

Gendered Impacts of COVID-19 on Income, Coping Strategies and Food Stockpiling: The Case of Ethiopia

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Gendered Impacts of COVID-19 on Income, Coping Strategies and Food Stockpiling: The Case of Ethiopia

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List of abbreviations and acronyms

COVID-19	Corona Virus Disease 2019
ESSP	Ethiopia Strategy Support Programme
EFSR	Emergency Food Security Reserve
ESA	Eastern and Southern Africa
GDP	Gross Domestic Product
ILO	International Labour Organization
IMF	International Monetary Fund
PM	Prime Minister
PSNP	Productive Safety Net Programmes
SNNP	Southern Nations, Nationalities, and Peoples
SoE	State of Emergency
USAID	United States Agency for International Development

Abstract

The novel coronavirus pandemic emerged since late 2019 and continues to spread rapidly throughout the globe. In Ethiopia, the first Coronavirus case was reported on March 13, 2020, and the number of cases has continued to increase afterwards. A covariate shock like COVID-19 influence livelihoods in general and income of various segments of the population in particular. This study examines heterogeneous impacts of COVID-19 on households' income, households' coping strategies and consumers' food stockpiling behavior using gender differentiated approach and taking Ethiopia as a case. Data from two-round phone surveys of individuals was used. In the first round of the survey, 1,037 respondents were interviewed from April 2020 in urban and rural areas of Ethiopia. A follow-up telephone survey was conducted in October 2021 on a sub-set of sampled respondents from the first round of the survey. In the second round telephone survey, 453 interviews were conducted urban and peri-urban areas of Ethiopia.

Findings from the study indicated that COVID-19 and its containment measures have substantially impacted income of male-headed households compared to female-headed households. About 50% and 44% of male-headed and female-headed households, respectively, were affected by income reduction induced by the COVID-19 pandemic. Both male and female respondents reported saving as the most commonly used coping strategy against income decline due to the COVID-19 pandemic. However, a lower percentage of females used savings as the primary coping strategy than males. This result could be strongly linked with the existing gender disparity in financial inclusion in Ethiopia. In addition, variations are observed across male and female respondents. About 25% of male-headed and female-headed households have stockpiled food items since the release of the news about the COVID-19 pandemic. Moreover, the pandemic has widened the difference in hours spent on reproductive and domestic activities among male-headed and female-headed households. While the number of hours spent per day on reproductive activities for men increased only from 1.63 before the pandemic to 1.8 during the pandemic, for women, the reported increase is from 3.8 to 4.4 hours per day. This is a significant increase for women respondents as compared to men respondents. Hence, it is important to initiate revolutionary change for equality by addressing issues related to reproductive and domestic activities, such as, monetization and recognition of these activities. It is evident that, in the home, women perform the bulk of reproductive activities (e.g., childcare and caring for the sick) and domestic activities (e.g., house cleaning and cooking). Although these jobs are unpaid and invisible, they are fundamental aspects of daily life in particular and the entire economy in general.

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1. Introduction

The COVID-19 pandemic is an international shock that affects, not only the global economy, but also the livelihood of households and individuals in developed and developing countries alike. The rapidly evolving nature of the pandemic and subsequent preventive measures, such as movement restrictions, influences livelihoods in general and income of various segments of the population in particular. A covariate shock like COVID-19 will especially adversely affect poor households and individuals by pushing some households below the poverty line and further diminishing the living standards of already poor households. Forecast estimates show that COVID-19 is likely to cause the first increase in global poverty since 1998, and that it pushes about 40-60 million people into extreme poverty (Mahler et al., 2020). This is especially relevant in developing countries like Ethiopia, where a sizeable portion of the population is clustered around the poverty line (Bundervoet & Finn, 2020). The World Bank estimates that growth in Ethiopia would be four percentage points lower than the pre COVID-19 forecast (Dione, 2020). It also reduced households' employment and incomes with female-headed households being hit harder (Dione, 2020). This is particularly true for young women who are more likely to be engaged in informal or low-wage activities such as petty trading, daily wage labour and domestic work (United States Agency for International Development [USAID], 2020)

Even though studies that assess the economic implications of COVID-19 pandemic in Ethiopia are emerging (Geda, 2020; Goshu et al., 2020; Omer & Hassen, 2020), these studies mostly consider macro-level effects. As a result, it is difficult, using the findings of these macro-level studies, to better understand the effects of and responses to the COVID-19 pandemic on households' welfare (such as employment and income), and thereby design and implement appropriate policy interventions. It is also important to examine the heterogeneous impact of the pandemic, for example, on income of male- and female-headed households. It is evident that the COVID-19 pandemic has disproportionately affected women. For example, the UN Women's report, reveals that the COVID-19 shock and measures to prevent its spread are driving a disproportionate increase in women's unemployment (as compared to men) and also decreasing their overall working time (UN Women, 2020). Hence, this proposal aims to take a rather focused dimension on micro-implications of COVID-19 by examining the impact of the pandemic on income of various segments of the population (namely, salaried

workers, daily wage, and self-employed) particularly through a gender lens. This helps to provide a wider perspective on how the pandemic has affected the livelihood of males and females specifically and provide targeted policy recommendations.

In an effort to attenuate the negative effects of the COVID-19 pandemic (e.g., reduction in income), individuals may use various coping strategies. Some of these strategies include using own savings; borrowing; selling of productive assets and reduction in non-food and food expenditure, which may have implications for food security. Hence, this proposal aims to identify the most common coping strategies employed disaggregated by income sources and gender. This analysis can potentially help policy makers and governments to better tailor and implement interventions and policy responses and monitor their effects.

Studies are also showing that the continued rise in the spread of COVID-19 poses various challenges on food supply chains (Minten et al., 2020; Morton, 2020; Richards & Rickard, 2020) and brings about concerns of household food security (Harris et al., 2020). As a response to this, food stockpiling may be frequently observed where consumers buy unusually large amounts of food products to avoid possible future shortages or increased food prices. Food stockpiling could also be due to movement restrictions and consumers' concern to minimize movements (from home to markets). Hence, it will be critical to understand consumer food stockpiling behaviour in the face of the current COVID-19 pandemic in developing countries. However, there are no studies, to our knowledge, which systematically analysed the impact of the COVID-19 pandemic on the extent and trends of food stockpiling, and variations across males and females in Ethiopia. Hence, this proposal aims to measure the impact of the pandemic on food stockpiling in Ethiopia. It will also explore from a gender perspective by analysing whether there is a gender differentiated food stockpiling response to COVID-19.

2. Literature review, research gaps and research questions

In addition to its impact on education, health, and other public services, the COVID-19 pandemic has resulted in unprecedented shocks to the income and food security of households. It is evident that the pandemic has reduced economic activities and mobility, increased transaction costs, and lowered trading activities, which in turn disrupt resource allocations within countries and across sectors, increase inefficiency in the economy, and lower total productivity growth (see Bartik et al., 2020; Apedo-Amah et al., 2020). This impact, in turn, threatens the global progress in poverty reduction, inclusive growth, and shared prosperity achieved in recent decades. There is a growing body of literature revealing consistent findings with these situations. For example, using online survey data from 442 respondents, Kansime et al. (2021) examine the impact of the COVID-19 pandemic on household income and food security in Kenya and Uganda. The authors find that more than two-thirds of the respondents experienced income shocks associated with the COVID-19 crisis. Almeida et al. (2021) also analyse the impact of the COVID-19 pandemic on EU households' income and find that the pandemic has significantly reduced households' disposable income, with lower income households being more severely hit.

Studies show that Ethiopia is no exception with regard to the negative impact of the pandemic on households' income. For example, based on a high frequency household phone survey data, Wieser et al. (2020) show that, about 55% of the respondents report either a reduction (51%) or a total loss (4%) of income in Ethiopia. Abay et al. (2020) also finds that two-thirds of their respondents in Ethiopia reported that their incomes had fallen after the pandemic began, and almost half reported that their ability to satisfy their food needs had worsened. Similarly, Abate et al. (2020) show that more than two-thirds of the households indicated that their incomes were lower than expected, and 45% reported that they are extremely stressed about the situation. Using a pre-pandemic wealth index, the authors found that less-wealthy households were considerably more likely to report income losses and high stress levels than were wealthier households. Bundervoet and Finn (2020) state that the COVID-19 pandemic and its containment measures have stronger effects on urban residents since their livelihoods are more likely to be in sectors that are more adversely affected by social distancing policies and travel bans as these sectors are dominated by informal businesses such as small shops, roadside cafeterias, shoe-shiners and casual labourers.

Moreover, the COVID-19 pandemic forced countries to undertake strong containment measures including total and/or partial lockdowns and stay-at-home orders. These measures restricted mobility, livelihoods, gender equality and family support networks, leading to socioeconomic consequences, including major loss of income (Ragasa & Lambrecht, 2020) and disruption of agriculture activities such as farming, access to farm inputs and markets (Arndt et al., 2020) that have exacerbated food insecurity and related nutrition deficiencies (Naja & Hamadeh, 2020). Reductions in incomes and restrictions in access to food markets may lead to a decline in diversity of diet as well as shifts from high quality but more expensive items to cheaper substitutes (Abay et al., 2020).

Like the rest of the world, many African countries experience some form of food insecurity, particularly among poor households and remote or rural communities. For example, Chiwona-Karlton et al. (2021), using a probit model, find that concern about the local spread of COVID-19 and economic impact of the virus increases the probability of food insecurity in sub-Saharan Africa countries. Govender et al. (2021) state that, in Eastern and Southern Africa (ESA) countries that have been affected by COVID-19 pandemic, public health measures designed to control the spread of virus have reduced economic activities and severely deteriorated the livelihood of people. Many people in ESA are employed informally, have low-paid contract positions, or receive hourly wages. The containment measure of the pandemic such as sudden closure of formal and informal businesses has caused significant reduction in income for many people, with household food and health security being threatened.

Consistent with this evidence, using a difference-in-difference model, Amare et al. (2021) assess the implication of the COVID-19 pandemic on household food security and labour market participation outcomes in Nigeria. They found that households exposed to higher COVID-19 case rates or containment measures became more prone to food insecurity. They also show that the reduction in labour market participation is a potential channel through which the pandemic affects household's food security. More specifically, the authors find that lockdown measures are associated with a 6-15 percentage points increase in households' experience of food insecurity. Likewise, lockdown measures are associated with 12 percentage point reduction in the probability of participation in non-farm business activities. These lockdown measures have limited implications on wage-related activities and farming activities. In terms of food security, households relying on non-farm businesses, poorer households, and those living in remote and conflict-affected zones have experienced relatively larger deteriorations in food security.

Other studies show that households adopted various coping strategies to cushion the adverse income and food security effects of the COVID-19 crisis. Households who faced reduction in income due to COVID-19 pandemic may use their own savings or borrow to compensate for the income reduction due to unforeseen effects of a shock. However, in developing countries, where liquidity constraints are prevalent, saving and credit might not be sustainable coping strategies (Dercon, 2002). Moreover, formal insurance against shocks (for example health insurance) is minimal or practically

absent, making market-based coping strategies limited. Households could also use informal insurance arrangements (Skoufias & Quisumbing, 2005) and social capital (Carter & Maluccio, 2003) in coping with shocks. Other coping strategies in times of shock include increasing labour supply (Frankenberg et al., 2003) and shifting labour to more direct income generating activities (Kochar, 1999). However, these strategies may not be feasible in the context of COVID-19 pandemic, which imposes travel and movement restrictions. This displays the trade-off between prioritizing health issues and the related income loss and subsequent limitations on choice/use of various coping strategies.

Households may reduce their consumption to cope with the decline in income caused by the COVID-19 crisis. For example, using phone survey data in Ethiopia, Wieser et al. (2020) show that, reducing food and non-food consumption are one of the most relevant coping strategies adopted by households. They also argue that reducing food and non-food consumption could potentially affect the long-term health of household members. Furthermore, they show that coping strategies vary across income groups. There are slight differences in coping strategies among the poorer and richer households. Specifically, the bottom 40% are more likely to have done nothing (60%) while the top 60% are more likely to have relied on savings (25% compared to 12% of the bottom 40%).

Similarly, using cross-sectional surveys from urban and rural Bangladesh, Das et al. (2020) show that both rural and urban households who suffered from food insecurity adopted financial strategies, or both financial and reduction in food consumption as the most relevant coping strategies. Using longitudinal household survey data from Ethiopia, Malawi, Nigeria, and Uganda, Josephson et al. (2020) demonstrate that households adopted various coping strategies to minimize the negative impacts associated with the COVID-19 pandemic. They show that about 33 million households (i.e., around 56% of the household population across the four countries) have adopted some coping strategies, including living off of savings, selling assets, reducing food or non-food consumption, receiving help from family, and receiving government assistance.

Nguyen et al. (2021) use panel data from both face-to-face survey (2019) and phone survey (2020) in India and demonstrate that food-insecure households adopted various coping strategies, including reducing other essential non-food expenditures, borrowing money to buy food or selling jewellery to buy foods. Similarly, Niles et al. (2020) use population-level surveys in the US and document that respondents use “eating less” as the most relevant coping strategies since the outbreak of the COVID-19 pandemic.

Households may use food stockpiling as a coping strategy to maintain their food security. For example, Jafri et al. (2021) use a total of 1,075 adult participants from 82 countries and investigate the perceived effects of the COVID-19-induced lockdown measures on food availability, accessibility, dietary practices, and strategies adopted by respondents to cope with these measures. They find that 62.7% of the respondents

reported to have stockpiled food, mainly cereals and legumes and canned products. Kirk and Rifkin (2020) also state, in the US, the pandemic has caused a rush in stockpiling essentials that emptied groceries of several products including milk and meat.

Consumer behaviour and preferences are different in emergency or pandemic situations as compared to common scenarios (Kurihara et al., 2012; Wang et al., 2020). While few emerging studies assessed consumers' stockpiling during COVID-19 (Brizi & Biraglia 2021; Ben Hassen et al., 2020; Micalizzi et al., 2020; Omer & Hassen 2020; Wang et al., 2020; Yoshizaki et al., 2020), these studies focused on India and USA (Brizi & Biraglia 2021), Qatar (Ben Hassen et al., 2020) and Brazil (Yoshizaki et al., 2020), while experiences in other developing countries remain largely unexplored. For example, understanding the behaviour of consumers in relation to food stockpiling in the face of COVID-19 pandemic is useful to design a policy intervention that targets specific segments of the population that are significantly affected by the pandemic and at the same time that are not able to mitigate its effect by using food stockpiling. Specifically, these groups of the population will be vulnerable to food insecurity given their exposure to the pandemic and inability to mitigate the effect of the pandemic. Hence, it will be critical to understand consumer food stockpiling behaviour in the face of the current COVID-19 pandemic in developing countries using a gender disaggregated approach.

The pandemic has also exacerbated gender gaps in business earnings and employment. While women entrepreneurs face significant structural barriers in business start-up and operation, the COVID-19 pandemic intensified existing structural inequalities between men- and women-owned firms further. Moreover, evidence shows that females are disproportionately suffered (e.g., in terms of job losses) relative to males from COVID-19-induced restrictions such as forced business closures, collapse in demand and a sharp drop in monthly revenue (see Abebe et al., 2020).

The COVID-19 pandemic caused disparities among male and female in total allocation on paid (productive) and unpaid works (person care and house works). For example, Bahn et al. (2020) argue that the COVID-19 pandemic reveals how the usual functioning of the labour market combines with gender roles to require more work from women than from men. They also state that the pandemic increased the burden born by women through increasing the need for home-based caring which is mainly caused by closing of schools and childcare facilities, and also a surge in the number of sick people who need closer attention and help.

Consistent with this argument, using a survey of Australian men and women, conducted during state-imposed lockdown in May 2020, Craig and Churchill (2021) examine the effect of the COVID-19 pandemic on paid work, domestic work, and caring responsibilities. They find that domestic burden has increased for both male and female respondents. While females shouldered most of the unpaid workloads, male's childcare time increased in relative terms. This indicates that the pandemic has narrowed gender gaps in average terms. However, the relative gap between male and female in housework remained after the pandemic. In the same vein, Fodor et al.

(2021), using survey data in Hungary, examine the effect of the COVID-19 pandemic on gendered division of childcare duties. The authors find that the pandemic has significantly increased the gender gap (in absolute terms) in terms of the allocation of working hours for childcare activities.

Although there are burgeoning number of studies which examine the multifarious impact of the COVID-19 pandemic on income, food security, and other socioeconomic outcomes, little is known about the gender implications of the pandemic with regard to income, coping strategies and food stockpiling behaviours particularly in the case of Ethiopia. Hence, our paper fills this important gap in the literature by examining the heterogeneous impacts of COVID-19 on households' income, coping strategies, and food stockpiling behaviour using gender differentiated approach and taking Ethiopia as a case study. The results from such analysis helps governments and policy makers to understand the underlying factors behind the decline in income due to the pandemic, and thereby design and implement policy interventions to ease the effects of the COVID-19 pandemic.

This paper puts forward research questions that aim to add to the growing body of literature on the COVID-19 pandemic. Thus, the major objective of the proposed study is to examine heterogeneous impacts of COVID-19 on households' income, households' coping strategies and consumers' food stockpiling behaviour using gender differentiated approach and taking Ethiopia as a case study. The specific research questions are:

- a) What are the patterns of income reduction caused by COVID-19 disaggregated by gender and other key socioeconomic variables?
- b) What are the key demographic and socioeconomic predictors of households' income reduction due to COVID-19 using gender lens?
- c) Are there any significant gender differences in responses to income decline/job loss to cope with the impacts borne by COVID-19?
- d) What are the gender impacts of access to social cash transfers (as a coping strategy) designed to address the effects of COVID-19 pandemic? What are the inequalities in access to social cash transfers? Are there particular groups (e.g., by income groups, location, formal/informal sector) who have been excluded?
- e) What are the major determinants of stockpiling behaviour of male-headed and female-headed households?

3. Country background: COVID-19 in Ethiopia and policy responses

The novel coronavirus pandemic emerged in late 2019 and continues to spread rapidly throughout the globe (Zhong et al., 2020). In the initial stage of the pandemic, sub-Saharan Africa reported one of the lowest infection rates of COVID-19. However, numbers began to rise starting late March 2020, with confirmed cases increasing across the continent. The first coronavirus case was reported in Ethiopia on 13 March 2020, and the number of cases has continued to increase afterwards. Since the time COVID-19 case was identified, the Government of Ethiopia undertook various restrictions to contain the spread of the virus. Some of these measures include suspension/closure of schools, sporting events, public gatherings, a regulation for anyone entering into Ethiopia to undergo a mandatory government supervised-quarantine for 14 days, and declaration of a five-month long State of Emergency (SoE) starting on 8 April 2020. Currently, the State of Emergency due to COVID-19 is lifted and the government has cautiously loosened travel and other public restrictions. Nevertheless, wearing of masks is mandatory and information dissemination and public awareness raising efforts have continued.

These restrictions and lockdown measures have implications on income and could lead to substantial economic costs especially for the already poor segments of the population. To protect citizens against adverse economic effects of the pandemic, the Government of Ethiopia announced various policy guidelines and financial stimulus packages. These include multi-sectoral response to financial needs, support micro enterprises and private companies, provision of food and medical supplies to the most vulnerable, and tax arrears forgiveness for 3,099 taxpayers. The most notable intervention is the National Bank's budgeting of a 15-billion-birr (US\$450 million equivalent to 0.45% of GDP) liquidity facility for private banks to support their clients, especially businesses adversely affected by COVID-19 (International Monetary Fund [IMF], 2020). Moreover, the government has announced a COVID-19 Multi-Sectoral Preparedness and Response Plan, with prospective costing of interventions of US\$1.64 billion, about 1.6% of GDP (IMF, 2020). According to the IMF (2020) report, the COVID-19 response plan comprised the following: (i) US\$635 million (0.6% of GDP) for emergency food distribution to 15 million individuals vulnerable to food insecurity and not currently covered by the rural and urban Productive Safety Net Programmes (PSNPs) ; (ii) US\$430 million (0.4% of GDP) for health sector response under a worst-case scenario of community spread with over 100,000 COVID-19 cases

of infection in the country, primarily in urban areas; (iii) US\$282 million (0.3% of GDP) for provision of emergency shelter and non-food items; (iv) The remainder (US\$293 million, 0.3% of GDP) allocated to agricultural sector support, nutrition, the protection of vulnerable groups, additional education outlays, logistics, refugees support, and site management support (IMF, 2020). The urban PSNP is expanded to 16 additional cities in collaboration with the World Bank, at an estimated cost of US\$88 million. This covers 500,000 new beneficiaries for three months at a cost of US\$88 million (IMF, 2020). Other urban social safety net programmes introduced as responses to COVID-19 includes the PM's initiation of sharing-meal and related supports are done to make sure that more vulnerable groups, such as women and children, have food in their plate throughout the partial lockdown period.

However, these assistance programmes and stimulus packages could only directly benefit the formal sector of the economy. A unique character of the Ethiopian economy is the existence of an informal sector. A recent estimate indicates that most of the workforce in the urban areas is engaged in the informal sector (about 36%) and yet these are one of the most vulnerable groups (Geda, 2020). Data obtained from the World Bank's high frequency survey (Wieser et al., 2020) indicates that the pandemic resulted in a significantly higher proportion of job loss among these groups. About 8% of respondents lost their jobs at the beginning of the outbreak, and job losses were higher in urban (20%) than in rural areas (3%), and higher for women (13%) than for men (6%). As in many other low-income countries, registration of informal economic units in Ethiopia is low, and as a result, most of them remain outside the purview of government policies, especially with respect to labour and taxation. This leaves millions of employed men and women, the poorly educated and those engaged in agriculture, manufacturing, construction, and services less accessible and less attended by the various macro-level government interventions.

The very few snapshot surveys conducted in Ethiopia over the past few months indicated that, when the news of travel restrictions emerged, people have started stockpiling food, sometimes more than what they need (Omer & Hassen, 2020). In the most recent study funded by the World Bank Group, based on a sample of 3,249 households, the authors reported that most households were able to buy enough of the food items they needed such as teff, wheat, maize, and edible oil (Wieser et al., 2020). Of those who could not buy enough food, affordability (because of higher prices) was the biggest challenge (Wieser et al., 2020). Other studies argue that stockpiling food items is more pronounced at macro-level in view of tackling the pressure borne by the pandemic. Currently, the biggest and most popular one is the Emergency Food Security Reserve (EFSR), which stockpiles 410,000mt (mainly wheat, maize and sorghum). It has storage sites located in seven different food insecurity-prone areas (Häberli, 2013). The main objective of the EFSR is price stabilization and emergency assistance to the most vulnerable population in Ethiopia.

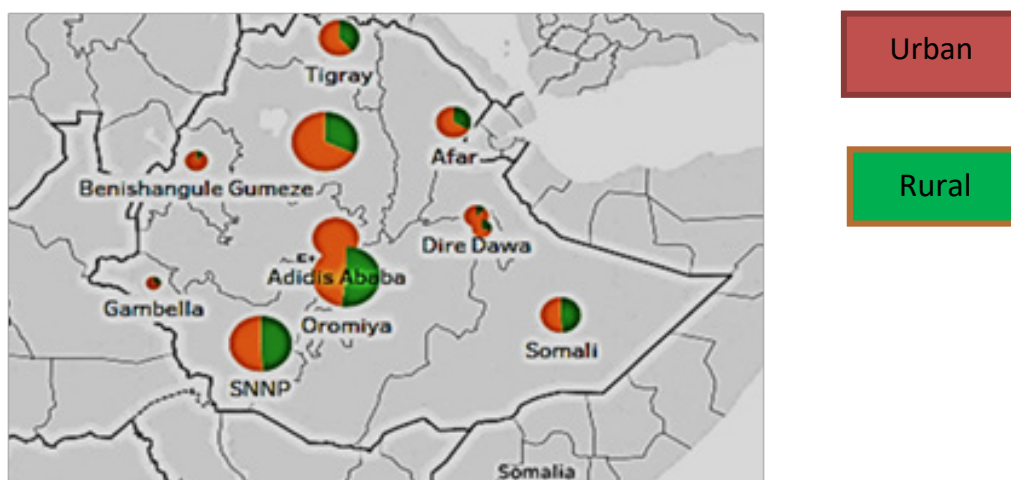
4. Data and methodology

Data

This study uses two primary data sources. One is a rapid assessment survey conducted in Ethiopia in April 2020 by Frontieri, Ethiopia, in collaboration with Humboldt University of Berlin, Germany. The second is a follow-up survey conducted in October 2021 by taking a sub-sample of respondents from the first round of survey. In what follows, we describe both rounds of survey in detail.

The first round survey was implemented with a mobile phone data collection approach and cross-sectional design targeting citizens of age 18 and above in nine regional states and two city administrations in Ethiopia (Figure 1). Sampling for this survey aimed to construct a nationally representative urban and semi-urban sample that could help to draw inference vis-a-vis understanding the income implications of COVID-19; various coping strategies employed and consumer food stockpiling behaviour. The mobile phone based survey is the preferred option because it was impossible to conduct face-to-face interviews during the on-set of COVID-19 pandemic. A stratified random sampling strategy was used, where the regional states/city administrations constituted our strata. A sample size of 1,050 respondents was estimated for the eligible population based on a 3% sampling margin of error at 95% confidence level.

Figure 1: Distribution of respondents across regions in Ethiopia



Following standard procedure, sampling frames for a mobile phone survey could be from three sources. These include sampling from existing nationally representative surveys with mobile phone number of respondents; sampling from a list of valid phone numbers from a telecommunication company; and using random digit dialling (Himelein et al., 2020). Out of these three alternatives, the most viable and immediately accessible option for the rapid assessment was the one where a sample of respondents were drawn from an already conducted nationally representative survey at Frontieri with registered mobile phone numbers of respondents. Sixteen enumerators were trained for conducting the mobile phone-based survey, and interviewed 1,037 respondents from April 9-25, 2020, where one interview session took an average of 25 minutes. Verbal consent was obtained from all participants before administering the questionnaire.

The data collection focused on a wide range of issues pertaining to COVID-19, including some background information on the demographic and socioeconomic characteristics of respondents. Income implications of COVID-19 were assessed by inquiring whether respondents' income reduced due to the pandemic, and if yes by how much (in percentage). For those respondents who reported an income reduction, a follow-up question was posed regarding the main cause of income reduction and the respective coping strategy employed. Regarding food stockpiling, respondents were asked whether they stockpiled food items since they heard the news about the pandemic, and if yes, they were requested to report on the type of food item they stockpiled.

The research team conducted a follow-up telephone survey in October 2021 on a subset of sampled respondents from the April 2020 first round of survey. This is possible, since the survey has stored telephone numbers of the interviewees from round one in April 2020. In the second round telephone survey, a total of 453 interviews were conducted in Addis Ababa, Afar, Amhara, Benishangul-Gumuz, Dire Dawa, Gambella, Harar, Oromia, SNNP region, and Somali region. The second round survey respondents are mostly from urban and semi-urban areas. Hence, the results from descriptive and panel analysis can be considered representative for urban and semi-urban segments of the population of Ethiopia.

The survey questionnaire included follow-up questions on income, coping strategies, and food stockpiling, keeping the panel structure of the survey. The follow-up survey also helped to examine patterns of changes of food stockpiling behaviour over time with a gender lens. In addition, new questions were introduced that help assess social protection (e.g., access to social cash transfers and alternative income sources) and time allocation on productive and reproductive (person care work and housework) roles before and during COVID-19, all from a gender disaggregated perspective.

Empirical methods

Descriptive statistics (means, percentage of frequencies, and standard deviations) will be used to assess income implications of COVID-19 on various income groups. The respective coping strategies and food stockpiling behaviour of respondents is explored using descriptive analysis disaggregated by gender. Panel regression model is used to

estimate the factors determining whether a respondent's income has been affected by the COVID-19 pandemic and whether respondents have stockpiled food since they heard about the pandemic and respective movement restrictions and disruptions.

The key advantage of using panel data is that it deals with time-invariant unobserved heterogeneity that causes bias in estimation if it is not accounted for. For this, standard econometric methodology suggests the use of efficient panel data estimators, such as fixed effect and random effect estimators (Wooldridge, 2002). Fixed effect estimators control for unobserved time-invariant characteristics of households and account for within-household variations across time. Random effects model takes care of both within- and between-household variations. We undertake the Hausman test to identify use of fixed effect or random effect estimators for result interpretation.

The panel equation to be estimated can be expressed as:

$$Y_{it} = \phi G_i + \delta I_{it} + \beta X_{it} + \alpha_i + \varepsilon_{it}$$

Where: Y_{it} is a binary outcome variable for respondent i at time t . Two different panel regressions will be estimated. For identifying the determinants of reduced income; Y_{it} takes the value of 1 if a respondents' income has reduced due to the COVID-19 pandemic and 0 otherwise. For identifying the determinants of food stockpiling; Y_{it} takes the value of 1 if respondents have stockpiled food items since they heard about COVID-19 and 0 otherwise. The two main variables of interest are G and I , which denote gender of the respondent and income category of respondents, respectively. ϕ and δ are the respective parameters to be estimated. In a way, this study pays particular attention to how gender and different income generating categories determine the likelihood of income reduction imposed by COVID-19.

The paper also assesses how gender and different income-generating categories influence food stockpiling behaviour. X_{it} is a vector of demographic and other explanatory variables including education, household size, and other characteristics of respondent i at time t . β is the associated vector of parameters to be estimated. α_i denotes unobserved respondent specific effects assumed to be fixed over time and vary across respondents, and ε_{it} is the error term. t denotes the two-time frames of phone-based data collection, namely round I conducted in April 2020 and round II conducted in October 2021. We will use a balanced panel sample size of 441 respondents for the regression analysis. We also present regression results for male-headed and female-headed households separately to disentangle significant determinants of income reduction due to COVID-19 and food stockpiling.

5. Results and discussion

Descriptive results

For the descriptive analysis, we focus on gender disaggregated indicators by taking the average value of various relevant variables across the two survey rounds, namely in 2020 and 2021. In specific, the pooled data from the two surveys gives us 894 observations out of which 520 are male and 374 are female respondents, who reside in urban and semi-urban areas of Ethiopia. Table 1 presents descriptive statistics for the socioeconomic characteristics of both male and female respondents. It is evident that there is no significant difference in mean age of male and female respondents. Most of male and female respondents are adults aged above 30 years. Roughly, 60% of the respondents are male while 40% are female. Table 1 also shows that most of male respondents were married (84%) compared to female respondents (62%). Literacy rate is lower among female respondents than male respondents, in which about 14% and 6% of female and male respondents, respectively, had no education. Similarly, the completion of primary and secondary levels of education among female respondents is lower, where 60% and 52% of male and female respondents had attended primary and secondary education. However, there exists an insignificant difference in terms of the attainment of tertiary education among male and female respondents (i.e., 34% of them had attended tertiary education).

With regard to income sources, Table 1 shows that a smaller proportion of both male (6%) and female (1%) respondents were engaged in farming activities to generate incomes. The main reason for this evidence is that we conducted the survey in urban and semi-urban areas of Ethiopia where a few individuals engaged in agricultural activities. This result is consistent with Yalew (2020) who states that urban agriculture contributes 0.5% to the overall crop production in Ethiopia. Furthermore, Table 1 demonstrates that more than one-third of male and female respondents were engaged in salaried employment. On the other hand, compared to female respondents (23%), a higher proportion of male respondents (32%) were engaged in self-employment. Likewise, while 13% of male respondents were involved in daily wage employment, 8% of female respondents were engaged in the same type of economic activities. Female respondents had lower perception of being at risk (30%) due to COVID-19 pandemic compared to male respondents (37%). This evidence could have strong association with lower expectations among female respondents (17%) that the corona virus transmits alarmingly than the expectations of male respondents (27%).

Although the Ethiopian Government implemented numerous policy measures to support individuals to reduce the negative consequences of the COVID-19 pandemic, the support measures have not reached a majority of citizens. Table 1 shows that only 2% of male and female respondents have benefited from government support (such as food aid, finance, loan redemption) related to the COVID-19 pandemic. This result should, however, be taken with caution, since our sample is urban and semi-urban biased and that the government support could have reached rural areas which is not captured in our sample. Nevertheless, our results show that, even for urban and semi-urban areas, support to male and female respondents (in any form) was reported by only 2% of respondents. Our results also indicate that this minimal support did not also consider the more distinct effect of the pandemic on female-headed households. Studies showed that, food insecurity among females was reported to have increased two-fold as compared with their men counterparts (Negesse et al., 2020). Hence, at macro-level, severity of food insecurity among female-headed households in Ethiopia was a more pronounced issue as compared with the general national estimate of food insecurity. This evidence suggests that the Government of Ethiopia needs to outlook how economic and health-related shocks, such as the COVID-19 pandemic, affect women's involvement in every aspect of activity and their level of household food security.

Larger proportion of male respondents (50%) was severely affected by income reductions induced by the COVID-19 pandemic compared to female respondents (44%). This result could have strong association with the fact that a higher proportion of male respondents (13%) were engaged in daily wage employment as compared to female respondents (8%). It is evident that this segment of the workforce is particularly vulnerable to the economic shocks such as labour market and health shocks including the COVID-19 pandemic. Hence, for households engaging in daily wage employment, COVID-19 and its containment measures such as lockdowns, movement restrictions, and other mitigation measures, have significantly affected their employment opportunities, and thereby income levels. In addition, the higher loss of income among the male respondents (compared to female respondents) could be attributed to the existing evidence in the Ethiopian labour markets. Specifically, according to the World Bank development indicators in 2019, male labour force comprises a higher proportion (53.4%) of the total labour force than the female labour force. Thus, this result, to some extent, indicates that the burden of losing jobs and then income due to the COVID-19 pandemic could be relatively higher on male labour force than its female counterpart. However, there appears insignificant variation among male and female respondents in stockpiling food since the release of the news about the COVID-19 pandemic. About one-fourth of male and female respondents have stockpiled food items.

Table 1: Summary statistics of the socioeconomic characteristics of the respondents

	Mean		
	Male	Female	Difference
Age group (years)			
18-24	21.82	21.37	0.44 (0.28)
25-34	29.41	28.50	0.91 (0.00)
35-50	40.35	40.55	-0.21(0.69)
51-64	56.12	57.32	-1.20(0.05)
>64	69.87	69.99	-0.02 (0.99)
Household size (#)	5.08	4.73	0.35 (0.01)
Marital status (1 = married; 0 = otherwise)	0.84	0.62	0.21 (0.00)
Education of respondent:			
0 = respondent has no education	0.06	0.14	-0.08 (0.00)
1 = respondent has completed primary and secondary education	0.60	0.52	0.08 (0.08)
2 = respondent has completed tertiary education	0.34	0.34	0.00 (0.99)
Main source of income:			
0 = Farming	0.06	0.01	0.06 (0.00)
1 = Self-employment	0.32	0.23	0.09 (0.04)
2 = Daily wage employment	0.13	0.08	0.05 (0.09)
3 = Salaried employment	0.37	0.38	-0.01 (0.81)
4 = Other sources of income*	0.13	0.31	-0.18 (0.00)
Respondent feels that he/she is at risk of COVID-19 virus (1 = yes; 0 = no)	0.37	0.30	0.07 (0.03)
Respondent expects virus transmission grows alarmingly** (1 = yes; 0 = no)	0.27	0.17	0.11 (0.00)
Respondent holds an opinion on food price increase due to COVID-19 (1 = yes; 0 = no)	0.73	0.70	0.03 (0.33)
Respondents who have benefited from any government support (such as food aid, finance, loan redemption) related to the COVID-19/Coronavirus pandemic	0.02	0.02	-0.01 (0.62)
Respondents who have received any assistance from any institution (the government, international organizations, and religious bodies) in the form of cash or kind	0.02	0.06	-0.05 (0.00)
Reported income reduction due to COVID-19 (1 = yes; 0 = no)	0.50	0.44	0.06 (0.08)
Stockpiled food items since the news about COVID-19 (1=yes; 0 = no)	0.26	0.25	0.01 (0.68)
Number of observations	520	374	

Notes: We checked the significance of the mean differences across male and female respondents using t-test. The p-values for the t-test are provided in parentheses.

*Other sources of income include housewife/househusband, not working/unemployed, student, and community/religious worker.

** Respondents were requested to express their expectation of COVID-19 virus transmission in the coming three months. Their responses was coded into a binary viable (=1 Virus transmission grows alarmingly; =0 virus transmission stops or hard to guess/do not know).

For those respondents that reported an income reduction due to COVID-19 pandemic, a follow-up question was posed where respondents were requested to answer questions regarding the coping strategies used in response to income shock. Table 2 presents the list of coping strategies (disaggregated by main sources of income and gender of respondents) taken by the respondents to cope-up with the adverse impact of the COVID-19 pandemic on their income. Both male and female respondents reported that they used saving as the most commonly used coping strategy against income decline. However, a higher proportion of male respondents reported that they used savings as the most important coping strategy. In specific, about 70% and 64% of male and female respondents, respectively, reported to have used their savings to compensate for the income reduction. This result could have strong association with the existing gender disparity in terms of financial inclusion in Ethiopia. To be more specific, in Ethiopia, males are 16.6% more likely to have formal savings and 8.4% more likely to use savings for emergency funding compared to females (see Hundie & Tulu, 2021).

Table 2 further demonstrates that there is insignificant variation in male and female respondents, who engaged in farming activities, in terms of using various coping strategies. When looking at self-employment in particular, 28% and 41%, respectively, male and female respondents used borrowings from family and friends to cope with the income reduction induced by the COVID-19 pandemic. Furthermore, about 50% of male respondents who were involved in daily wage employment had higher opportunities of accessing formal credit compared to their female counterparts (38%). Similarly, about 54% of male respondents engaged in daily wage employment used borrowing from family and friends as compared to 46% of their female counterparts. This shows that access to both formal and informal credit for those engaged in daily wage employment is consistently lower for female respondents.

It is important to note from Table 2 that a larger proportion of both male and female respondents used borrowing from family and friends than from using credit from formal institutions. This could be the case that, while the number of banks is increasing, the majority of Ethiopians, mainly the very poor and those engaged in micro and small businesses do not have access to formal credit. Value of assets and collateral are one of the main factors affecting households' likelihood of being credit constrained in Ethiopia (see Kedir, 2003).

Reduction in food expenditure is reported as a coping strategy by about 29% of male and 35% of female respondents. Reduction in food expenditure has clear implications for food security, and our data set shows that this coping strategy is reported more often by female than male respondents. Similarly, reduction in non-food expenditure is reported more often by female respondents (38%) as compared to male respondents (29%).

Table 2: Coping strategies by income-generating activities (%)

	All Respondents*		Farming		Self-Employed		Daily Wage Earners		Salaried Employed		Others	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Formal credit	0.20	0.21	0.25	0.00	0.14	0.31	0.50	0.38	0.10	0.00	0.11	0.12
Borrowed from family and friends	0.31	0.32	0.00	0.00	0.28	0.41	0.54	0.46	0.05	0.20	0.11	0.06
Used saving	0.70	0.64	1.00	0.00	0.71	0.81	0.81	0.46	0.55	0.50	0.44	0.75
Received Equib	0.11	0.12	0.00	0.00	0.05	0.00	0.34	0.00	0.05	0.00	0.00	0.00
Reduced food expenditure	0.29	0.35	0.00	1.00	0.13	0.03	0.04	0.08	0.20	0.20	0.33	0.13
Reduced non-food expenditure	0.29	0.38	0.00	0.00	0.09	0.00	0.08	0.15	0.05	0.10	0.22	0.00
Did Nothing	0.09	0.11	0.00	0.00	0.11	0.09	0.04	0.08	0.20	0.10	0.00	0.19
N	520	374	16	1	81	42	32	14	94	70	33	58

Note: *The sample size is considering only those respondents who reported an income decline.

Our data also enables us to assess the amount of time allocated to paid work (productive work), person care work (e.g., childcare and caring for the sick) and housework (e.g., house cleaning and cooking) by men and women in the period before COVID-19 and during COVID-19 pandemic. Table 3 shows that the COVID-19 pandemic has increased the pre-existing difference between hours spent on productive activities per day among male and female respondents. The result shows that the pandemic has widened the difference (in absolute terms) in hours spent on person care work and housework activities among male and female respondents. This evidence is consistent with the findings of Del Boca et al. (2020) which show that most of the additional housework and childcare associated with COVID-19 falls on women.

While female respondents spent about six hours on productive activities per day before COVID-19 pandemic, male respondents spent more than eight hours on average on productive activities. During the pandemic, this already existing gap widened in that females' average hours spent on productive activities reduced to 4.7 while that of males average hours spent on productive activities reduced from eight to 7.4 hours. The difference-in-difference of hours spent on productive activities between male and female before and during COVID-19 pandemic shows an absolute value of 0.25. In a way, this supports the argument that the pandemic has increased the pre-existing difference between hours spent on productive activities per day among male and female respondents.

Table 3: Differences in time allocation on productive and person care and housework roles before and during the COVID-19 pandemic

Statement	Before COVID- 19 (1=Yes; 0=No)			During COVID- 19 (1=Yes; 0=No)		
	Male	Female	Difference	Male	Female	Difference
Hours spent on productive (paid) activities per day	8.38	6.01	2.37 (0.00)	7.36	4.75	2.62 (0.00)
Hours spent on person care activities (e.g., childcare and caring for the sick) per day	1.63	3.79	-2.53 (0.00)	1.80	4.42	-2.62 (0.00)
Hours spent on housework activities (e.g., house cleaning and cooking) per day	1.03	3.18	-2.15 (0.00)	1.11	3.46	-2.34 (0.00)
Do you have paid domestic/house help	0.17	0.18	-0.01 (0.00)	0.14	0.12	0.02 (0.00)
Number of observations	520	374		520	374	

Examining the difference in hours spent on person care work (e.g., childcare and caring for the sick) and domestic activities (e.g., house cleaning and cooking), our data shows supporting evidence that indeed women's time spent on these activities increased much more during the pandemic as compared to men. This is shown by the

fact that while the number of hours spent on person care activities for men increased only from 1.63 before the pandemic to 1.8 during the pandemic; for women the reported increase is from 3.8 to 4.4 hours per day. A similar trend is observed in the average number of hours spent on domestic work as well. In relation to availability of paid domestic/house help, we do not find significant differences between male and female respondents. However, we find that both male and female respondents reported a decline in use of paid domestic/house help during the pandemic as compared to before the pandemic. This may be due to the reason for the increased number of hours spent by women in housework and person care activities.

Regression results

Table 4 shows panel estimation results on the factors that determine whether a respondent's regular sources of income have been affected by the COVID-19 pandemic. We run the panel estimation for the entire sample of balanced panel (column 1); only for male respondents (column 2) and for only female respondents (column 3). Our findings reveal that age of respondents plays a significant role in that aged respondents are less likely to report an income reduction due to the pandemic. This is especially significant for the entire sample and for male respondents. This may have potentially correlated with the fact that a higher proportion of aged male respondents were engaged in various income-generating activities, and hence can compensate for income shocks through diversified income sources.

The other set of variables of interest are respondents' job sector. The findings show that those respondents involved in self-employment and daily wage employment are more likely than those involved in farming to report that their regular sources of income have been affected by the COVID-19 crisis. These results reveal that daily wage earners and self-employed are primarily affected by the COVID-19 pandemic. This is expected that the containment measures such as lockdowns and movement restrictions due to COVID-19 have potentially affected sectors (such as construction works which were scaled down or even come to a halt) which hire a larger number of daily wage earners. This is likely because daily wage earners, self-employed workers, those on temporary, on-call or part-time contracts and informal economy workers are highly exposed to income losses prompted by the pandemic (see, e.g., International Labour Organization [ILO] - OECD, 2020). In contrast, engagements in salaried employment showed no significant effect on the effect of income during the COVID-19 crisis. In fact, our results for the female sample respondents show a significant (at 15%) and negative relationship between report of income reduction and salaried employment. Women engaged in salary employment are less likely to report income reduction, significant at 15% level.

Table 4: Factors determining whether COVID-19 pandemic affected income: Panel probit estimation

VARIABLES	(1): All Sample	(2): Male Respondents	(3): Female Respondents
	Income reduced due to pandemic	Income reduced due to pandemic	Income reduced due to pandemic
Age of respondent	-0.0153*** (0.00441)	-0.0149** (0.00631)	-0.0108 (0.00738)
Household size	-0.00233 (0.0270)	-0.000988 (0.0345)	0.00926 (0.0482)
Married respondent	0.1000 (0.138)	-0.193 (0.222)	0.260 (0.198)
Respondent stayed at home due to pandemic	-0.0881 (0.122)	0.0762 (0.166)	-0.151 (0.198)
Respondent feels at risk of virus	-0.131 (0.123)	-0.266* (0.160)	0.0922 (0.210)
Completed elementary and secondary education ^a	0.238 (0.198)	0.323 (0.296)	0.328 (0.310)
Completed tertiary education ^a	0.0480 (0.227)	0.253 (0.329)	-0.0434 (0.362)
Self-employment (1=yes)^b	1.348*** (0.244)	1.588*** (0.313)	0.776 (0.499)
Daily wage employment (1=yes)^b	1.425*** (0.279)	1.713*** (0.370)	0.749 (0.531)
Salaried employment (1=yes) ^b	-0.400 (0.246)	-0.199 (0.302)	-0.976* (0.528)
Other income sources ^{b*}	0.117 (0.237)	0.0114 (0.328)	-0.207 (0.490)
Observations	849	507	342
Number of Household ID	453	271	192

Notes: The dependent variable is respondents reporting income decline due to COVID-19 (1=income declined due to COVID-19; = 0 otherwise). The values in parentheses are standard deviation. *** p<0.01, ** p<0.05, and * p<0. a Base category is no education; b Base category is farming. *Other sources of income include housewife/househusband, not working/unemployed, student, and community/religious worker.

Table 5 presents results of panel probit estimation that identified factors of consumers' food stockpiling due to COVID-19 pandemic. We run the panel estimation for the entire sample of balanced panel (column 1); only for male respondents (column 2) and for only female respondents (column 3). The results reveal that aged respondents were less likely to stockpile food items during the COVID-19 pandemic. Respondent's opinion about food price increment due to the COVID-19 pandemic is positively and significantly related to food stockpiling. This result is consistent for all three separate regressions (all samples, men only, and female only respondents) showing that if

respondents have the opinion that COVID-19 results in food price increase, they are more likely to stockpile food items. Likewise, respondent's expectation that the coronavirus transmits alarmingly and their opinion that COVID-19 results in shortage of food supply increases the likelihood of food stockpiling, although at marginally significant level.

Table 5: Factors of consumers' food stockpiling due to COVID-19 pandemic: Panel probit estimation

	(1): All Sample	(2): Male Respondents	(3): Female Respondents
	Stockpiling	Stockpiling	Stockpiling
Age of respondent	-0.0140*** (0.00449)	-0.00881 (0.00761)	-0.0154** (0.00623)
Household size	-0.00222 (0.0271)	0.0521 (0.0484)	-0.0265 (0.0333)
Married respondent	-0.0113 (0.139)	-0.255 (0.193)	0.281 (0.217)
Respondent feels at risk of virus	-0.0849 (0.119)	-0.359* (0.218)	0.0617 (0.141)
COVID-19 impact perception: shortage in food supply	0.192 (0.118)	0.220 (0.204)	0.181 (0.144)
Opinion on food price increase due to COVID-19 (1=yes)	0.340*** (0.129)	0.376* (0.215)	0.357** (0.162)
Respondent expects virus transmission grows alarmingly (1=yes)	0.102 (0.134)	0.207 (0.245)	0.0359 (0.156)
Completed elementary and secondary Education ^a	-0.0813 (0.198)	0.212 (0.315)	-0.278 (0.276)
Completed tertiary education ^a	-0.0237 (0.227)	0.308 (0.366)	-0.251 (0.307)
Self-employment (1=yes) ^b	-0.558** (0.240)	-1.092** (0.557)	-0.434 (0.278)
Daily wage employment (1=yes) ^b	-0.483* (0.262)	-1.369** (0.598)	-0.205 (0.300)
Salaried employment (1=yes) ^b	-0.491* (0.251)	-1.207** (0.571)	-0.277 (0.294)
Other income sources ^b	-0.320 (0.238)	-0.866 (0.541)	-0.298 (0.313)
Observations	847	340	505
Number of Household_ID	452	192	270

Notes: The dependent variable is respondents' food stockpiling behaviour due to COVID-19 (1 = a respondent has stockpiled food due to COVID-19; 0 = otherwise). The values in parentheses are standard deviation. *** p<0.01, ** p<0.05, and * p<0. ^a Base category is no education. ^b Base category is farming. *Other sources of income include housewife/househusband, not working/unemployed, student, and community/religious worker.

Our estimation result shows that education is not found to have a significant relation to food stockpiling. In the sample of male respondents, although not statistically significant, we find a positive relationship between education and food stockpiling. However, this relation does not hold to the full sample or the sample of women respondents. In relation to the various job sectors, we find a significant and negative association to food stockpiling. Specifically, those engaged in self-employed, engaged in daily wage employment, and salaried employees are less likely to stockpile food items due to COVID-19.

6. Summary and conclusion

This paper addresses research questions that aim to add to the growing body of literature on the gender implications of COVID-19 pandemic. The major objective of the study is to examine heterogeneous impacts of COVID-19 on households' income, households' coping strategies and consumers' food stockpiling behaviour using gender differentiated approach and taking Ethiopia as a case study. To address this objective, the paper uses two rounds of telephone surveys administered in urban areas covering diverse regions in Ethiopia. The telephone survey was conducted in April 2020 for round one and October 2021 for round two, respectively. A total of 452 observations are used as a balanced panel for estimation. The descriptive and regression analysis used gender disaggregated lens throughout the paper.

The major findings show that a larger proportion of male respondents (50%) were severely affected by income reduction induced by the COVID-19 pandemic compared to female respondents (44%). Although the Ethiopian Government implemented numerous policy measures to support individuals to reduce the negative consequences of the COVID-19 pandemic, the support measures have not reached a majority of citizens. Our findings show that, only 2% of male and 2% of female respondents have benefited from any government support (such as food aid, finance, or loan redemption) related to the COVID-19/coronavirus pandemic. This calls for a concerted effort to reach to the target group in terms of designing social support programmes especially in times of global shocks such as COVID-19.

Regarding coping strategies, we find that both male and female respondents used savings as the most commonly used coping strategy against income decline. However, reduction in food expenditure is reported as a coping strategy by female respondents (35%) than male respondents (29%). Reduction in food expenditure has clear implications for food security and our data set shows that this coping strategy is reported more often by female than male respondents. Similarly, reduction in non-food expenditure is used as a coping strategy more often by female respondents (38%) as compared to male respondents (29%). This shows evidence of clear difference in the choice of coping strategies between men and women in response to COVID-19 pandemic.

Our data also provides supporting evidence that the COVID-19 pandemic has increased the pre-existing difference between hours spent on productive activities per day among male and female respondents. This is shown by the difference-in-

difference of hours spent on productive activities between male and female before and during COVID-19 pandemic resulting in an absolute value of 0.25. Likewise, our result shows that the pandemic has widened the difference (in absolute terms) in hours spent on person care work and house work activities among male and female respondents. This implies that the pandemic has resulted in additional housework and childcare on women as compared to men.

Finally, we find that those involved in self-employment and daily wage employment need special focus while designing interventions as they are more likely to be affected by the COVID-19 crisis. In particular, our research provides evidence that females engaged in daily wage employment have lower access to both formal and informal credit. This implies that these segments of the population need especial attention and/or intervention since their access to coping strategies is limited to smooth their consumption against income reduction in the face of the pandemic. Even though there appears to be no significant variation among male and female respondents in stockpiling food, determinants of food stockpiling such as respondent's opinion about food price increment due to the COVID-19 pandemic is found to be a significant factor to consider for policy makers concerned with food stockpiling. Given that the pandemic has disrupted global food chains, it has become increasingly evident that interventions that improve local food chains are important to ensure food availability in local markets and minimize opinion shifts about food prices among consumers.

Notes

1. The Productive Safety Net Programme (PSNP), launched in 2005, is a policy initiative by the Government of Ethiopia and donors to shift chronically food-insecure rural people from recurrent emergency food aid to a more secure and predictable, and largely cash-based, form of social protection.

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