furnishings, household equipment, and restaurants and hotels. (see Table 3).

Table 3: Major commodity items with high inflation rates (weighted inflation) by income group

	Weight	Weighted inflation (per cent)				
		2018	2019	2020	2021	2022 Jan-Feb.
	Lower 20%					
Headline	1.00	14.6	16.4	21.3	30.1	40.5
Food and non-alcoholic beverages	0.65	8.8	12.8	15.4	22.2	30.3
Bread and Cereals	0.24	4.6	5.2	5.9	10.3	12.3
Oils and fats	0.04	-0.1	0.3	0.7	2.9	4.7
Vegetables/Pulses	0.17	2.0	4.4	3.3	3.6	4.3
Food products/Spices	0.10	1.09	1.7	3.7	2.4	4.4
Non-alcoholic beverages and coffee	0.05	0.49	0.2	1.3	1.9	3.5
Non-food	0.35	5.9	3.6	5.8	7.4	9.6
Housing, water, electricity, and fuels	0.17	2.8	1.7	3.2	2.7	3.4
	Middle 60%					
Headline	1.00	12.7	13.9	19.0	27.1	35.4
Food and non-alcoholic beverages	0.56	6.9	10.4	12.0	17.9	23.8
Bread and Cereals	0.19	2.9	3.7	4.5	7.1	9.1
Oils and fats (ND)	0.05	-0.3	0.4	0.7	3.0	4.0
Vegetables/Pulses	0.15	1.6	3.9	3.2	2.6	3.4
Food products/Spices	0.06	0.8	0.4	1.8	2.5	3.2
Non-Alcoholic Beverages and coffee	0.04	0.5	0.0	1.1	1.5	2.6
Non-food	0.44	5.7	3.2	6.9	8.6	11.0
Housing, water, electricity, and fuels	0.18	3.4	0.1	3.7	2.9	3.4
	Upper 20%					
Headline	1.00	14.4	15.6	19.9	25.6	33.2
Food and alcoholic beverages	0.46	6.0	9.3	11.1	14.4	18.4
Bread and Cereals	0.14	2.1	3.0	3.8	4.4	4.5
Meat	0.08	1.5	1.7	1.4	2.0	2.7
Oils and fats	0.0	-0.1	0.4	0.7	2.7	3.8
Vegetables/Pulses	0.1	0.8	3.1	2.3	1.0	2.3
Food products/Spices	0.04	1.0	0.3	1.7	2.7	2.5
Non-food	0.54	8.5	6.4	8.7	10.8	14.4
Housing, water, electricity, and fuels	0.14	2.8	1.5	2.9	2.1	2.7
Furnishings and household eqpt.	0.06	1.3	0.8	0.4	1.7	2.4
Restaurants and hotels	0.09	1.6	1.2	1.4	2.0	2.8

Source: Authors' computations using data from CSS.

Low-income households have less potential to drive high inflation due to their limited effective demand. The low-income group accounted for only 13.2% of the total national level food consumption expenditure.

Particularly important for policy in dealing with inflation in the nature of what has been observed since 2019 is that prices on bread and cereal category item accounted for more than a third, more than a quarter, and a sixth of the headline inflation in the low, middle, and high-income groups, respectively. Bread and cereals, oils and fats, pulses, and spices category items jointly accounted for 64%, 56%, and 40% of headline inflation in low-, middle-, and high-income groups. This shows that high inflation is impacting low and to some extent middle income households against their basic needs more so than households in the high-income group.

Lastly, the study revealed that low-income households had less potential to drive the high inflation the adverse effect of which they had to bear. The food consumption expenditure by household in low-income group accounted for only 13.2% of the total national level food consumption expenditure while the share of that of the middle and high-income groups were 61.3%, and 25.6%, respectively. Similarly, expenditures on non-food items by low-income households stood at 11% of the total household consumption expenditure on non-food items in contrast to middle income and high-income groups which accounted for 56%, and 36% of the total expenditure on non-food items.

Policy recommendations

Policy interventions need to assess the varied impact that inflation has across income groups. Consumption subsidies, support to production, and policy interventions to deal with major supply bottlenecks need to prioritise vulnerable income groups.

The fact that the varied level of impact of inflation on different income groups varies from time to time depending on the change in price of a particular commodity over the other implies that a perpetual report of price indexes by income group are needed to supplement the plutocratic index.

While price hikes appeared to have been limited to few commodities as evidenced by this study, the structural drivers that emanate from the demand as well as supply side need to be assessed. The stubborn nature of inflation in Ethiopia may be tempting to hypothesise that inflation in Ethiopia is primarily driven by demand side factors. Nevertheless, the underlying domestic and global conditions and the fact that Ethiopia's economy operates far below its potential by global standards justify the need to consider supply-side aspects of sources of inflation. In particular, further studies on sources of inflation in Ethiopia may give greater emphasis to supply-side issues as well unlike in the previous periods of high inflation episodes where demand-side issues were the primary focus of investigation. Impact of inflation may also have geographic dimensions. Further studies and data collection may focus on such dimensions of impact of inflation.

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