



Research Notes

The market-reach of pandemics: Evidence from female workers in Ethiopia's ready-made garment industry

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ABSTRACT

In a globalized world, pandemics transmit impacts through markets. We document employment changes, coping strategies, and welfare of garment factory workers in Ethiopia's largest industrial park during the early stages of the Coronavirus Disease 2019 pandemic. We field a phone survey of female workers during a two month period in which cases are rapidly rising globally, but not locally. Our data suggest significant changes in employment, high levels of migration away from urban areas to rural areas if women are no longer working, and high levels of food insecurity. These findings compel a research and policy focus on documenting and mitigating the market-reach of pandemics on low-income workers at the margins.

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1. Introduction

This research note documents impacts of the Coronavirus Disease 2019 (COVID-19) pandemic on low-wage manufacturing workers at the margins of the global economy. In the ready-made garment (RMG) industry and its global value chains, the sharp economic downturn in key consumer markets has led to order cancellations. This pandemic-induced demand shock threatens the livelihoods of production workers in countries such as Ethiopia.

We conduct a phone survey with a random sample of female RMG workers employed before the start of the crisis in Hawassa Industrial Park (HIP), Ethiopia's flagship special economic zone. Our data collection occurs at a time when factories are suspending production due to the collapsing demand and in a period in which

COVID-19 is slowly spreading throughout Ethiopia, though not locally in Hawassa. This allows us to observe employment changes, coping strategies, and welfare of workers indirectly impacted by the pandemic.

We find significant changes in employment status within our sample; 41 percent of respondents employed in HIP in January 2020 were put on leave or terminated by the time of our survey. Among those, almost no one has found other employment. Our measures of expenditures outstrip income. Levels of food insecurity are high. Many respondents who have lost employment have migrated out of Hawassa. Those who have migrated report lower levels of food insecurity, however 67 percent of our sample remain in a location that is not their desired location. Many of those who have migrated hope to return to Hawassa. Main barriers to relocation include resources and fear of health risks.

This research note complements the plethora of emerging research on the direct economic and welfare impacts on firms and individuals in high-income (Bartik et al., 2020; Fairlie, 2020; Forsythe, Kahn, Lange, & Wiczer, 2020; Adams-Prassl, Boneva, Golin, & Rauh, 2020; Baker, Farrokhnia, Meyer, Pagel, & Yannelis, 2020) and low-income countries such as Ethiopia (Abebe,

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Bundervoet, & Wieser, 2020; Wieser, Ambel, Bundervoet, & Tsegay, 2020). In contrast with these existing studies, we highlight the potential for indirect market-reach impacts through global value chains. Our findings suggest a role for policy makers to put in place insurance and social protection policies that help firms and workers retain jobs, even in places not directly suffering from the pandemic. More broadly, they call for researchers, policymakers, and development partners to adopt a comprehensive perspective that takes into account the indirect impacts of this global crisis.

The remainder of this note is structured as follows: Section 2 introduces our study context. Section 3 summarizes our empirical strategy and survey design. It also includes a comparison of our survey sample to the universe of workers in HIP before the crisis and to the broader population nearby. Section 4 presents results from the survey. A fifth section concludes with brief policy recommendations and suggestions for future research.

2. Context

2.1. Industrialization in Ethiopia

Over the past decade, the government of Ethiopia has pursued a strategy of labor-intensive industrialization through export-oriented light manufacturing. The strategy is predicated on the use of low-cost labor as a source of competitive advantage within global value chains. For this purpose, the government has encouraged foreign direct investment (FDI) in the RMG industry and other light manufacturing, invested massively into enabling infrastructure, and set up ten special economic zones, “industrial parks,” across the country.

Before the crisis, firms across all industrial parks in Ethiopia employed about 86,000 workers. The flagship park is located in the city of Hawassa, in Ethiopia's Southern Nations, Nationalities, and People's (SNNP) Region. In January 2020, almost 28,000 workers from the wider region were employed by 20 different firms in Hawassa Industrial Park (HIP). At full capacity, HIP could provide employment to 60,000 workers.

The production workers who account for the bulk of employment in the RMG industry already represent one of the most disadvantaged and vulnerable groups in Ethiopia's formal labor market. They are predominantly female and tend to be young, low-skill, recent rural–urban migrants with little to no previous work experience.² As migrant workers, they may also have a less robust local safety net and find it more difficult to access public services.

2.2. The COVID-19 pandemic and the global RMG industry

Our survey was conducted between April 28 and July 1, 2020. Fig. 1, Panel (a) shows that the survey period coincides with a rapid increase in confirmed COVID-19 cases globally and in Ethiopia. However, it is important to point out that none of these cases were reported in our study site of Hawassa. When the final data point was collected, the official number of COVID-19 cases in Hawassa was still zero. Around 80 percent of Ethiopian cases are reported in Ethiopia's capital of Addis Ababa.

The Ethiopian government reacted quickly to the global spread of COVID-19. While it never issued strict stay-home orders, people were recommended not to leave their house from 8 April onward (Panel (a), orange overlay). Anecdotally, these recommendations were not strictly adhered to by the majority of the population. The government never ordered businesses or factories to close. Along with several other measures to stop the spread of COVID-

19 and to support the economy, the government announced that private employers were not allowed to terminate workers during a five-month State of Emergency starting April 2020.³

In the crisis, the firms in Ethiopia's industrial parks, along with the rest of the global garment industry, experienced significant demand- and supply-side shocks. Fig. 1, Panel (b) shows clothing retail sales in the US and Germany collapsing during the initial phase of lock-downs in March 2020. As a result, orders in the RMG industry were frozen or cancelled: In a contemporaneous survey of firms in Ethiopia's industrial parks conducted between May and July 2020, more than 75 percent of firms reported experiencing lower sales and lower production volumes than they had planned before the crisis (Mengistu, Maaskant, Meyer, & Krkoska, 2020).⁴ Among impacted firms, average production volumes decreased by 56 percent. Firms in Hawassa Industrial Park reacted by temporarily suspending operations and putting workers on paid and unpaid leave.⁵ By July 2020, many firms have started production of personal protective equipment and are bringing back workers.

3. Empirical strategy

3.1. Design

The data presented in this research note comes from a survey that took place between April 28 and July 1, 2020. We report on a total sample of 3896 female HIP workers, including information on fixed demographics, current location and migration, employment status, income, savings, and expenditures, and mental health. The precise survey date was randomised over the respondents. The approximate English translation of our survey instrument is available online at osf.io/wxdhj.

3.2. Sampling frame

We draw the survey sample from an electronic personnel database that includes all production workers and production work applicants in Hawassa Industrial Park. This database uses biometric identification to de-duplicate individuals. It contains basic demographic data, contact details, and keeps track of employment within HIP. While it is unlikely that anyone could apply for a production job in HIP without being registered in this database, exits from employment are not carefully tracked.

This worker database as of April 15, 2020 represents the starting point for our sampling frame. We impose no other restrictions on the data. We then contact phone numbers of workers in the database in a random order. When we do not reach the person indicated in the database but another contact (e.g. in the case of shared phones), we attempt to obtain updated contact information for the person in the database.

Respondents are included in the sample if (1) the respondent verbally confirms they were working in HIP on or after January 1, 2020, (2) we are able to reach the respondent using the phone number listed in the database or provided by another contact within 15 attempts, (3) the respondent consents to participate in the study. This strategy implies that our sample contains only individuals that were working in the industrial park at the beginning of

³ See “Proclamation 3/2020 – State of Emergency Proclamation Enacted to Counter and Control the Spread of COVID-19 and Mitigate Its Impact”, available from https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=110046&p_count=26&p_classification=01 (accessed August 3, 2020).

⁴ This figure is based on preliminary estimates shared in private correspondence.

⁵ The ILO BetterWork initiative reported in April 2020 that about 14,000 workers in Hawassa Industrial Park, about half of all production workers, have been asked not to work (<https://betterwork.org/2020/04/15/ethiopia-updates/>, accessed August 3, 2020).

² See also Girm, Buehren, and Goldstein (2020) and Meyer (2020) for a description of workers in Ethiopia's RMG industry.

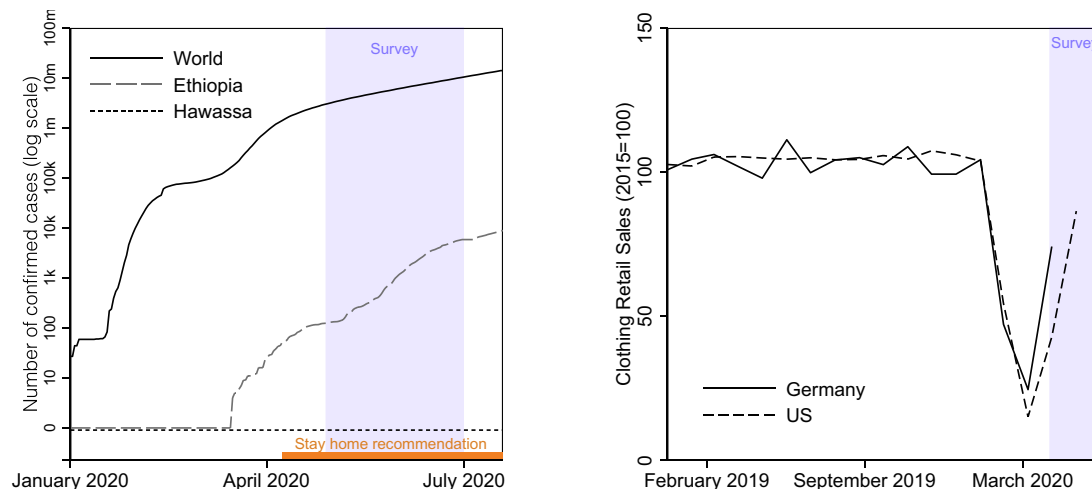


Fig. 1. The COVID-19 Pandemic and Global Clothing Retail Demand. *Notes:* This figure shows the timeline of events. Survey dates are shaded in blue. *Sources:* Number of confirmed COVID-19 cases for Ethiopia and the world are based on Thomas et al. (2020). Number of confirmed COVID-19 cases for Ethiopia and the world are based on the European Centre for Disease Prevention and Control (ECDC); number of confirmed cases for Hawassa are based on the Ethiopia COVID-19 monitoring platform (<https://www.covid19.et/covid-19/>). Number of confirmed COVID-19 cases for Ethiopia and the world are based on Thomas et al. (2020). Number of confirmed cases for Hawassa are based on the Ethiopia COVID-19 monitoring platform (<https://www.covid19.et/covid-19/>). Ethiopia policy measures stem from Thomas et al. (2020). Monthly clothing retail sales for the US are based on the US Census Bureau Advance Monthly Retail Trade data (Clothing and Clothing Accessory Stores). Clothing retail sales for Germany are based on German Federal Statistical Office (Destatis) GENESIS Table 45212-0005 (WZ08-4771 Retail Sale of Clothing). All retail data are in constant prices, indexed to 2015 = 100, and seasonally adjusted using X-13 ARIMA. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

the calendar year 2020; it does not include individuals who only applied for a job in the park but did not get it.

In this paper, we exclusively report on the female respondents of our survey.

3.3. Profile of the sample

We compare our study sample with the universe of female HIP workers and applicants and the female population at large in Table 1. For comparisons with the broader population, we use public data from the Living Standards Measurement Study/ Ethiopia Socioeconomic Survey (ESS/LSMS) 2015–2016 round.

Columns 1 and 2 show that all respondents are women with an average age of 22 years and 10–11 years of education. A minority of under 10 percent are married and the vast majority of 97 percent were born locally in the SNNP region. Our current sample is very similar to the overall park worker population (column 3). Compared to the overall urban population in the SNNP region (column 4) and urban Ethiopia as a whole (column 5), our sample population is younger, with twice as many years of education, and a lower proportion of married individuals. Unsurprisingly, our sample is clustered within the SNNP region, but still contains fewer migrants than the SNNP region as a whole.

Our study sample is highly similar to data in the personnel database in terms of work history (Table 1, Panel (b)): respondents first entered the HIP personnel database 1.32 years ago, spend an average of 1.12 to 1.19 years at a given firm, and work at a firm with around 1675 workers. The only difference is that 73 percent of individuals in our sample are currently working, whereas only 64 percent of people in the personnel database do.⁶

⁶ We want to highlight that this difference may be driven by the inclusion criteria described above. Those in the personnel database are included whether or not they are recently working and inclusion in our sample is (among other things) conditional on having been working in the park as of January 2020. This means that, by design, those in our sample should have a higher likelihood of working than those in the personnel database. The fact the database indicator for working is not 1 for all members of our sample indicates that the personnel database information on employment may not be fully up to date and/or clean. This confirms our decision to not condition sampling on this indicator.

Our sample is highly characteristic of women in Ethiopia's RMG industry (Table 1). The average age is 21 years and only a small fraction of 9 percent are married or living with someone as if married.⁷ Almost all respondents have completed 10th grade education and one third have completed the 12th grade of education. Only about 1 percent of respondents report ever having received assistance from the government's urban or rural productive safety net program.⁸

Among the respondents in our sample, all of which have worked in HIP in January 2020, about 72 percent are currently still in Hawassa. There has already been a significant amount of migration away from the city. It is notable that 65 percent of all respondents in our sample report having a local *kebele* identification card. In Ethiopia, *kebeles* (neighborhoods or wards) issue cards that serve as identification document across Ethiopia. A *kebele* ID is typically required to access public services including government social assistance programs.

4. Empirical results

This section reports findings on underlying health conditions that may increase the risk of severe illness from COVID-19, information about COVID-19, employment, savings and expenditures, food security, mental health, and migration patterns. Table 2 reports key outcomes.⁹

⁷ Note that this figure is different from the information recorded in the HIP personnel database. This might be due to different data entry protocols and potential biases that are induced when this question is asked by a firm representative versus our survey team. Additionally, information from the HIP personal database may be significantly older than our survey data.

⁸ This compares to about 3 percent of households in rural SNNP region who report receiving support from the productive safety net program in the Ethiopia Socioeconomic Survey/ Living Standards Measurement Study (ESS/LSMS) 2015–2016 round. Given potential stigma attached to receiving support from the safety net, both the data in our survey and in ESS/LSMS may suffer from social desirability bias.

⁹ While Table 2 reports the unconditional means, the means conditional on individual-level covariates are extremely similar and therefore not included in this paper. They are available from the authors upon request.

Table 1
Sample selection and summary statistics.

	(1)	(2)	(3)	(4)	(5)
	Study sample (survey data)	Study sample (personnel data)	HIP applicants (personnel data)	Urban SNNPR (2015/16 LSMS)	Urban Ethiopia (2015/16 LSMS)
<i>Panel (a): individual characteristics</i>					
Age	20.81 (2.48)	21.88 (2.99)	21.82 (3.03)	22.61 (16.12)	25.40 (17.24)
Female	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)
Years of education	11.12 (1.96)	10.12 (1.07)	10.05 (1.05)	5.40 (5.31)	6.11 (5.68)
Married	0.09 (0.28)	0.02 (0.13)	0.02 (0.13)	0.30 (0.46)	0.29 (0.45)
Born in SNNP	0.97 (0.16)	0.97 (0.16)	0.96 (0.19)	0.88 (0.33)	0.16 (0.37)
Born in Oromia	0.01 (0.08)	0.01 (0.08)	0.01 (0.08)	0.03 (0.17)	0.25 (0.43)
From Hawassa zone		0.47 (0.50)	0.52 (0.50)		
Currently in Hawassa	0.72 (0.45)				
Has Hawassa kebele ID	0.65 (0.48)				
(U) PSNP* program beneficiary	0.01 (0.09)				
<i>Panel (b): work history</i>					
Currently working		0.73 (0.45)	0.64 (0.48)		
Workers at company		1655.86 (727.16)	1696.14 (706.47)		
Years in HIP		1.32 (0.57)	1.32 (0.54)		
Average stint duration (in years)		1.19 (0.62)	1.12 (0.61)		
Observations	3896	3896	32896	398	2672

Notes: Table presents means with standard deviations in parentheses. Columns 1 and 2 summarize our study sample based on survey data. Column 3 presents data for all HIP applicants based on personnel data. Columns 4 and 5 are based on data from the 2015–2016 round of the Living Standards Measurement Study/ Ethiopia Socioeconomic Survey (ESS/LSMS). * Has ever been or is currently a beneficiary of the Urban or Rural Productive Safety Net Program.

Table 2
Outcomes, for whole sample and by employment status

	By HIP employment status					
	(1) Whole sample	(2) Employed and working	(3) Paid leave	(4) Unpaid leave	(5) Decided to leave	(6) Terminated
<i>Panel (a): Health and COVID-19 Information</i>						
Number of health conditions (0 –5)	0.09 (0.33)	0.08 (0.32)	0.09 (0.32)	0.07 (0.26)	0.10 (0.38)	0.12 (0.42)
Believe there is medicine for COVID-19	0.05 (0.22)	0.05 (0.23)	0.04 (0.20)	0.06 (0.24)	0.04 (0.21)	0.05 (0.22)
<i>Panel (b): Employment outcomes</i>						
Share of sample in category		0.59 (0.49)	0.20 (0.40)	0.06 (0.24)	0.13 (0.34)	0.02 (0.14)
No employment			0.93 (0.25)	0.94 (0.24)	0.85 (0.36)	0.93 (0.26)
Temporary employment			0.03 (0.16)	0.03 (0.16)	0.06 (0.24)	0.01 (0.11)
Self-employed without employees			0.03 (0.16)	0.01 (0.11)	0.05 (0.21)	0.05 (0.22)
Other employment			0.02 (0.12)	0.02 (0.14)	0.05 (0.22)	0.01 (0.11)
<i>Panel (c): Savings and Expenditure</i>						
Most recent monthly salary in HIP	1096.17 (489.70)	1113.76 (515.65)	1059.22 (438.09)	1048.97 (373.08)		
Savings last 7 days	61.12 (169.97)	57.62 (164.44)	73.06 (177.46)	59.90 (181.75)	62.37 (182.77)	41.69 (120.72)
Any food expenditure	0.86 (0.35)	0.97 (0.17)	0.78 (0.41)	0.76 (0.43)	0.57 (0.50)	0.76 (0.43)
Food expenses last 7 days	231.95 (181.90)	260.31 (156.97)	214.44 (200.84)	210.39 (222.22)	151.32 (204.04)	179.19 (171.10)
Rent last month	271.84 (212.51)	309.57 (200.18)	246.50 (190.03)	247.23 (230.31)	167.54 (241.78)	190.18 (213.08)
Combined monthly rent and food expenses ^(a)	1199.64 (816.03)	1350.80 (697.77)	1104.25 (857.80)	1088.80 (1019.87)	772.83 (938.93)	906.95 (756.96)
<i>Panel (d): Other outcomes</i>						
Worried not enough food for self	0.52 (0.50)	0.56 (0.50)	0.50 (0.50)	0.53 (0.50)	0.36 (0.48)	0.64 (0.48)
Screened depressed (PHQ2 > 3)	0.24 (0.43)	0.23 (0.42)	0.26 (0.44)	0.29 (0.45)	0.21 (0.41)	0.25 (0.44)
Current city is Hawassa	0.72 (0.45)	0.96 (0.20)	0.43 (0.50)	0.35 (0.48)	0.30 (0.46)	0.47 (0.50)
In desired location	0.68 (0.47)	0.76 (0.43)	0.58 (0.49)	0.54 (0.50)	0.56 (0.50)	0.58 (0.50)
Observations	3896	2280	776	243	524	83

Notes: Table presents means with standard deviations in parentheses. This table shows various socio-economic outcomes for the whole sample of respondents (column 1) as well as split up by employment status (columns 2–6). The data is presented as mean (standard deviation). The most recent salary in HIP has fewer observations because it is only available for respondents who are employed or on paid or unpaid leave.^(a) Monthly rent expenses plus food expenses in the last 7 days multiplied by 4.

4.1. Health and COVID-19 information

Underlying health conditions that may increase the risk of severe illness from COVID-19 are not common in our sample of HIP workers (Table 2, Panel (a)).¹⁰ Our data do not include self-reported health symptoms specifically related to COVID-19. Instead we asked a random half of our respondents about their knowledge of and beliefs about COVID-19 to identify potential misinformation.¹¹ We find very little misinformation about COVID-19, a high willingness of respondents to share a WHO health message about the COVID-19 pandemic in their social networks,¹² and widespread interest in receiving future health information. We also find that 66 percent of respondents rule out that they have or had the disease; 5 percent believe that they have or had COVID-19.

4.2. Employment

A key dimension of this study is understanding how employment status is evolving during the COVID-19 pandemic for workers in HIP. All respondents in this study were working in HIP as of January 1, 2020. We consider five employment categories: currently employed in HIP and working, employed but on paid leave, employed but on unpaid leave, not employed at HIP due to voluntarily leaving, and being terminated from HIP. Table 2, Panel (b) details the percent of respondents in each category.

At the time of our survey, over half of our respondents are still working (59 percent). However, a large fraction are on paid leave (20 percent), 6 percent are on unpaid leave, 13 percent left voluntarily, and very few have been terminated (2 percent). The low termination rate likely reflects the government's State of Emergency declaration, which banned private firms from terminating workers. However, given that all respondents were working as of January 1, 2020 approximately 40 percent of them have seen a change in employment status over the course of the pandemic. There is no difference in employment status by age or education of respondent. We do find that respondents who have worked in HIP longer are more likely to be currently working or on paid leave than those with shorter employment stints. Among those respondents who have left their job voluntarily or because they were terminated,

¹⁰ To understand risk factors among HIP workers, our survey collects data on six health conditions (cardiovascular diseases, diabetes, hepatitis B, chronic obstructive pulmonary disease, chronic kidney diseases, and cancer) that were commonly observed comorbidities at the onset of the COVID-19 pandemic (Guan et al., 2020). 92 percent report having none of these health conditions, while another 7 percent report having one of these conditions.

¹¹ All respondents who were asked this set of questions were also read a detailed information message based on guidance on World Health Organization (WHO) website at the time of the survey. The text of the WHO health message is taken from <https://www.who.int/health-topics/coronavirus> and reads as follows: "Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The best way to prevent and slow down transmission is to be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow). At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical findings become available." This was done to ensure that possibly false beliefs were not left uncorrected and is similar to the approach by Lopez-Pena, Davis, Mobarak, and Raihan (2020).

¹² This suggests that outreach and information campaigns through social networks, where members of the general public are encouraged to share relevant public health information with their friends and families, hold promise. This mirrors the findings of Lopez-Pena et al. (2020).

79 percent report that they would like to go back to work once the situation improves.

The vast majority of respondents who are not currently working in HIP have no other form of employment (91 percent, Table 2, Panel (b)). This is despite the fact that out of those 91 percent without other employment, 41 percent have tried to find a job or start a business. Of those who have not tried to find a job, 29 percent report they are waiting to hear back from HIP, 16 percent are too worried about the risks of COVID-19, and 11 percent report that they are discouraged from looking for other employment. This stark finding suggests there are significant barriers to finding other employment for respondents who have temporarily or permanently lost HIP employment.

4.3. Savings and expenditure

We ask all respondents about their savings and expenditures on food and rent. For respondents who are currently working or who are on leave we also ask about their most recent monthly net salary in HIP.¹³

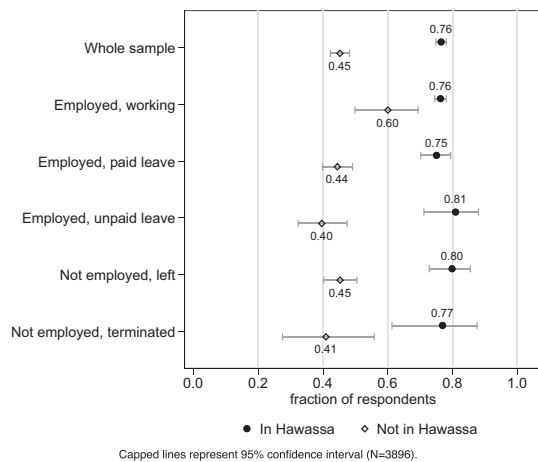
Table 2, Panel (c) details income, savings and expenditures for the respondents. The most recent monthly salary for respondents who are employed is 1114 ETB on average (approximately 31.60 USD), which masks considerable variation between the fifth percentile at 600 ETB and the 95th percentile at 2000 ETB. Savings in the last seven days are small, at 61 ETB on average (1.73 USD), with 80 percent of respondents reporting zero savings. The mean savings for respondents with at least some positive savings are 299 ETB (8.49 USD). Mean food expenditures for the last 7 days are 232 ETB (6.59 USD) while mean monthly rent is 272 ETB (7.72 USD), with 20 percent of the sample paying zero rent. Combining monthly rent and food expenses under the assumption that food expenses in the last seven days reflect a quarter of the monthly expenses leads to total monthly rent and food expenses of 1200 ETB (34.07 USD).

We note that the estimated average basic food and rent expenditures are higher than the average monthly salary. This is the case for 57 percent of employed respondents, which indicates that this is not driven by large outliers in our data. Overall, food (mean 231.95 ETB) and rent expenditures (mean 271.84 ETB) are relatively precisely estimated. This finding does not appear to be driven by specific firms, though there appears to be large heterogeneity between firms. It also does not appear to be driven by bulk purchases of respondents on specific days of the survey (say at the beginning of the week or month). Differences between net earnings and consumption expenditures may be driven by other income sources, notably incoming remittances, and systematic measurement error.¹⁴

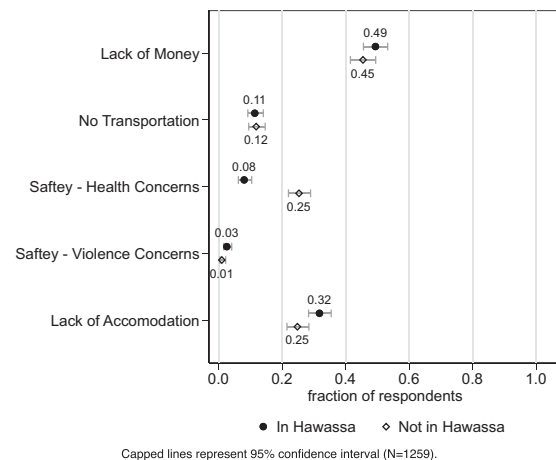
Food Security We find high levels of food insecurity in our survey, with 52 percent of respondents reporting that they are worried about personally not having enough food in the past 7 days (Table 2, Panel (d)). Although we do not have pre-crisis measures of food security for our sample, the reported levels of household

¹³ All data in this section are winsorized at the 99th percentile (at the top). Winsorizing is a common procedure to limit extreme values in observational data. All observations above the 99th are set to the value at the 99th percentile.

¹⁴ Two types of measurement error are relevant in this context: Recall error and telescoping error. Recall error refers to respondents under-reporting true consumption expenditure due to lack of memory. Telescoping error refers to respondents compressing consumption that occurs over a longer reference period into the shorter period and thus over-reporting true consumption. Longer reference periods are more likely to lead to recall error while shorter reference periods are more likely to induce telescoping. As is common in survey research on consumption expenditures, our instrument aims to find a balance between both errors. We follow the Ethiopian LSMS and research on survey methodology from other contexts (Beegle, De Weerd, Friedman, & Gibson, 2012) in using a 7-day recall.



(a) In Desired Location



(b) Barriers to Movement

Fig. 2. Migration. *Note:* This figure displays our findings on internal migration of respondents. Panel (a) on the left shows the share of respondents who state that they are in their desired location, by the respondent's employment status and by whether they are currently in Hawassa. Panel (b) on the right shows the share of respondents mentioning different barriers to movement, split by whether respondents are currently in Hawassa.

– not individual – food security in the ESS/LSMS may offer a benchmark: In 2015–2016, 22 percent of households in urban SNNPR reported being worried about not having enough food.

4.4. Mental health

To assess the mental health of respondents, we administered the 2-item version of the Patient Health Questionnaire (PHQ-2). PHQ-2 is a commonly used, quick, self-administered screening instrument to detect depressive disorder (Kroenke, Spitzer, & Williams, 2003). It is important to note that the purpose of this instrument is not to establish a diagnosis or to monitor depression severity, but to act as a first step in screening patients. Kroenke et al. (2003) recommend that patients who score ≥ 3 on PHQ-2 are more likely to suffer from a depressive disorder and should be further evaluated with the other diagnostic instruments or direct interview to determine whether they meet criteria for a depressive disorder. We use the same suggested cut-off point in the results that we report below. PHQ-2 has been validated among Ethiopian adults (Gelaye et al., 2016; Hanlon et al., 2015). We plan to administer the more detailed 8-item Patient Health Questionnaire (PHQ-8) in a later survey round. We find that 24 percent of respondents screen positive (Table 2 Panel (d)). There are no statistically significant differences by HIP employment status.

4.5. Migration

As we report in our description of the sample (Table 1), a large share of workers in HIP and in our sample are rural–urban migrants who moved to Hawassa for work. Their particular living arrangements, often separated from other family members and renting small rooms with other workers in slums near the industrial park, pose additional challenges in the COVID-19 crisis. Migrant workers may also find it more difficult to access public services or social assistance programs if they do not have appropriate identification documents.¹⁵ Lacking other economic opportunities and a safety net in the city of Hawassa, rural–urban migrant workers who lose their job in the park may try and return to their origin communities. Anecdotal evidence from South Asia suggests

that such return migrants may act as (perceived and actual) disease vectors (Beech, 2020; Agarwal, 2020; Patel, 2020).¹⁶

A significant share of respondents in our sample appear to have migrated away from Hawassa if they are no longer currently working (Table 2, Panel (d)). Only 43 percent of respondents on paid leave are currently in Hawassa, compared to 96 percent of respondents currently working. The vast majority of respondents who are no longer in Hawassa have relocated to a rural area.

Migration may be an important coping mechanism for our sample. We find that 60 percent of respondents in Hawassa and 44 percent of respondents who have left Hawassa report that they are worried about personally not having enough food in the past 7 days. These lower levels of food insecurity among those that have left Hawassa may be explained by the fact that respondents can stay with family members or friends in their rural origin communities and thus do not incur any personal food expenditures. This is supported by the fact that only 65 percent of respondents that have left Hawassa report any food expenditures at all (compared to 95 percent of respondents in Hawassa).

Fig. 2, Panel (a) details the proportion of respondents who state that they are in their desired location, broken down by employment status and by their current location. A stark difference in whether or not respondents are in their desired location can be seen between those currently in Hawassa and those who are not. For respondents currently in Hawassa, 76 percent are in their desired location given their current situation. For respondents not currently in Hawassa, only 45 percent are in their desired location given their current situation. This difference is large in magnitude and statistically significant at the one percent level. This difference in being in ones' desired location by whether or not they are currently in Hawassa holds across all employment categories.

If respondents are not in their desired location, we asked them to list the most important barriers to moving among the following list: lack of money, not having transportation, safety concerns related to health, safety concerns related to violence and lack of accommodation. Fig. 2, Panel (b) details the proportion of respondents who cited each barrier, broken down by if they currently live in Hawassa. The most common barrier is lack of money, with about

¹⁵ On the impacts of COVID-19 on domestic migration across the developing world, see World Bank (2020).

¹⁶ Early research has similarly shown that social and economic links measured from online social networks are predictive of the spread of COVID-19 (Kuchler, Russel, & Stroebel, 2020).

50 percent citing this reason, followed by lack of accommodation. Barriers to relocation are similar among those in Hawassa compared to those not in Hawassa, except for the barrier about safety due to health concerns. Significantly more individuals not in Hawassa report this as a barrier (25 percent of those not in Hawassa compared to only 8 percent of those in Hawassa).

5. Conclusion

This research note highlights an important way in which the impacts of pandemics may spread. A spiking case count and lockdown in the United States or Germany may spread through global value chains to people and markets in other parts of the world. To alleviate potential adverse impacts on the workers at the margins of these value chains, policymakers may want to put in place policies that help firms and workers retain jobs, even in places not directly suffering from the pandemic.

In contexts like Ethiopia's industrial parks, with a high degree of formalization and availability of reliable administrative data, targeting and implementing such support schemes is highly feasible. Using the contact details available from personnel data, such support could even reach workers after they have returned to rural origin communities. Wage subsidies to firms may represent one potential instrument to protect jobs. Such a wage subsidy can flexibly be combined with a cash transfer to worker should they lose their jobs. For all support measures, resolving uncertainty early on would be critical.

Finally, this note adds an important, complementary perspective to the literature on the impacts of factory job opportunities in developing countries (Blattman & Dercon, 2018; Atkin, 2016; Atkin, 2009) and, more specifically, job opportunities for women in the RMG industry (Heath & Mushfiq Mobarak, 2015; Kagy, 2018). What happens to these workers if jobs disappear? This is a key area of attention for future research.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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