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# COVID-19, Lockdowns, and Africa's Informal Sector: Lessons from Ghana\*

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## Abstract

Using unique survey data on informal enterprises, we draw inferences about the potential effects of COVID-19 on informal enterprises in Ghana, beyond the anecdotes which currently dominate the discourse. We draw important lessons on how the lockdown may affect the performance of female- and male-owned informal enterprises in two urban areas of Ghana, Accra and Tema. The following results emerge from the multivariate decomposition regression: first, we find an unexplained spatial gap in sales between informal owners who reside in Accra and Tema. Second, we find no gender gap in sales or innovation, however, there are explained and unexplained gender-gaps in how size affects current sales of informal enterprises. Hence, given that the lockdown affects business performance, we conjecture that the COVID-19 pandemic is likely to increase or introduce gender- and spatial-gaps in the performance of informal enterprises.

*JEL Classification:* D72, O55, J16, P16, R12

*Keywords:* COVID-19; Gender; Informal enterprises; Urban areas; sub-Saharan Africa; Ghana

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# 1 Introduction

The COVID-19 pandemic is a crisis that has brought about ravaging effects on economies and individuals. In response to this pandemic, governments across the world have enforced social distancing and in some cases lockdown measures to reduce the spread of the virus. As a result, unemployment rates have soared globally, which may inevitably induce a global recession. In fact, the world is currently experiencing the worst recession since the Great Depression (International Monetary Fund, 2020). The effects of COVID-19 are likely to be akin to those of the Great Recession, particularly on those in precarious employment.<sup>1</sup> Examining the effects of this pandemic on the world's most vulnerable workers and population has become a key global policy objective (See for instance, Balde et al., 2020; Coibion et al., 2020; Baker et al., 2020; Bartik et al., 2020; Rojas et al., 2020; Acemoglu et al., 2020; Fernández-Villaverde and Jones, 2020, for a non-exhaustive list of recent studies).

In this paper, we provide a formal understanding of the direct and indirect implications of COVID-19 on informal enterprises in Ghana.<sup>2</sup> We employ a multivariate decomposition analyses and a unique survey data collected in 2016 on 513 informal enterprises in two urban cities of Ghana — Accra and Tema. While the survey does not directly contain measures on COVID-19, it provides background information and an understanding of informal enterprises in Accra and Tema — two cities that have been most affected by COVID-19. Most importantly, we are able to utilize the data to present formal evidence of the determinants of performance by location and gender in the informal sector. This permits us to analyze how the pandemic and its subsequent implications (e.g., lockdown and social distancing measures) are likely to impact these determinants, which may in turn affect economic activities in the informal sector. Hence, the main contributions of this paper are twofold: First, we attempt to draw formal juxtapositions and implications of COVID-19 on informal enterprises beyond the general and speculative discussions that currently dominate the discourse in developing countries. Second, our paper focuses on sub-Saharan Africa (SSA) by using Ghana as a case study to shed light on the potential impact of COVID-19 in developing economies. Current studies on COVID-19 (and its impact) have predominantly focused on developed countries, with Balde et al. (2020) as one of the only exceptions focusing on SSA.<sup>3</sup>

<sup>1</sup> ILO (2011, p.5) defines precarious work as work that is ‘characterized by variable levels and degrees of objective (legal status) and subjective (feeling) characteristics of uncertainty and insecurity.’

<sup>2</sup> Informal enterprises are defined as businesses that are not registered at the Registrar General’s Department in Ghana.

<sup>3</sup> A simple search on NBER working papers presents a list of COVID-related research

The informal economy is critical to the livelihood of most households as it is the main source of income in Africa (Dedehouanou et al., 2018; Mhando and Kiggundu, 2018). In the wake of the COVID-19 pandemic, many informal enterprises have either been completely or partially shutdown. For example, in Ghana and Zimbabwe, law enforcement agents ensured that wet markets and street vendors were not operating during lockdown periods.<sup>4</sup> At the same time, Senegal imposed a dusk-to-dawn curfew on all market operations. The manner in which lockdown policies are implemented are crucial as wet markets for instance, are a vital source of livelihood for many individuals in urban parts of Africa. In addition, these measures may impose a ripple effect on the supply chain as small-scale farmers' livelihoods mainly depend on the operations of these markets (Mhlanga and Ndhlovu, 2020).

Informal workers lack the benefits of formal employment and they face an increased risk of losing their livelihoods due to COVID-19 (ILO, 2020). In particular, female-owned informal enterprises may be worse off than their male counterparts, given that they experience a heavier time burden as they are the primary carers (of children and older adults) in the African society (Waterhouse et al., 2017). Indeed, recent studies show that female-owned enterprises "under-perform" compared to male-owned enterprises (e.g., Demartini, 2018; Ggombe and Akampumuza, 2018). Furthermore, studies such as Tandrayen-Ragoobur and Kasseeah (2017) and Ggombe and Akampumuza (2018) find that male-owned enterprises tend to perform better in sales in comparison to female-owned enterprises. Bijedic et al. (2016) on the other hand focus on innovation and find similar results.<sup>5</sup> These differences in performance can be attributed to differences in characteristics of entrepreneurs and/or the enterprises (Dedehouanou and Araar, 2020). These gaps in performance may further widen given the fact that women generally split their time between reproductive work (e.g. household maintenance and child care) and productive work (Awumbila and Momsen, 1995). In contrast, Rosa and Sylla (2018), Akulava (2015), Pfeifer and Wagner (2014) and Koellinger (2008) found that female-owned enterprises tend to have a higher likelihood of introducing innovation, which can

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that predominantly focuses on developed countries or non-African countries. See [https://www.nber.org/wp\\_covid19.html](https://www.nber.org/wp_covid19.html) for details.

<sup>4</sup> Zimbabwe is currently in lockdown and Ghana has eased some lockdown measures. See <https://ourworldindata.org/policy-responses-covid#workplaces-closures>

<sup>5</sup> It is important to note that results in the broader literature are generally mixed. On one hand, some studies have found no differences between male- and female-owned enterprises (see for instance, Kalleberg and Leicht, 1991; Coleman and Robb, 2012; Robb and Watson, 2012; Lee and Marvel, 2014). In contrast, Kalleberg and Leicht (1991) Lee and Marvel (2014) found that male-and female-owned small- and medium-scale enterprises (SMEs) tend to perform equally in Korea, while Kalleberg and Leicht (1991) found that no gender differences exist between the innovativeness of female-owned and male-owned enterprises in Indiana, USA. Evidently, the latter do not focus on developing countries.

lead to higher performance than their male counterparts. Tying the aforementioned to the ongoing COVID-19 pandemic, one of the primary questions we seek to address is: will any observed pre-existing gender-gap in performance of informal enterprises as measured by sales and innovation worsen in the case of Ghana?

Relatedly, there is a variation in the geographical spread of COVID-19, both at the national and sub-national levels. In the context of Ghana, for instance, Accra ranks the highest in the number of recorded cases, followed by Tema and other big cities (see Section 2.1 and Figure 2 in the appendix for details). These differences in the spatial impact of COVID-19, combined with the subsequent varying responses by governments can lead to the widening of existing spatial gaps in informal enterprise performance (see for instance, Williams and Windebank, 1993; Jensen et al., 2019). These observations are also likely to be true at the sub-national level — e.g., different urban areas or rural *vs* urban areas. To this end, we also examine whether spatial inequalities exist among informal enterprises in Accra and Tema, and consequently shed light on how differing COVID-19 related policies will exacerbate or mitigate these inequalities.

Our findings reveal that there are differences in the factors that affect the performance of informal enterprises by ownership (female *vs* male) and location (Tema *vs* Accra), suggesting pre-existing gender- and spatial gaps in Ghana. Specifically, results from the multivariate decomposition uncover an unexplained spatial-gap on current sales, which is due to differences in the effects of previous sales (our measure of enterprise size), age, lack of water and electricity, and crime. This unexplained gap implies that spatial inequalities exists when it comes to factors that drive sales in Accra *versus* Tema. Second, while we do not find an unexplained gap in the effects of variables that contribute to differences in sales performance between female- and male-owned enterprises, we find a gender-gap in the effects of size on current sales. Hence, given that the lockdown affects current sales, we conjecture that future sales of informal enterprises would be affected as a result of COVID-19. The results reveal that there will be differential effects on how COVID-19 and the subsequent lockdown would impact female- and male-owned informal enterprises as well as those located in Accra and Tema.

The remainder of this paper is structured as follows. In section 2, we present some statistical facts on the effects of COVID-19 on the informal economy, and the status of COVID-19 in Ghana. In section 3, we present the data, empirical analyses, and the results. Section 4 discusses the results and its connection to ongoing policy reactions to COVID-19. We conclude the paper in section 5 with some policy discussions.

## 2 Some facts

In section 2.1, we present a summary of the Ghanaian government's response to the ongoing pandemic. In section (2.2), we briefly discuss stylized facts about the informal economy in SSA in general and COVID-19 related policies enacted by the Ghanaian government to assist businesses.

### 2.1 COVID-19 in Ghana

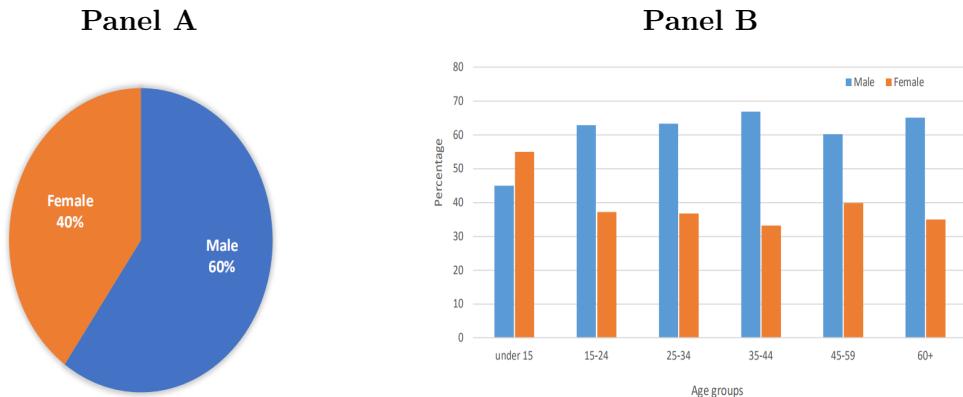
As of April 6th, 2020, a total of 287 cases of COVID-19 and five deaths were recorded. The regional distribution of the cases were as follows: Greater Accra Region, where Accra and Tema are the largest urban areas, had most cases (256), followed by the Ashanti Region (18), Northern Region (10), Upper West Region (1), Eastern Region (1) and Upper East Region (1).<sup>6,7</sup> As of April 14, 2020, Ghana recorded about 641 confirmed COVID-19 cases and 8 deaths. Starting March 16, the government adopted sweeping social distancing measures and travel restrictions to avert an outbreak, including (i) suspension of all public gatherings exceeding 25 people for four weeks; (ii) closure of all universities and schools until further notice; and (iii) mandatory 14-day self-quarantine for any Ghanaian resident who has been to a country with at least 200 confirmed cases of COVID-19, within the last 14 days. On March 23, Ghana closed all its borders to travelers. On March 30, a partial lockdown of major urban areas went into effect.

Figure 1 presents the distribution of COVID-19 cases in Ghana by gender and age. Panel A shows some inequality in the number of cases with 40% of all reported cases in the country are females whereas 60% are males. In Panel B, we observe that males dominate the number of cases for all ages above 15 years, whereas majority of females infected are below 15 years. Panel B further shows that amongst children (i.e. < 15 years), girls are more vulnerable, whereas amongst prime working age (i.e. 15 - 55 years), men seem to be more vulnerable. This demographic differences presents an interesting link with the survey data that further pushes for an investigation of how COVID may affect male- and female-owned business differently.

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<sup>6</sup> See, <https://www.ghanahealthservice.org/covid19/archive.php>.

<sup>7</sup> See, <https://www.ghanahealthservice.org/covid19/> for current updates on COVID-19 in Ghana.



**Figure 1:** Panel A represents percentage distribution of COVID-19 cases in Ghana by gender over the period March-April, 2020. Panel B presents percentage distribution of COVID-19 cases in Ghana by gender and age group over the period March-April, 2020.

**Notes:** Data is from the Ghana Health service. Available here:

<https://www.ghanahealthservice.org/covid19/#>

Figure 2 in the appendix presents a heat map that shows the spatial distribution of the number of COVID-19 cases reported in Accra and Tema as at April 6th, 2020. The heat map suggests that Accra and Tema are unequally affected by COVID-19, with the highest concentration of reported cases in Accra.

## 2.2 The informal economy and COVID-19

As the number of COVID-19 cases soared around the world, African countries swiftly introduced various forms of countermeasures to stop the spread of the virus on the continent.<sup>8</sup> These include lockdown, social distancing, restrictions on the movement of people, restrictions on economic and social activities, and isolation/quarantine measures. Arguably, these measures are unravelling and exacerbating pre-existing socio-economic issues such as food insecurity, gender-gaps, and spacial inequality within the continent. In addition, the countermeasures seem to be upending many livelihoods thereby creating more local crisis upon the global crisis, particularly for those in the informal economy.

As noted, the informal economy is a significant part of most economies in SSA (Medina et al., 2017). The International Labor Organization (ILO) estimates that about 85.8% of all employment in Africa is informal (ILO, 2018). Moreover, West Africa is

<sup>8</sup> There is available evidence that most African countries implemented various forms of these policies before they recorded 100 cases of the virus (Ryder and Benefo, 2020).

estimated to have the highest informal employment in SSA with a rate of 92.4% (ILO, 2018). These suggest that the informal economy is not only a vital source of income in SSA, but a key provider of essential services and food security as well.

However, these significant contributions of the informal sector are expected to fall given that its activities are most vulnerable to the virus. Recent estimates from the ILO (2020) show that about 1.6 billion informal workers (i.e., 76% of global informal employment) are affected by the virus, and informal workers have lost about 60 percent of their meagre earnings. Based on real-time data, the ILO (2020) also estimates that high-risk informal sectors such as food services and retail trade — sectors in which women are mostly engaged will be highly affected. Given that economic recovery is expected to be generally slow and uncertain post COVID-19 (ILO, 2020), and the lack of support available to the informal economy, the challenges to female informal enterprise owners are expected to be long-lasting.

In terms of policy support, the Government of Ghana has committed US\$100 million to support the response to the virus, and about US\$210 million was committed to the Coronavirus Alleviation Programme (CAP) to the promotion of selected industries (e.g., pharmaceutical sector supplying COVID-19 drugs and equipment). In addition, these funds contribute to the creation of guarantees and first-loss instruments(i.e., an insurance policy) for SMEs and unemployment benefits. Unfortunately, most of these policies may not benefit informal enterprises or individuals in precarious employment.<sup>9</sup>

Hence, it goes without saying that the informal economy may bare the brunt of the negative effects of COVID-19 and the public measures that have been implemented by governments in SSA (ILO, 2020). Although formal and informal sectors are both impacted by the effects of COVID-19, a cross-country analysis by Balde et al. (2020) suggests that the impact on the informal economy is likely to be markedly higher for at least two reasons: (1) informal employees hardly have formal contracts, hence more likely to face layoffs; and (2) informal workers lack social security. Consequently, while the effect of the pandemic on African economies remain uncertain, it is not surprising that conservative estimates reflect an expected decline in growth by about -5.1% and about 100 million jobs to be lost in the informal economy (World Bank, 2020) and McKinsey & Co as cited in Ryder and Benefo (2020). It is therefore imperative to examine the performance of informal enterprises in the face of COVID-19.

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<sup>9</sup> See, <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19> for more details on Ghana's response to COVID-19.

### 3 Methodology

In this section, we present the data and formulate a simple empirical model to decompose the factors that drive the performance of (i) informal enterprises located in Accra versus those in Tema; and (ii) male- versus female-owned informal enterprises. We present the results in section 3.3.

#### 3.1 Data

COVID-19 has compounded difficulties in collecting primary data on informal enterprises and their activities. As a result, we use primary data collected in 2016, on 513 informal enterprises in Accra and Tema to build our discussion. The data was collected in 17 randomly selected zones in urban Ghana (9 in Accra and 8 in Tema). Face-to-face interviews were conducted using a semi-structured questionnaire that covered information on sales, costs, gender of owner, registration, business environment, registration and business activities (Avenyo, 2018). The interviews were conducted in English and three local languages (Twi, Ga, and Ewe). Full details of the survey data is available in Avenyo (2018). The survey data do not contain information on COVID-19, however, it provides important background information which allows us to draw valid inference on the potential effects of the pandemic on the informal economy.

**Table 1:** Summary statistics of key variables

	Male	Female	Total
<b>Full sample</b>	300	213	513
Essential sectors	119	114	233
City (Accra)	71	56	127
City (Tema)	48	58	106
TPP innovation (Yes)	231	152	513
Sales in 2015 (mean in Ghanaian Cedis) <sup>a</sup>	3542.154	3104.433	3363.564

**Note:** <sup>a</sup>Ghanaian Cedis is the local currency in Ghana. Mean difference of 437.726 statistically insignificant with  $p$ -value of 0.600.

Source: Avenyo (2018)

Table 1 presents the summary statistics from the survey data. First, the data shows that 213 of our sampled enterprises are female-owned while 300 are male-owned. Classifying essential sectors as those that produce baked foods, and sell food or groceries, the data distribution shows that essential industries are equally owned by males and females. Male-owned essential enterprises are mainly located in Accra, while female-owned essential enterprises are mainly dominant in Tema. The data also shows that 231 male-owned

enterprises introduced technological product and process (TPP) innovation compared to 152 female-owned enterprises. On average, male-owned enterprises generated about 3,542 Ghanaian Cedis (approximately \$612 USD) in sales in 2015, while their female counterparts generated about 3,104 (approximately \$536 USD) Ghanaian Cedis in sales in 2015. The mean comparison of sales however suggests that there are no statistically significant difference between the mean sales of male-and female-owned enterprises in 2015.

### 3.2 Empirical strategy

To examine whether there are pre-existing gaps between the performance of male- and female-owned informal enterprises, and between Accra-and-Tema-based informal enterprises, we formulate a simple regression model as:

$$Y_i = \alpha_0 + \alpha_1 X_i + \beta_G + \delta_C + \epsilon_i \quad (1)$$

where  $Y_i$  is the vector of performance outcomes of the informal enterprise: sales and TPP innovation.  $X_i$  adjusts for other explanatory variables,  $\beta_G$  and  $\delta_i$  capture the gender of the owner and the city of location of the enterprise, respectively. The term  $\epsilon_i$  is a standard normally distributed error with mean 0 and variance equal to 1.

As noted, we use sales in 2015, and TPP innovation to measure the performance of informal enterprises. Sales in 2015 is a continuous variable defined as the logarithm of total sales of enterprises in 2015 fiscal year. TPP innovation is a binary variable taking the value 1 if the enterprise introduced either a product or a process innovation between 2013-2015 and 0 otherwise. Hence, we estimate an Ordinary Least Squares (OLS) regression for sales in 2015, and a logit regression for TPP innovation. The choice of these two outcome measures is based on two key dynamic effects of the pandemic. First, informal enterprises are expected to experience reduced work time and lower demand for their products due to the lockdown and restrictions on mobility. On the contrary, innovative informal enterprises may be better able to mitigate the negative effects of the lockdown and mobility restrictions on sales, but also may experience less disruption in their activities through pure increases in innovation activities.

The parameter  $\beta_G$  is a binary variable taking the value 1 if the enterprises is male-owned and 0 otherwise, while  $\delta_G$  takes the value 1 if the informal enterprise is located in Accra and 0 otherwise. The variables in the vector  $X$  are mainly determined by the

empirical literature (Classen et al., 2014; Gebreeyesus and Mohnen, 2013; Robson et al., 2009) and the data. We include lagged sales (in logs) as a measure of size and to account for possible simultaneity bias. Additionally, we control for age and its square, and a host of dummies capturing access to finance, access to electricity and water, corruption, crime. We also account for whether the enterprise: (a) is a family business; (b) interacts with formal entities; and (c) operates in essential industries. With regards to innovation, we also include whether the enterprise informal and formal enterprises in their innovative activities.

To further ground our discussions, we conduct simple regressions to examine gaps in factors that drive sales and innovation activities in male-owned and female-owned enterprises as well as by location. To do this, we estimate a multivariate decomposition for (non) linear response models (Powers et al., 2011) as:

$$\Delta Y_{(M-F)} = (X_M - X_F)\beta_M + X_F(\beta_M - \beta_F) + [(X_M - X_F)(\beta_M - \beta_F)] \quad (2)$$

$M$  and  $F$  are males and females, respectively (we substitute with Accra and Tema for decomposition by location),  $\Delta Y$  is the difference in mean sales for male and female owners (or owners in Accra and Tema),  $X_i, \dots, X_k$  are the characteristics, and  $\beta_i, \dots, \beta_k$  are estimated coefficients. The first part of the equation,  $(X^M - X^F)^M$  represents differences due to endowments (or the explained gap), the second part,  $X^F(\beta^M - \beta^F)$  represents difference due to coefficients (the unexplained gap), and the third part,  $[(X^M - X^F)(\beta^M - \beta^F)]$  is the difference in interaction between endowments and coefficients.

### 3.3 Results

The estimation results are reported in Table 2. Columns (1) reflects the OLS results (sales as the dependent variable) and shows that there is no significant difference between male and female enterprise owners. However, the results show that there is a negative and significant difference (at the 10 % level) between owners who reside in Accra and Tema. The results also show that larger enterprises and those that operate in essential services had more sales. The results from the logit regression in column (4) show that there is no significant relationship between gender and location with regards to innovation. However, the results uncover that informal enterprises that lack access to finance and face crime are less likely to innovate. On the other hand, enterprises that imitate informal and formal enterprises are more likely to innovate innovation. Older enterprises are also found to have a lower likelihood to innovate, highlighting that older enterprises are more conservative.

Columns (2) and (3) show the decomposition of sales, and column (5) and (6) show the decomposition of TPP innovation. Columns (2) and (4) are decomposed by location (Accra *vs* Tema) and columns (3) and (5) are by gender of owner (male *vs* female). There are two important features in the table— Panel A and Panel B. Panel A captures the part of the decomposition (in columns (2), (3), (5) and (6)) that is attributable to differences in *endowment (E)*, which is also the explained component of the decomposition. Panel B on the other hand, represents the unexplained or *coefficients effects (C)* of the decomposition. The results in column (2) show that there is a negative and significant difference (at the 10% level) in the effects of the coefficients of sales for owners in Accra and Tema. This is reflected by the unexplained component in the summary section of Table 2. This gap in sales mainly comes from gaps in size (positive), age (negative), lack of electricity and water (negative) and crime (negative). This implies that compared to informal enterprise owners in Tema, owners in Accra are more affected by age, electricity and water supply and crime. In column (3), we find a positive and significant gap (at the 1% level) in endowments that contribute to sales of male and female owners. Both columns (2 and 3) show explained and unexplained gaps in how the variable firm size affects sales significant (1% level). However, we do not find a gap in the effects of the coefficients. Columns (5) shows that there are no (explained or unexplained) gender-gaps in how these factors contribute to innovation. Column (6) shows that there is an endowment gap in TPP innovation between owners based in Accra and Tema.

The major advantage of decomposing factors that contribute to sales and innovation lies in the fact that it allows us to observe gender- or spatial-gaps within these factors. We are also able to see whether there is an overall (explained or unexplained) gap within the gender and spatial groups we examine. Our results show that, while there is a gender-gap in endowments, there is no unexplained gender-gap in sales in urban Ghana. However, there are explained and unexplained gender-gaps in how size (or previous sales) affect sales in 2015 ( see Panel A and Panel B in Table 2). Given that COVID-19 measures directly affect sales (McKinsey, 2020), gender-gaps in size may increase. This will either increase the gender-gap in size, which inadvertently induce an unexplained gender-gap. Specifically, while lockdown measures have been eased in Ghana, forms of COVID-19 related restrictions such as closure of schools are still in place. This implies that female-owners are likely to remain at home or work less in order to provide care for their children, while their male counterparts resume their businesses.

We find an unexplained spatial gap in sales between owners in Accra and Tema. The gap is negative implying that owners in Accra have a geographical disadvantage

when it comes to sales. This stems from unexplained differences in electricity and water supply, and crime. However, we anticipate that the observed gap in effects of electricity and water supply between owners in Accra (Table 2) will at least remain the same. This is because the Ghanaian government has taken different initiatives to support and ease the effects of COVID-19 on households and enterprises, such as halving or absorbing electric and water bills. Finally, there has been a decline in crime globally due to the lockdown (Mohler et al., 2020). We again anticipate that the effect of the lockdown and social distancing on crime will not increase the observed gap in the effects of crime. We however expect the overall gap in sales between enterprise owners in Accra and Tema to increase. This is because despite the fact that Accra is the business capital of Ghana, it is the hot-spot for COVID-19 and social distancing policies are stricter in Accra more than in Tema. As a result, enterprise owners in Tema are more likely to somewhat continue to conducting business activities while those in Accra experience effects of more stricter COVID-19 related policies.

In sum, the results from the decomposition of sales between male- and female-owned enterprises in Ghana show that female-owned enterprises have lower sales and have a disadvantage in how previous firm size has an effect on future sales. This suggests that in the near future, female-owned enterprises may end up have lower sales compared to male-owned enterprises. These results are similar to Bardasi et al. (2011) who found that female-owned enterprises in SSA have lower sales compared to male-owned enterprises. We also found a gap in effects of the coefficients between owners in Accra and Tema (Table 2). This gap emanated from the negative effects of previous sales, age, lack of electricity and water and crime. We do not expect these gaps to increase given the policies that target water and electricity supply and the reduction in crime during the lockdown.

**Table 2:** Decomposition of the determinants of sales and innovation in informal enterprises in urban Ghana

Estimation: Dependent:	OLS			Logit		
	Log of sales in 2015			TPP innovation in 2013-2015		
Panel A: Endowments (E)	(1)	(2)	(3)	(4)	(5)	(6)
Total sales, 2013 (log)	0.615*** (7.47)	-0.028*** (-10.16)	0.389*** (15.79)	0.022 (0.33)	0.006 (0.57)	-0.001 (-1.49)
Formal interaction	-0.036 (-0.35)	0.002 (0.20)	0.024 (1.44)	0.167 (0.66)	0.007 (1.07)	-0.009** (-2.21)
Age (log)	0.123 (1.13)	-0.005 (-0.30)	-0.009 (-0.60)	-0.458** (-2.04)	0.004 (0.69)	0.021*** (2.90)
Age square (log)	-0.000 (-1.25)	-0.012 (-0.90)	-0.002 (-0.36)	0.000 (1.08)	0.001 (0.36)	-0.002 (-0.50)
Lack of access to finance	-0.051 (-0.48)	0.004 (0.34)	-0.007 (-0.74)	-0.514* (-1.90)	-0.009** (-2.22)	0.014*** (2.81)
Family business	0.127 (1.14)	-0.000 (-0.09)	0.005 (0.72)	0.260 (0.86)	-0.001 (-0.47)	0.000 (0.58)
Lack of electricity and water	0.102 (0.80)	0.001 (0.22)	-0.001 (-0.91)	0.239 (0.92)	-0.001 (-1.22)	-0.001 (-0.58)
Corruption	-0.189 (-1.26)	0.001 (0.20)	-0.006 (-0.96)	0.257 (0.39)	-0.000 (-0.17)	-0.001 (-0.49)
Crime	-0.092 (-0.76)	0.005 (1.37)	-0.000 (-0.11)	-1.027*** (-3.47)	0.002*** (2.95)	0.005*** (3.27)
Essential industry	0.234* (1.96)	-0.022 (-1.17)	-0.023 (-1.23)	-0.330 (-1.31)	0.010 (1.31)	0.031*** (3.75)
Imitate other informal enterprises				4.026*** (5.72)	-0.000 (-0.22)	-0.001 (-0.38)
Imitate formal enterprises				2.976** (2.39)	0.001** (2.07)	-0.011* (-1.68)
TPP	0.026 (0.17)	-0.003 (-0.37)	0.016 (1.48)			
Gender of owner	0.179 (1.56)	0.010 (1.35)		0.237 (0.94)		0.001 (0.30)
City	-0.194* (-1.88)		-0.005 (-0.70)	0.041 (0.15)	-0.002 (-0.56)	
Panel B: Coefficients Effect (C)						
Total sales_2013 (log)	1.446*** (3.25)	1.274*** (3.05)		-0.024 (-0.22)		0.456 (0.28)
Formal interaction	-0.049 (-0.43)	0.189** (2.17)		-0.032 (-1.39)		0.034 (0.20)
Age (log)	-0.452 (-0.99)	-1.171*** (-3.00)		-0.166 (-1.42)		0.861 (0.29)
Age square (log)	-0.069* (-1.79)	0.047* (1.79)		0.011 (0.98)		0.092 (0.27)
Lack of access to finance	0.045 (0.39)	-0.072 (-0.81)		0.018 (0.80)		-0.022 (-0.16)
Family business	-0.063 (-1.16)	-0.007 (-0.16)		-0.003 (-0.19)		-0.058 (-0.27)
Lack of electricity and water	-0.200 (-1.54)	-0.375*** (-2.97)		-0.032 (-0.96)		0.376 (0.28)
Corruption	0.036 (1.07)	-0.003 (-0.12)		-0.008 (-1.19)		-0.012 (-0.19)
Crime	-0.146 (-1.60)	0.007 (0.08)		-0.006 (-0.24)		-0.011 (-0.10)
Essential industry	-0.082 (-0.73)	-0.098 (-0.88)		0.039 (1.29)		-0.372 (-0.29)
Imitate other informal enterprises				0.022 (0.95)		0.163 (0.27)
Imitate formal enterprises				-0.007 (-1.11)		-0.068 (-0.27)
TPP	0.059 (0.31)	0.057 (1.04)				
Gender of owner	0.045 (0.37)					-0.176 (-0.27)
City		0.133 (1.09)		-0.001 (-0.03)		
Summary						
E	-0.047 (-1.57)	0.381*** (8.92)		0.017 (0.96)		0.047*** (3.45)
C	-0.185* (-1.79)	0.103 (0.98)		0.056 (1.41)		-0.035 (-0.93)
R	-0.231** (-2.34)	0.484*** (5.01)		0.073** (2.01)		0.012 (0.32)
adj. R <sup>2</sup>	0.483			52.68 (0.000)		
Wald chi <sup>2</sup> (Prob >chi <sup>2</sup> )				0.265		
Pseudo R <sup>2</sup>				498		
N	498	498	498	498	498	498

Notes: t-statistics in parentheses; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . TPP refers to technological product and process innovation.

## 4 Policy reactions: Is there a disconnect?

Lockdowns and social distancing of people have become the accepted way to combat COVID-19. Majority of African countries have adopted and enacted these policies from Eastern and Western countries in order to stop human-to-human spread of the virus. As the number of cases soared around the world, the immediate implementation of these policies in Africa appear to be a quick reaction to protect lives. As previously discussed, our country of interest, Ghana, instituted several laws and rules to curb the spread of COVID-19. In particular, and amongst other things, Ghana adopted social distancing measures, travel restrictions to avert an outbreak, the suspension of all public gatherings exceeding 25 people for four weeks. Moreover, Ghana closed all its borders to travelers and on March 30, a partial lockdown of major urban areas went into effect.

This reaction by the Ghanaian government and other African governments may be driven by paranoia of the virus which is rapidly spreading within (densely populated) African communities. Indeed, many African countries have poor health care systems, as evidenced by previous pandemics such as the Ebola crisis. Hence, the paranoia to protect a non-existing or failing health system, gave little no reverence to the implications on vulnerable populations such as informal workers. This inadvertently affects fundamental components of the economy such as food supply and other essential services.

As result, Africa's pre-coronavirus growth forecast and optimism appears to have dimmed with long-lasting effects of the pandemic on livelihoods. Given the increases in unemployment, and the pre-crisis jobless growth, the COVID-19 pandemic is expected to lead to increase casualisation of jobs and the erosion of gains made on achieving decent work for all (SDG 8). Development agencies such as the World Bank, the International Monetary Fund (IMF), and the African Development Bank (AfDB) have been opened and have offered to give quick relief funds to low- and lower-middle income countries to help address some of the immediate challenges of COVID-19. As mentioned earlier, in the case of Ghana, the government has committed US\$100 million to support preparedness and response, and approximately US\$210 million under its Coronavirus Alleviation Programme (CAP) to promote selected industries including pharmaceutical sector supplying COVID-19 drugs and equipment, the support of small and medium enterprises (SMEs) and employment, amongst others.<sup>10</sup> It is however important to note that while these policies make room for SMEs in general at the macro-level, the reality is that the implementation of such a policy at micro-level is starkly different, and potentially preclude its

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<sup>10</sup> See, <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19> for full details on country-specific policy responses and strategies following the ongoing pandemic.

large informal economy all together. This, therefore, generates a macro-micro disconnect in policy implementation where the true beneficiaries— i.e., owners of informal enterprises and informal workers — of such a policy will not benefit from the policy. More precisely, even in the absence of corruption and in the presence of strong government credibility to commit to the CAP, issues including but not limited to lack of data about enterprises in the informal sector and their unique challenges (see for instance, Avenyo, 2018) and information asymmetry in the informal sector will inadvertently prevent these informal businesses from benefiting from the policy.

The analysis reported in Table 2 suggests that there is a gap between the performance of male- and female- owned businesses. With the ongoing COVID-19 pandemic, the performance of enterprises, particularly those owned by women, are likely to be impacted negatively due to lockdown laws, for instance. The effects of the lockdown, therefore, will have differing effects on male- *versus* female-owned enterprises. Consequently, a macro-policy such as the CAP, which lacks clarity and does not explicitly account for these differences is likely to yield sub-optimal outcomes. Related, the lack of adequate and detailed data to accurately track enterprises and workers in the informal economy at the micro-level makes identifying and supporting these businesses by governments an impossible task. Even if a macro-policy such as the CAP explicitly accounts for possible differential effects of the COVID-19 pandemic on male- *versus* female-owned enterprises, large administrative costs and time lags in identifying these informal businesses would induce inefficiencies in the policy outcome.

Finally, informal enterprises operate ‘outside’ the legal and regulatory frameworks of modern economies (Loayza, 2016). This naturally raises the issue of asymmetric information where even if there is support for such enterprises at the macro-level, a decent fraction of owners may never learn of this information; hence, will not benefit from the policy. Furthermore, challenges at the political economy level (e.g., corruption or government credibility to commit to policies) can by themselves negatively affect the streamlining of macro-policies at the micro-level. Together, the existing structural issues in the informal economy along with political economy challenges can further deprive enterprises in the informal economy from benefiting from policies such as CAP. The latter can further widen the gap that exists between formal and informal sectors, in that firms are better tracked, have access to information and can better be targeted for support, which would make them benefit more from COVID-related governmental policies. The foregoing begets the question whether these policies are sustainable and economically prudent in stopping the spread and the devastating effects of the virus in

Africa since it excludes majority of those who truly need support due to the pandemic.

## 5 Conclusion

The global COVID-19 crisis is fast generating a more devastating local crisis in African economies. While African countries so far have had a different scenario regarding COVID-19, in that the continent have largely been spared in terms of the number of the reported cases and deaths due to the virus, other socio-economic dimensions of the pandemic seem to be creating or waiting to create a more bigger catastrophe on the continent. This paper examines some of these issues from an informal economy perspective.

Employing and analysing data collected in 2016 on informal enterprises in urban Ghana, and decomposing gender and spatial gaps in the performance of enterprises, the evidence indicates that pre-existing gaps between male-and female-owned enterprises is likely to widen given the role of women in household work. The results uncover that there will be differential effects of how COVID-19 and the subsequent lockdown measures will impact male- and female-owned enterprises as well as enterprises in different areas of residence. Compounded with the fact that: (i) most cases of COVID-19 are in Accra and Tema; (ii) COVID-19 relief policies that target enterprises in Ghana do not include informal enterprises; and (iii) the lockdown affected businesses and individuals that trade with informal enterprises, the differences that we observe in the data would likely worsen. In summary, our preliminary analysis reflects that COVID-19 counter-measures, that is lockdown and social distancing, are likely to create and lead to the widening of pre-existing gender and spatial gaps in the informal economy.

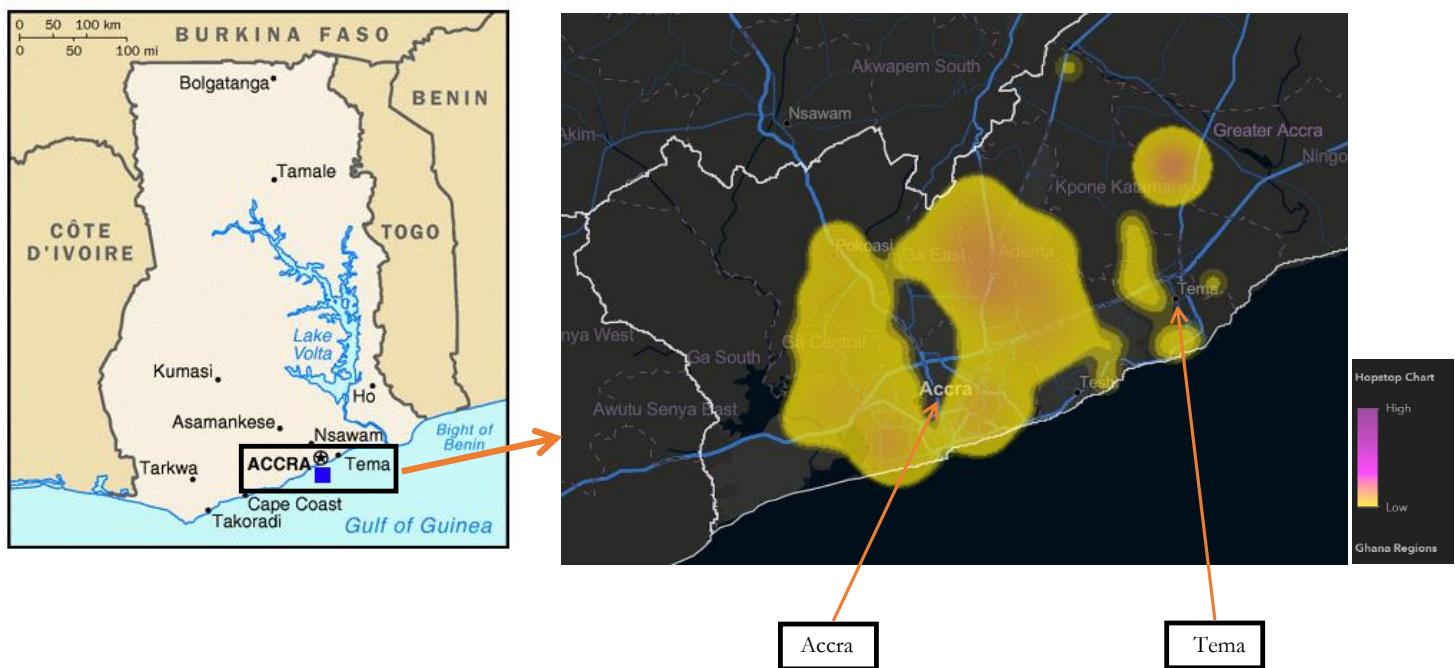
From a policy perspective, ongoing COVID-19-related policies should be carefully tailored to account for these differential impacts of COVID-19 at the micro-level. Additionally, immediate future policy should target putting in structures that focus on identifying and tracking informal enterprises in developing countries. This way, the impact of future external shocks such as COVID-19 on informal enterprises can be alleviated through effective policies (e.g., transfer payments) that easily target these enterprises.

This paper contributes to the fast-paced discussion on COVID-19 and its effect; hence, it presents a quick analysis on an uncertain and rapidly changing pandemic using pre-existing data. The results and analysis in this study are therefore preliminary. Going forward, measuring the specific gender and spatial effects of COVID-19 on the performance of informal enterprises using real time data would be a natural extension of this paper. Furthermore, while we are unable to provide inferences on interactions between

gender and location due to data constraints, our findings provide a direction for studies that could formally simulate the effects of COVID-19 on gender and spatial gaps in the performance informal enterprises. To this end, despite its limitations, the paper sheds light on gender and spatial inequalities in the informal sector, how COVID-19 polices in Africa may impact various socio-economic groups differently, and possible pathways forward for future research.

## Appendix

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