

Gebreselassie, Kidist; Abdisa, Lamessa T.

## Article

# Assessing gender equity among businesses in Ethiopia: implications for gender profitability gap

Cogent Economics & Finance

## Provided in Cooperation with:

Taylor & Francis Group

*Suggested Citation:* Gebreselassie, Kidist; Abdisa, Lamessa T. (2024) : Assessing gender equity among businesses in Ethiopia: implications for gender profitability gap, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 12, Iss. 1, pp. 1-19,  
<https://doi.org/10.1080/23322039.2024.2364039>

This Version is available at:

<https://hdl.handle.net/10419/321510>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/4.0/>

## Assessing gender equity among businesses in Ethiopia: implications for gender profitability gap

Kidist Gebreselassie & Lamessa T. Abdisa

**To cite this article:** Kidist Gebreselassie & Lamessa T. Abdisa (2024) Assessing gender equity among businesses in Ethiopia: implications for gender profitability gap, Cogent Economics & Finance, 12:1, 2364039, DOI: [10.1080/23322039.2024.2364039](https://doi.org/10.1080/23322039.2024.2364039)

**To link to this article:** <https://doi.org/10.1080/23322039.2024.2364039>



© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 04 Jul 2024.



Submit your article to this journal [↗](#)



Article views: 918



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)

# Assessing gender equity among businesses in Ethiopia: implications for gender profitability gap

Kidist Gebreselassie<sup>a</sup> and Lamessa T. Abdisa<sup>b</sup>

<sup>a</sup>Center for African and Asian Studies, College of Social Sciences, Addis Ababa University, Addis Ababa, Ethiopia;

<sup>b</sup>Ethiopian Economics Association, Addis Ababa, Ethiopia

## ABSTRACT

Evidence shows that gender inequality characterizes the enterprise landscape in sub-Saharan Africa, with women disproportionately concentrating in low return businesses. With the literature leaning toward comparing male- and female-owned enterprises and among females in female- and male-dominated sectors, evidence of a gendered profit gap within male-dominated sectors is scanty and mixed. This study evaluated the gender profitability gap and identified drivers of female participation in male-dominated and high-return sectors using the Ethiopian Socioeconomic Survey 2018/19 dataset. The study did not find evidence of gender gap in profit both before and after controlling for other factors affecting enterprise profit. Our result shows that women with larger households, a longer duration of migration, and better assets are more likely to engage in male-dominated sectors, whereas those who are widowed/divorced/separated and have small children are less likely to engage in such sectors. Larger households and longer durations of migration are more likely to be associated with female engagement in high-return sectors, whereas home-based business is less likely. From this, females in male-dominated sectors tend to have better support systems and lower vulnerabilities. Thus, the findings of the study warrant interventions in access to information on business opportunities, workspace, and paid care services.

## IMPACT STATEMENT

This study examines gender disparities in profit for businesses within male-dominated sectors. Our findings show no significant gap between female- and male-owned firms, even in high-return sectors. This highlights the importance of equal opportunity for women entrepreneurs. These robust results support efforts towards gender equality and women's empowerment in business.

The study explores why women participate in male-dominated and high-return sectors. It finds that these sectors are not always interchangeable, and household factors like childcare heavily influence female participation. Importantly, the study highlights the role of family support systems and other female entrepreneurs in encouraging women to enter male-dominated sectors. This emphasizes the social and economic influences beyond just industry dominance that impact female entrepreneurship.

By examining profitability gaps in male-dominated sectors and the factors influencing women's participation in both these and high-return sectors, this study offers valuable insights for policymakers. It highlights the need for childcare support to ease women's entry into male-dominated fields and proposes further research into alternative models for evaluating gender dynamics and business performance. Ultimately, the study paves the way for a more inclusive and equitable entrepreneurial landscape by providing evidence and direction for future initiatives.

## ARTICLE HISTORY

Received 26 December 2023

Revised 18 April 2024

Accepted 29 May 2024

## KEYWORDS

Enterprise-profit; gender; male-dominated sector; high-return sector; MSEs; Ethiopia

## REVIEWING EDITOR

Yamini Sharma, Reviewer  
Selection Editor, Taylor and Francis, India

## SUBJECTS

Economics; Finance;  
Industry & Industrial  
Studies; Gender Studies -  
Soc Sci; Gender &  
Development

## 1. Introduction

In Ethiopia, discriminatory gender norms had perpetuated women and girl's subjection in stereotyped roles that often puts them at a disadvantage. This situation had transpired in gender inequalities in

**CONTACT** Lamessa T. Abdisa  [lamessa.tariku@gmail.com](mailto:lamessa.tariku@gmail.com)  Ethiopian Economics Association (EEA), Michael Church, Yeka Sub-city, Woreda 11 CMC, P.O. Box: 34282 Addis Ababa, Ethiopia

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

socioeconomic and political spheres disproportionately affecting women. Despite increasing participation of women in productive roles over time, they still face significant challenges in terms of access to education and decent jobs (UNICEF, 2019; IMF, 2018). Gender roles and associated discriminatory practices also manifest themselves in disparities in access to productive resources, services, and opportunities (Bekana, 2020). In terms of finance, 23% of females aged 18 and older owned a financial account in a bank or in any formal financial institution as compared to 39% of males in 2018/19 (CSA, 2020). These socially constructed norms and behaviours shape women's choice of occupations into what is traditionally known as feminine and often informal and unpaid care activities (IMF, 2018; Bekana, 2020). Women also constitute 65% of the unemployed population (compared to 35% for males) with 54% of employed women belonging to the informal sector (compared to 41% of employed men) (ESS, 2021).

Studies conducted both in Ethiopia and elsewhere indicate the prevalence of gender inequality in the performance of business enterprises disproportionately affecting women (e.g. Bardasi et al., 2011; cited in Goldstein et al., 2019; Brixiova & Kangoye, 2015; Goldstein et al., 2019; Gonzalez & Poulin, 2019; Hardy & Kagy, 2018; Islam et al., 2018). Evidence further shows that the performance of female-owned enterprises depends on the specific sectors they operate in (Bardasi et al., 2011; cited in Goldstein et al., 2019; Hallward-Driemeier, 2013), which themselves are gendered (Blau & Kahn, 2017). In general, females operating in male-dominated sectors are proved to perform better in terms of sales, profits, and employment compared to females operating in female-concentrated sectors (Alibhai et al., 2017; Campos et al., 2018; Goldstein et al., 2019).

On the other hand, there is limited evidence as to how female-owned enterprises are faring compared to male-owned ones both operating in male-dominated sectors. In this regard, Campos et al. (2018) found that women business operators in Uganda make as much sales as men when both are operating in male-dominated sectors. On the other hand, Goldstein et al. (2019) found, based on a global dataset, that female-owned enterprises in male-dominated sectors generate lower profit than male-owned enterprises operating in male-dominated sectors. However, entry into male-dominated sectors does not seem to be an option available to all female entrepreneurs due to a number of gender-related constraints (Alibhai et al., 2017, 2018; Campos et al., 2018). As a result, female entrepreneurs tend to work fewer hours, hire less labor, use less credit, and are less likely to have a business license than their male cohorts (Buehren et al., 2019). These gender constraints also manifest themselves in women's choice of occupations and sectors. Female entrepreneurs concentrate in sectors characterized by low growth (Alibhai et al., 2018), less lucrative (Kevane & Wydick, 2001; Klapper & Parker, 2010; McKenzie & Woodruff, 2008), micro-sized (Campos & Gassier, 2017; UNDP, 2018) and informal (IMF, 2018; Singh et al., 2001).

Whereas several of the previous studies give evidence to enable identifying factors underlying gender gaps in the choice of enterprises and business performance, our knowledge is limited regarding the gender gap in performance between female and male-owned enterprises within male-dominated sectors. The scanty evidences on the topic is mixed. To the researcher's knowledge, there are two relevant evidences addressing gender gap in business performance based on assessment of gender gap in profit and sales. Goldstein et al. (2019) found, based on a global dataset, that female-owned enterprises generate lower profit than male-owned ones when both are operating in male-dominated sectors. On the other hand, Campos et al. (2018) found that females in male-dominated sectors in Uganda make as many sales as males in male-dominated sectors. Moreover, no study has so far been conducted to examine gender gaps in business performance between female and male-owned enterprises when both operate in male-dominated sectors in context of Ethiopia.

The present study, therefore, is aimed at evaluating gender gap in profit between female- and male-owned enterprises both operating in male-dominated sectors by using data from Ethiopia. It also characterized women who are more likely to be operating in sectors dominated by men and where potential returns are higher. To this end, OLS profit model is estimated to examine profit gaps between female and male-owned enterprises operating in male-dominated and high return sectors. A probit model was also estimated to identify predictors of female participation in male-dominated and high return sectors.

The remainder of the report is organized as follows: Section 2 presents a review of literature, positioning the study within the existing body of research, while Section 3 lays out the theoretical model adopted for the study. This is followed by Section 4, which presents the data, and Section 5, the main

findings of the study. Finally, [Section 6](#) gives a brief comparison of findings with prior studies and [Section 7](#) the conclusions and policy implications drawn from the study.

## 2. Existing research

The importance of gender in entrepreneurship research is widely recognized as a result of its far-reaching implications transcending the individual. A number of studies indicate the prevalence of gender inequality in the performance of business enterprises, disproportionately affecting women. Evidence shows that, relative to male-owned businesses, female-owned businesses get 31% lower sales in sub-Saharan Africa (Bardasi et al., 2011; cited in Goldstein et al., 2019), less than 50% of men's monthly sales in Swaziland (Brixiova & Kangoye, 2015), 28% lower value added in Madagascar (Nordman & Vaillant, 2014), and 6% lower average value added before controlling for other factors in Africa (Hallward-Driemeier, 2013). In terms of profit gaps, a study on Ghanaian garment sector found that female-owned microenterprises earn only 53% of profit earned by male-owned ones (Hardy & Kagy, 2018).

Evidence further shows that the performance of female-owned enterprises depends on the specific sectors they engage in. In general, women operating in male-dominated sectors are proved to perform better in terms of sales, profits, and employment relative to women operating in female-concentrated sectors (Campos et al., 2018; Alibhai et al., 2017; Goldstein et al., 2019). Looking further into gendered performances within male-dominated sectors, a global study including 11 African countries found that male-owned enterprises operating in male-dominated sectors make higher profit than female-owned enterprises in male-dominated sectors (Goldstein et al., 2019). On the other hand, enterprises owned by women had the same sales earning perform as were found no evidence of sales gap was found between male- and female-owned enterprises both operating in male-dominated sectors for the case of Uganda (Campos et al., 2018). However, entry into male-dominated sectors does not seem to be an option available to all female entrepreneurs (Alibhai et al., 2017).

Women are faced with a number of challenges, including lack of access to finance, support networks, training opportunities, and the need to balance work and home responsibility (Alibhai et al., 2017; Ogundana, 2022; Simba et al., 2022), which undermine their efforts to succeed in business. These challenges have cultural, socioeconomic and political dimensions which interact to determine women's entrepreneurial performance (Ojong et al., 2021). In particular, lack of collateral needed to access credit from financial institutions is a formidable challenge for women in sub-Saharan Africa, where gender norms and discriminatory practices limit women's ownership of assets (Ogundana, 2022; Simba et al., 2022). Notwithstanding the challenges, some women devise innovative strategies to cope and thrive (Ojong et al., 2021).

In Ethiopia, female-owned enterprises are characterized by lower growth rates (Amha, 2015), smaller sizes (UNDP, 2018) and informal setups (IMF, 2018; Buehren et al., 2019) compared to their male counterparts. Moreover, higher dropout rates are reported among female-owned enterprises in Ethiopia in comparison to male-owned ones (Woldehanna et al., 2018). Estimates further show that women in Ethiopia, on average, generate lower agricultural productivity (by 36%), lower business sales (by 79%) and lower hourly wages (by 44%) than their male cohorts (Buehren et al., 2019). Based on ESS (2015-16) data, Gonzalez and Poulin (2019) also found lower sales (by 24%) among female business managers compared to male managers after controlling for other factors. In line with this, female-led enterprises operating in male-dominated sectors are reported to generate higher profits and employ more workers than those operating in female-concentrated sectors (Alibhai et al., 2017). In terms of costing such disparities, estimates show that the annual cost of gender gaps in agricultural productivity amounts to 1.4% of total GDP of Ethiopia, the cost of business sales being 1.4 percent of total GDP and that of gender gaps in hourly wages is 1.9 percent of total GDP (Buehren et al., 2019).

Underpinning these gaps in business participation and performance are the deeply ingrained gender norms and stereotypes perpetuating inequalities, which manifest themselves in women's limited access to resources, services, and opportunities. Women in Ethiopia tend to have limited ownership of land, housing, control over a bank account, and a mobile phone (MoWCY, UNICEF Ethiopia & SPRI, 2019). Such gender related constraints influence the decision to start a business (World Bank, 2013), the choice of business sectors (Alibhai et al., 2017) and the intensity of engagement in businesses (Buehren et al.,

2019). Entry of female entrepreneurs into high-return, male-dominated sectors, in Ethiopia, is influenced by lack of access to capital, market entry opportunity, business networks, information on potential returns, and harassment and discrimination (Alibhai et al., 2017).

Performance among business women in Ethiopia are also influenced by constraints including lack of access to business information and training, finance, raw materials and land (Terefe, 2020; Mulatu, 2021), and business premises and marketing (Assefa and Eldana Cheru, 2018). In particular, women's lower business sales are associated with their engagement in lower work hours and use of lower hired labor and credit and lack of business license whereas their lower hourly wages are associated with level of education and marital status (Buehren et al., 2019).

Understanding the gender dimensions of the entrepreneurial ecosystem is useful for identifying potential areas of intervention for enhancing the participation and performance of businesswomen in male-dominated and high return sectors and closing the gender gap in the labor market. Moreover, considering the cost of perpetuating the status quo of gender inequalities in contexts where entrenched gender norms influence occupational and sectoral choices further reinforcing gendered income inequalities.

### 3. Conceptual framework

#### 3.1. Defining male-dominated and high return sectors

The theoretical explanation for gendered occupations is introduced in Polachek's (1981; cited in European Communities, 2009) theory of segregation which illuminates the interplay between women's care and productive roles shaping women's intensity of employment and job choice. In the same vein, a study in Vietnam, found evidence for occupational sorting driven by women's preference for non-monetary job characteristics, e.g. shorter work hours and paid leave, compared to their men counterparts (Chowdhury et al., 2018).

Our exercise of identifying enterprises as male-dominated and female-concentrated, has adapted the concept of market concentration ratio with slight modifications to fit our purpose. The market concentration ratio aggregates the market share of the largest firms to determine the degree of inequality (or competition) within a given industry (Weinstock, 1982; cited in Pavic et al., 2016). Instead of market share of firms, we introduce rate of participation of male enterprise owners in the sector to distinguish between male-dominated and female-concentrated sectors. Analytically, the concentration ratio (in our case, male entrepreneur,  $m$ , ownership concentration ratio),  $CR_m$ , for sector  $j$  ( $j = 1, 2, \dots, J$ ), is given by

$$CR_m^j = \frac{\sum_{i=1}^n E_i^j}{n_j}$$

$$E_i^j = \begin{cases} 1, & \text{if enterprise } i \text{ in sector } j \text{ has a male owner} \\ 0, & \text{otherwise} \end{cases} \quad (4.1)$$

$$N = \sum_{j=1}^J n_j$$

where  $E$  stands for the enterprise index,  $n_j$  the number of enterprises in sector  $j$ , and  $N$  the total number of enterprises,  $i$  ( $i = 1, 2, \dots, N$ ), in the sample. The value of  $CR$ , in (4.1), may range from 0 to 100 with a  $CR$  of 1 for sector  $j$  indicating complete male-domination in the sector, 0, complete female-concentration and a  $CR$  of 0.5 gender equality in ownership concentration. For empirical analysis of participation in male-dominated sectors,  $MD$ , we use the outcome given as:

$$S^j = \begin{cases} \text{male-dominated}(MD = 1), & \text{if } CR_m^j > 0.5 \\ \text{female-concentrated}(MD = 0), & \text{if } CR_m^j < 0.5 \end{cases} \quad (4.2)$$

In (4.2), the  $j$ th sector,  $S^j$ , is identified as male-dominated if more than 50%<sup>1</sup> of enterprises in that sector are owned by men. This enabled identifying female- and male-owned enterprises operating in male-dominated sectors, with its indicator variable included among the predictors in the profit model. The individual significance of the variable is tested to identify potential profit gap.



For the case of defining high return sectors, we draw on the literature on income distribution and inequality. Haughton and Khandker (2009, p. 103) presented a simple way of measuring inequality for an array of income arranged in an ascending order by dividing up the population into, e.g. fifths (20<sup>th</sup> percentiles), and reporting the proportions of income accruing to each level. Hence, the five income quintiles (1, lowest, to 5, highest), each consisting of 20% of the population. We adapt their approach with a slight adjustment to identify enterprises which make top 25% profits (top quartile) to benchmark high return enterprises.

Thus, the  $j^{\text{th}}$  ( $j = 1, 2, \dots, J$ ) sector,  $S^j$ , is categorized as high return,  $HR$ , or low return,  $LR$ , as follows:

$$S^j = \begin{cases} HR(HR = 1), & RE_i^j > \text{the 3rd quartile} \\ LR(HR = 0), & \text{otherwise} \end{cases} \quad (4.3)$$

Where  $RE_i^j$  denotes profit for enterprise  $i$  in sector  $j$ . Hence, enterprises generating a return in excess of the 3<sup>rd</sup> quartile are categorized as high return, which enabled identifying female- and male-owned enterprises operating in high return sectors used for predicting profit beside other variables.

### 3.2. Modeling gendered profit gap

The following profit model is estimated to examine gendered profit gap:

$$Y_i = \pi^G FMD_i + \pi x_i + e_i \quad (4.4)$$

Where  $Y_i$  represents annual profit of the  $i^{\text{th}}$  enterprise which is a function of observed explanatory variables,  $x_i$  and error term,  $e_i$ .  $Y_i$  is calculated as the difference between total annual revenue and cost<sup>2</sup>.  $FMD_i$  denotes female participation in male-dominated sectors.  $x_i$  consists of owner-, household-, enterprise- and context-specific variables, drawn from the literature, to predict enterprise profits. It includes gender, age, education level, source of initial capital, hired labor, accessibility of savings, access to credit, intensity of operation, experience, sector category, assets, enterprise's share in household income and location<sup>3</sup>.  $\pi$  and  $x_i$  are vectors.

The profit gap between female and male-owned enterprises both operating in male-dominated sectors, is computed from the mean profit of the enterprises. The mean profit of female-owned enterprises operating in male-dominated sector is given by:

$$E(Y_i | x_i, FMD_i = 1) = \pi^G + \pi x_i \quad (4.5)$$

The mean profit of a male-owned enterprise operating in male-dominated sector is given by:

$$E(Y_i | x_i, FMD_i = 0) = \pi x_i \quad (4.6)$$

The mean profit gap between male- and female-owned enterprises operating in male-dominated sector is obtained by taking the differences between (4.5) and (4.6):

$$E(Y_i | x_i, FMD_i = 1) - E(Y_i | x_i, FMD_i = 0) = \pi^G \quad (4.7)$$

The actual mean profit gap in (4.7) depends on the sign and magnitude of  $\pi^G$  in the empirical estimation. The same procedure is applied in estimating the profit gap between female- and male-owned enterprises operating in high-return sectors, using  $HR_i$  corresponding to (4.3), in place of  $FMD_i$  in (4.4).

### 3.3. Modeling female participation in male-dominated and high return sectors

The empirical model for female participation in male-dominated sectors, has a binary outcome, indicating participation. Let  $S_i^{MD}$  denote the binary observed dependent variable for female-owned enterprise  $i$ 's participation in a male-dominated sector, corresponding to (4.2), the probit model for examining the predictors of female participation in a male-dominated sector is specified as:

$$S_i^{MD} = x_i' \beta + \varepsilon_i \quad (4.8)$$

$$S_i^{MD} = \begin{cases} 1, & \text{if } S_i^{MD*} > 0 \\ 0, & \text{if } S_i^{MD*} \leq 0 \end{cases}$$

where  $S_i^{MD*}$  is the unobserved (latent) variable.  $S_i^{MD}$  takes a value of 1 if a female-owned enterprise operates in a male-dominated sector; and 0 if a female-owned enterprise operates in a female-concentrated sector.  $\beta$  denotes the estimated parameters and  $\varepsilon_i$  stochastic error term. The explanatory variables in  $x$  are age, education, household size, marital status, children under the age of 5, migration of members, and access to support networks, accessibility of savings, assets, experience in business, hired labor, salaries/wages, site of business operation, and location.

Similarly, the empirical probit model for female participation in high return sectors, corresponding to (4.3) is:

$$S_i^{HR} = x_i' \alpha + e_i \quad (4.9)$$

$$S_i^{HR} = \begin{cases} 1, & \text{if } S_i^{HR*} > 0 \\ 0, & \text{if } S_i^{HR*} \leq 0 \end{cases}$$

where  $S_i^{HR*}$  is the unobserved (latent) variable. The dependent variable,  $S_i^{HR}$ , takes a value of 1 if a female-owned enterprise operates in a high return sector (i.e. earning profit in excess of the top quartile level) and 0 if a female-owned enterprise operates in low return sector.  $\alpha$  denotes the estimated parameters and  $e_i$  the error term. The explanatory variables,  $x$ , are similar to those in the probit for participation in male-dominated sectors.

## 4. Data and methodology of the study

### 4.1. Source of data

The present study makes use of Ethiopia Socioeconomic Survey (ESS) 2018/19 (ESS4)<sup>4</sup> dataset to attain its objectives. It consists of data on a number of enterprise-, household- and context-specific variables needed to estimate the gender profitability gap; however, it has some drawbacks related to outliers. The dataset consists of a total of 7315 observations after cleaning for outliers.

### 4.2. Individual and household profiles of enterprise owners

Descriptive results show no striking differences between enterprises operating in male-dominated and female-concentrated sectors in terms of average age, education, household size, having under 5-year-old children, and duration of migration (see Table 1). About half of the enterprises operating in male-dominated sectors are married compared to 42% in female-concentrated sectors. About 48% of enterprise owners in male-dominated sectors and 53% in female-concentrated sectors have other female household members also owning an enterprise.

Accessibility of savings, proxied by use of remote banking services (ATM, online and mobile banking), is 11% among business owners in male-dominated sectors compared to 8% in female-concentrated ones. Similarly, ownership of a mobile phone is slightly higher (61%) among entrepreneurs in male-dominated sectors compared to those in female-concentrated ones (59%). In terms of asset holding, a slightly larger proportion (8%) of business owners in male-dominated sectors possess more than one building compared to 6% among those in female-concentrated sectors.

### 4.3. Enterprise attributes

About 33% of enterprises operating in male-dominated sectors are licensed, compared to 28% of those in female-concentrated sectors. Nearly half (49%) of the enterprises operating in female-concentrated sectors are operating around the house-yard compared to 28% among those in male-dominated sectors. A considerable share (31%) of the enterprises operating in female-concentrated sectors (compared to 22% in male-dominated) secured their business start-up capital from an existing agricultural income source.

The mean years of experience in business is about 6 years for both types of enterprises (see Table 2). Enterprises in female-concentrated sectors are operated for an average of 180 days per year, compared to 175 days in the case of male-concentrated sectors. On average, the use of hired labor (and monthly salaries and wages costs) among enterprises in male-dominated sectors is about 60% (and 39%) of those in



**Table 1.** Description of individual and household specific characteristics of enterprise owners.

Variable name	Measurement	Male-dominated sector		Female-concentrated sector	
		No. of Obs	Mean (Stdev)	No. of Obs	Mean (Stdev)
Age	Years	1624	40.17 (14.02)	1236	40.42 (13.07)
Education	Years of completed schooling	1076	7.08 (5.14)	3,566	7.05 (5.17)
Household size	No. of household members	1624	5.55 (2.39)	5503	5.68 (2.56)
Migration of household members	No. of months since a household (HH) member migrated	1604	1.09 (3.69)	5418	1.162 (4.39)
Dwelling duration	No. of years in the current dwelling	1624	11.01 (11.7)	5,503	12.16 (11.77)
Marital status		1172		4031	
	1 = Never married	525 (44.8%)	1940 (48.1%)		
	2 = Married	575 (49.1)		1677 (41.6%)	
	3 = No more married (due to death, divorce, separation)	72 (6.1%)		414 (10.3%)	
Child under five-year-old	1 = If owner's HH has under 5-year-old children; 0 = Otherwise	167 (10.3%)		509 (9.3%)	
Access to support networks	1 = If other female household members own NFE; 0 = Otherwise	780 (48.0%)		2925 (53.2%)	
Loan use	1 = If loan was used; 0 = Otherwise	247 (15.2%)		896 (16.3%)	
Accessibility of savings	1 = If owner uses ATM/ online/ mobile banking; 0 = Otherwise	174 (10.7%)		456 (8.3%)	
Mobile phone ownership	1 = If owner has a mobile phone; 0 = Otherwise	995 (61.2%)		3238 (58.8%)	
ATM use	1 = If owner uses ATM; 0 = Otherwise	166 (10.2%)		29 (7.8%)	
Additional building	1 = If owner has more than one building; 0 = Otherwise	134 (8.3%)		330 (6.0%)	

Note. difference in number of observations is due to variable specific cleaning.

Source: Authors computation based on ESS 2018/19.

female-concentrated sectors. Locationally, about 26% of sample enterprises operating in male-dominated sectors are located in Addis-Ababa and Dire-Dawa, compared to 21% for those in female-concentrated sectors, with potential implications for access to opportunities that cities offer.

In terms of sectoral distribution, the entire sample of agricultural enterprises is female-dominated. Nearly 91% of the enterprises in manufacturing/construction sector and 75% in service/trade sector are female-concentrated, compared to 9% and 25% male-concentrated, respectively. Overall, females constitute majority (53%) of sample enterprise owners, compared to 47% men. In terms of performance, on average, enterprises operating in female-concentrated sectors generate a slightly higher annual profit (51,299.6 ETB)<sup>5</sup> than those in male-concentrated sectors (50,877.8 ETB). While some (unconditional) profit differential is also observed between enterprises in female and male-dominated sectors, whether the difference prevails after controlling for other variables also affecting profit is examined in Sections 5.1.

#### 4.4. Participation in male-dominated and high return sectors

Male-dominated sectors are defined as sectors with more than 50% of enterprises in the sector are owned by men whereas female-concentrated sectors are those with more than 50% of enterprises owned by women. Based on this, there are 14 male-dominated sectors and 22 female-concentrated sectors in the

**Table 2.** Enterprise characteristics across male-dominated and female-concentrated sectors.

Variable name	Measurement	Male-dominated sectors		Female-concentrated sectors	
		No. of Obs	Mean (Stdev)	No. of Obs	Mean (Stdev)
Experience in business	No. of years since established	1624	6.16 (6.01)	5503	6.17 (6.53)
Intensity of operation	Average no. of days enterprise was active over last 12 months	1592	175.16 (116.84)	5394	179.72 (126.72)
Hired labor	No. of hired workers	1624	1.18 (4.60)	5503	1.981 (41.79)
Salaries and wages	Monthly costs in salaries & wages in ETB	1624	986.23 (7423.44)	5503	2511.6 (61159.81)
Land size	Square meter	985	403.28 (1062.90)	3605	493.38 (1648.57)
Enterprise share in HH income	% Share	1624	43.41 (36.68)	5503	39.15 (33.29)
Licensed	1= If enterprise has license; 0= Otherwise	539 (33.2%)		1535 (27.9%)	
Site of business operation	1= If enterprise is operated in house-yard; 0= Otherwise	461 (28.4%)		2694 (48.9%)	
Location	1= If enterprise is located in Addis Ababa/ Dire-Dawa; 0= Otherwise	425 (26.2%)		1145 (20.8%)	
Source of start-up capital		1624		5503	
	1= Agricultural income	354 (21.8%)		1730 (31.4%)	
	2= Non-farm income	419 (25.8%)		1448 (26.3%)	
	3= Family/friends	230 (14.2%)		592 (10.8%)	
	4= Other income	621 (38.2%)		1733 (31.5%)	
Sector		1647 (22.5%)		5668 (77.5%)	
	1= Manufacturing/ Construction/ Mining	93 (9%)		942 (91%)	
	2= Service/Trade	1554 (25%)		4662 (75%)	
	3= Agriculture	0 (0%)		64 (100%)	
Profit of enterprise	Annual profit in ETB	1624	50,877.83 (632755.4)	5503	51,299.57 (567434.1)

Note. difference in number of observations is due to variable specific cleaning.

Source: Authors computation based on ESS 2018/19.

studied enterprises. The male-dominated sectors are mainly mining of metal ores, manufacture (leather, wood, metal, basic pharmaceutical), specialized construction, wholesale & retail, maintenance, transportation, information service, rental & leasing, human health & social work, membership organization. The female-concentrated sectors are crop and animal production, manufacturing (food, beverages, furniture), accommodation, food & beverage service, repair and installation, construction of buildings, wholesale and retail trade except for motor vehicles, architectural and engineering activities, employment activities, tour & travel agency, office administration and support, creative arts & entertainment, repair of computers.

Results show that 20.5% of female business owners engage in male-dominated sectors and 77% in female-concentrated sectors whereas the remainder 2.4% are in parity sectors (see Table 3). About 24% of male business owners participate in male-dominated sectors, 73% in female-concentrated sectors and 2.7% in parity sectors. This shows that majority of male- and female-owned enterprises are engaged in female-concentrated sectors. In the pooled sample, women constitute 49% of total business owners operating in male-dominated sectors and men 51%. On the other hand, women constitute 54% of total business owners engaged in female-concentrated sectors and men 46%.

With regard to participation in high return sectors, 25% of female-owned businesses are operating in high return sectors, whereas 75% are in low return sectors. The proportion is the same for male-owned businesses operating in high and low return sectors. Overall, female-owned enterprises make up 53.5% of sample enterprises in high return sectors and men 46.5%.

## 5. Results

### 5.1. Gender profitability gap

This section examined gender profitability gap based on a test of mean profit differences (see Table 4). The test involved estimating and making comparison of the unconditional mean annual profit (equation 4.4

**Table 3.** Distribution of male-dominated and high return enterprise ownership by sex.

Category of business sector men and women engaged in	Female business owners		Male business owners		Total		Sex distribution of business owners		
	#	%	#	%	#	%	Female (%)	Male (%)	Total
Male-dominated sector	794	20.5	830	24.1	1624	22.2	48.9	51.1	100
Female-concentrated sector	2987	77.1	2516	73.1	5503	75.2	54.3	45.7	100
Total in non-parity sector	3781	97.6	3346	97.3	7127	97.4	53.1	46.9	100
Total in parity sectors (a sector with 50-50 ownership by women- men) <sup>1</sup>	94	2.4	94	2.7	188	2.6	0.5	0.5	100
Total in business	3875	100	3440	100	7315	100	52.9	47	100
High return sectors	976	25.2	850	24.7	1826	24.9	53.5	46.5	100
Low return sectors	2899	74.8	2590	75.3	5489	75.1	52.8	47.2	100
Total sample business owners	3875	52.9	3440	47	7315	100	52.9	47	100

<sup>1</sup>The parity sector was excluded from the regression model in Section 6 to avoid potential biases from margining into one or the other categories.

Source: Authors computation based on ESS 2018/19.

**Table 4.** Test of predicted mean annual profit differences between female- and male-owned enterprises in male-dominated sectors and in high return sectors.

Assumption	Male-dominated sectors			High return sectors		
	Conditional mean predicted profit <sup>1</sup>	Conditional mean predicted profit <sup>2</sup>	Unconditional mean profit	Conditional mean predicted profit <sup>1</sup>	Conditional mean predicted profit <sup>2</sup>	Unconditional mean profit
<b>1. Equal variances of annual profit between female- and male-owned enterprises in male-dominated sectors</b>						
Female-owned	10.706 (0.288)	10.255 (0.228)	9.428 (0.092)	12.004 (0.075)	11.950 (0.074)	11.617 (0.031)
Male-owned	9.951 (0.389)	9.681 (0.297)	9.309 (0.093)	12.144 (0.062)	12.044 (0.088)	11.597 (0.033)
Mean difference between females & males (H <sub>0</sub> : mean difference = 0)	-0.754 (0.474); Pr( T  >  t ) = 0.1142	-0.575 (0.369); Pr( T  >  t ) = 0.1222	-0.119 (0.131); Pr( T  >  t ) = 0.3663	0.139 (0.097); Pr( T  >  t ) = 0.1522	0.094 (0.114); Pr( T  >  t ) = 0.4103	-0.0198 (0.046); Pr( T  >  t ) = 0.6654
<b>2. Unequal variances of annual profit between female- and male-owned enterprises in male-dominated sectors</b>						
Female-owned	10.706 (0.288)	10.255 (0.228)	9.428 (0.092)	12.004 (0.062)	11.950 (0.074)	11.617 (0.031)
Male-owned	9.951 (0.389)	9.68051 (0.297)	9.309 (0.093)	12.144 (0.075)	12.044 (0.088)	11.597 (0.033)
Mean difference between females & males (H <sub>0</sub> : mean difference = 0)	-0.754 (0.484); Pr( T  >  t ) = 0.1222	-0.575 (0.374); Pr( T  >  t ) = 0.1273	-0.119 (0.131); Pr( T  >  t ) = 0.3659	0.139 (0.098); Pr( T  >  t ) = 0.1537	0.094 (0.115); Pr( T  >  t ) = 0.4127	-0.0198 (0.046); Pr( T  >  t ) = 0.6654
Decision: Assumption 1	Do not reject H <sub>0</sub>	Do not reject H <sub>0</sub>	Do not reject H <sub>0</sub>	Do not reject H <sub>0</sub>	Do not reject H <sub>0</sub>	Do not reject H <sub>0</sub>
Decision: Assumption 2						

NB: Standard errors in parenthesis.<sup>1</sup>Hired labor as an indicator for enterprise size; <sup>2</sup>Salaries/wages as an indicator for enterprise size.

Source: Authors' estimation based on ESS 2018/19.

before including the control variables) and the conditional mean predicted annual profit gaps between enterprises owned by women and men both operating in male-dominated and in high return sectors. This is followed by estimation of the profit model after controlling for the relevant individual, household, enterprise, and context-specific characteristics (4.4)<sup>6</sup>.

Test results show that the null hypothesis of no differences in mean annual profits between female- and male-owned enterprises operating in male-dominated sectors could not be rejected in both the tests of unconditional mean annual profit and conditional mean predicted annual profits. In the latter case, the test was conducted by estimating predicted annual profit based on a regression of a log transformed annual profit on a dummy for being a woman enterprise owner in male dominated sectors and control variables. This enables seeing if the test results from unconditional gender profit gap change after controlling for the relevant variables.

This is found to be the case under the assumption of equal variance of annual profits (in the population) for female- and male-owned enterprises operating in male-dominated sectors and after allowing for heteroscedastic variances. Hence, the mean annual profits can be said to be equal for female- and

male-owned enterprises both operating in male-dominated sectors. Similarly, the null hypothesis that the mean annual profits are equal for female- and male-owned enterprises operating in high return sectors could not be rejected for both the cases of conditional predicted mean profit and unconditional mean profit under each of the assumptions of equal and heteroscedastic variances in annual profits. Based on this, the study did not find any evidence of profit difference between enterprises owned by women and men both operating in male-dominated and in high return sectors.

This finding is consistent with that of Campos et al. (2018) who found female-owned enterprises operating in male-dominated sectors performing as well as male-owned ones in male-dominated sectors for the case of unconditional sales in Uganda. Our finding is unlike that of Goldstein et al. (2019), who found a significant profit gap between female- and male-owned enterprises in male-dominated sectors, by using a global dataset consisting of 97 countries including 11 SSA countries. The present finding of lack of gendered profit gap may indicate that women who ventured in male-dominated and in high return sectors also possess the attributes needed to close the gender disparity in business performance. From this follows that identifying factors associated with the likelihood of women operating in male-dominated and in high return sectors helps to furnish some of the explanation for the finding of lack of evidence of gendered profit gap and guide future interventions for closing the gap. In an effort to identify factors associated with the likelihood of women sorting into male-dominated and high return sectors, we estimated a probit model in Section 5.2.

In the next steps, a profit model was estimated with control variables to enable identifying variables that affect enterprise profit and checking if the model meets theoretical expectations in terms of expected signs and significance of some of the control variables. For the estimation of the profit model with control variables, a log-log model was estimated with the non-discrete righthand side variables also transformed into log forms. The same procedure was followed for the case of estimating the profit model on a dummy for high return enterprises after controlling for the relevant variables. For estimation of the profit model with control variables, two models were estimated by taking different indicators for enterprise size, i.e. hired labor and wages/salaries (see Table 5).

The variables female-owned enterprises in male-dominated sectors and female-owned enterprises in high return sectors are not found to be significant in predicting enterprise profit indicating the absence of evidence of profit difference between enterprises owned by women and men both operating in male-dominated and in high return sectors. Based on this, the results on the lack of evidence of significant profit gap did not change after controlling for the relevant variables. Further, results on the control variables e.g. experience in business (and its squared term), intensity of operation, hired labor/wages & salaries, enterprise share in household income, assets and location have the expected signs and significance indicating their role in predicting enterprise profit, albeit with some variations along indicators for enterprise size.

## **5.2. Predictors of female participation in male-dominated and high return sectors**

The Section addresses the objective of identifying and characterizing female-owned enterprises operating in male-dominated sectors and in high return sectors. To this end, the empirical models given in equations (4.8) and (4.9) are estimated each in a probit specification on a set of variables identified from the literature. The findings on the variables associated with the likelihood of female-owned enterprises operating in male-dominated and in high return sectors offer some insights into explaining the finding of lack of a significant profit gap between female- and male-owned enterprises operating in male-dominated sectors and in high return sectors.

### **5.2.1. Females participating in male-dominated sectors**

In order to identify predictors of female participation in male-dominated sectors in comparison to those operating in female-concentrated sectors, equation (4.8) was estimated. The dependent variable takes a value of 1 if a female-owned enterprise operates in a male-dominated sector; and 0 if a female-owned enterprise operates in a female-concentrated sector. Results show that women with larger households, longer duration of migration of members, and additional buildings are more likely to be engaged in male-dominated sectors (see Table 6). The favorable role of a larger household may indicate that women

**Table 5.** Annual profit for female and male entrepreneurs operating in male-dominated and in high return sectors.

(1) Variables	Estimation with females in male-dominated sectors: hired labor (2) and salaries/wages (3) as indicators for size		Estimation with females in high-return sectors: hired labor (4) and salaries/wages (5) as indicators for size	
	(2) Robust coef	(3) Robust coef	(4) Robust coef	(5) Robust coef
Age	0.104 (0.221)	0.165 (0.231)	−0.107 (0.086)	−0.118 (0.083)
Education	−0.120 (0.209)	0.183 (0.300)	0.066 (0.109)	0.049 (0.102)
Household size	0.013 (0.608)	−1.583 (0.471)***	0.293 (0.216)	0.331 (0.167)**
Experience in business	6.499 (1.322)***	−0.981 (1.013)	2.171 (0.464)***	0.989 (0.350)***
Experience squared	−1.599 (0.356)***	0.427 (0.363)	−0.541 (0.106)***	−0.238 (0.089)***
Intensity of operation	0.804 (0.280)***	1.316 (0.193)***	0.029 (0.167)	0.065 (0.117)
Hired labor	0.956 (0.438)**		0.116 (0.156)	
Salaries & wages		0.376 (0.174)**		0.476 (0.082)***
Accessibility of savings	−0.829 (0.636)	−0.267 (0.461)	−0.037 (0.225)	−0.081 (0.171)
Loan use	0.193 (0.510)	0.719 (0.558)	−0.193 (0.222)	0.462 (0.309)
Sector				
Manufacturing/ construction	−0.499 (1.146)	0.936 (1.129)	−0.590 (0.478)	−0.883 (0.431)**
Service/ tradea			−1.498 (0.295)***	−1.374 (0.325)***
Capital source				
Agriculture income	−0.254 (0.977)	1.940 (0.691)***	0.390 (0.317)	0.206 (0.299)
Non-farm income	−0.008 (0.502)	0.988 (0.45)**	−0.214 (0.183)	0.357 (0.172)**
Family/relatives	−0.109 (0.894)	−0.914 (0.61)	−0.578 (0.228)**	−0.337 (0.246)
Licensed	−0.537 (0.553)	0.084 (0.614)	−0.514 (0.268)*	−0.359 (0.244)
Site of business operation	−0.616 (1.077)	−1.708 (1.173)	−0.144 (−0.233)	0.016 (0.172)
Location	1.767 (0.584)***	1.274 (0.643)*	0.517 (0.217)**	0.309 (0.187)*
Additional building	−0.166 (0.699)	2.567 (0.510)***	−0.479 (0.234)**	−0.520 (0.263)**
Land size	−0.331 (0.193)*	−0.087 (0.232)	0.162 (0.070)**	0.399 (0.119)***
Enterprise share in household incomeb			0.266 (0.122)**	0.385 (0.104)***
Female in male- dominated sector	0.477 (0.341)	0.094 (0.293)		
Female in high-return sector			−0.097 (0.144)	−0.139 (0.129)
Constant	1.943 (1.752)	2.044 (1.942)	9.657 (0.971)***	4.518 (1.244)***
No. of obs.	89	109	198	205
Prob > F	F(19, 69) = 31.36 0.000	F(19, 89) = 22.23 0.000	F(21, 176) = 10.22 0.000	F(21, 183) = 15.86 0.000
R-Squared	0.7860	0.7694	0.3577	0.4956

NB: Standard errors in parentheses. The symbols \*\*\*, \*\*, \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. <sup>a</sup>STATA dropped the sector category, *service/trade*, from estimation in columns (2) and (3) due to insufficient observations/variations. <sup>b</sup>*Enterprise share in household income* is dropped from estimation in columns (1) and (2) as it reduced the model predictive power (R-squared, significance) while not making any difference on the significance of the variable of interest.

Source: Authors estimation based on ESS 2018/19.

who are operating in male-dominated sectors are taking advantage of the available household support (e.g. labor, other) for their enterprises. This is plausible in cases where male-dominated sectors have higher (perceived or actual) demand for such support.

The likelihood of female participation in male-dominated sectors also increases with the increase in duration of migration of household members. The role of migration may be seen in terms of increasing access to alternative income sources (to finance investment needs and as a fallback position in case of

**Table 6.** Probit for female participation in male-dominated sectors (vs. females in female sector).

(1) Variables	(2) Estimation with hired labor as an indicator for enterprise size	(3) Estimation with hired labor as an indicator for enterprise size	(4) Estimation with salaries/wages as an indicator for enterprise size	(5) Estimation with salaries/wages as an indicator for enterprise size
	Robust coef	dy/dx	Robust coef	dy/dx
Age	0.013 (0.016)	0.002 (0.003)	0.011 (0.015)	0.002 (0.003)
Education	0.012 (0.025)	0.002 (0.005)	0.011 (0.026)	0.002 (0.005)
Household size	0.250 (0.085)***	0.047 (0.016)***	0.247 (0.082)***	0.047 (0.016)***
Migration of members	0.050 (0.024)**	0.009 (0.004)**	0.049 (0.024)**	0.009 (0.004)**
Dwelling duration	-0.024 (0.015)	-0.005 (0.003)	-0.022 (0.015)	-0.004 (0.003)
Marital status: no more married	-0.46 (0.278)*	-0.091 (0.059)	-0.476 (0.278)*	-0.096 (0.06)
Child under 5-year-old	-0.885 (0.397)**	-0.118 (0.04)***	-0.883 (0.393)**	-0.120 (0.041)***
Business ownership by other female members	-1.011 (0.406)**	-0.268 (0.129)**	-1.023 (0.404)**	-0.275 (0.129)**
Mobile phone ownership	0.338 (0.312)	0.055 (0.045)	0.313 (0.309)	0.053 (0.047)
ATM use	0.09 (0.324)	0.018 (0.065)	0.029 (0.321)	0.006 (0.063)
Additional buildings	0.795 (0.421)*	0.214 (0.143)	0.782 (0.418)*	0.212 (0.142)
Experience in business	0.021 (0.018)	0.004 (0.003)	0.022 (0.018)	0.004 (0.003)
Hired labor	-0.008 (0.015)	-0.001 (0.003)		
Salaries & wages			0.0 (0.0)	0.0 (0.0)
Site of business operation	-0.282 (0.237)	-0.054 (0.047)	-0.29 (0.235)	-0.057 (0.048)
Location	0.128 (0.252)	0.025 (0.049)	0.057 (0.251)	0.011 (0.049)
Constant	-1.562 (0.629)**		-1.468 (0.615)**	
No. of Obs.	198		195	
Wald chi2(15)	36.89		39.45	
Prob > chi2	0.0013		0.0005	
Pseudo R2	0.1708		0.1678	

NB: The symbols \*\*\*, \*\*, \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Source: Based on ESS 2018/19.

risks), information/exposure, technology, and opportunities. This finding is relevant if we expect that male-dominated sectors demand more capital investment, better information, and a higher risk. Similarly, asset holding manifested in ownership of additional buildings may indicate a better fallback position among women operating in male-dominated sectors.

On the other hand, having children below the age of 5, marital status and other household members' engagement in business are found to be negatively associated with female participation in male-dominated sectors. Having children below the age of 5-years places additional demand on care work competing for women's time for enterprises. Further, women who are widowed, divorced, and separated, are less likely to engage in male-dominated sectors, indicating the importance of the constraints such women face, including lack of spousal support, increased household responsibilities and cultural pressure on property/resources control for their business decisions. The additional care responsibilities associated with having small children and being female-headed may prevent women's entry and stay in male-dominated sectors, particularly if such businesses are demanding in terms of labor time and other resources.

Additionally, female enterprise owners belonging to households with other female members also engaging in business are less likely to participate in male-dominated sectors, which may be indicative of the role of household support in influencing enterprise-related decisions. Previous studies (e.g. Alibhai et al., 2017; Campos et al., 2018; Goldstein et al., 2019) identified male role models and support networks influencing female participation in male-dominated sectors. The present study found that female



entrepreneurs, who belong to households with other female members also owning enterprises, are less likely participating in male-dominated sectors. This may indicate that the gender of the role model matters for enterprise choice, with female role models likely reinforcing entry into traditionally female-concentrated sectors.

### 5.2.2. Females participating in high return sectors

The Section identifies and characterizes female-owned enterprises operating in high return sectors by estimating (4.9) in a probit specification with the upper profit quartile (38,650 ETB)<sup>7</sup> taken as a benchmark for high return. In terms of predictors, the variables used in predicting female participation in male-dominated sectors in Section 5.2.1 are also relevant here. A slight difference relates to inclusion of intensity of operation which is considered more relevant for her participation in high return sector and the exclusion of mobile ownership variable which is less of a defining factor between participants in high and low return enterprises.<sup>8</sup>

Having compared the findings on predictors of female participation in male-dominated and in high return sectors, some differences are noteworthy (see Table 7). A higher intensity of enterprise operation<sup>9</sup> is associated with a higher likelihood of female participation in high return sectors, indicating that women sorting into high return sectors operate their businesses with higher intensity. This finding is consistent with the expectation that higher intensity of operation contributes to higher enterprise returns.

**Table 7.** Probit for female participation in high return sectors (vs. females in low return sectors).

Variables	Estimation with hired labor as an indicator for enterprise size		Estimation with salaries/wages as an indicator for enterprise size	
	Robust coef	dy/dx	Robust coef	dy/dx
Age	0.005 (0.013)	0.002 (0.004)	0.003 (0.013)	0.001 (0.004)
Education	0.026 (0.02)	0.008 (0.006)	0.022 (0.02)	0.007 (0.006)
Household size	0.171 (0.072)**	0.054 (0.022)**	0.176 (0.07)**	0.055 (0.022)**
Migration of members	0.054 (0.028)*	0.017 (0.009)*	0.051 (0.028)*	0.016 (0.009)*
Dwelling duration	−0.022 (0.012)*	−0.007 (0.004)*	−0.02 (0.011)*	−0.006 (0.004)*
Marital status: no more married	−0.1 (0.241)	−0.032 (0.076)	−0.108 (0.248)	−0.034 (0.079)
Child under 5-year-old	0.011 (0.322)	0.003 (0.102)	0.059 (0.332)	0.019 (0.107)
Business ownership by other female members	−0.029 (0.36)	−0.009 (0.114)	−0.063 (0.349)	−0.02 (0.112)
ATM use	0.235 (0.298)	0.077 (0.103)	0.088 (0.308)	0.028 (0.1)
Additional buildings	0.555 (0.392)	0.198 (0.151)	0.521 (0.39)	0.184 (0.149)
Experience in business	0.01 (0.016)	0.003 (0.005)	0.012 (0.017)	0.004 (0.005)
Intensity of operation	0.003 (0.001)***	0.001 (0.0)***	0.004 (0.001)***	0.001 (0.0)***
Hired labor	−0.005 (0.002)*	−0.001 (0.001)*		
Salaries & wages			0.0 (0.0)*	0.0 (0.0)*
Site of business operation	−0.472 (0.212)**	−0.15 (0.067)**	−0.57 (0.214)***	−0.181 (0.067)***
Location	0.118 (0.237)	0.037 (0.076)	−0.085 (0.247)	−0.026 (0.076)
Cons	−2.148 (0.628)***		−1.998 (0.63)***	
No. of Obs.	199		199	
Wald chi2(15)	31.21		31.08	
Prob > chi2	0.0188		0.0195	
Pseudo R2	0.1478		0.177	

NB: The symbols \*\*\*, \*\*, \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Source: Based on ESS 2018/19.

On the other hand, the operational site of the enterprise, hired labor, cost in salaries/wages, and duration of residence in the current dwelling are found to be negatively associated with the likelihood of female owners' participation in high return sectors. Female-owned enterprises that are operated around the homestead are less likely belonging to high return categories, which may indicate multiple household responsibilities compromising business performance among home-based female-owned entrepreneurs. Although using home as a worksite may as well have to do with lack of access to work premises, previous studies (e.g. Chowdhury et al., 2018) show that females prefer occupations that offer some flexibility to enable accommodating domestic responsibilities at the expense of higher earnings. It may also indicate that with the growth in profit to the upper quartile level, one may expect female-owned enterprises to move away from the homestead as they transition from a household enterprise status into a full-fledged firm status.

The findings further show that female-owned enterprises that hire more workers have a lower likelihood of belonging to high return sectors and those that incur higher costs in salaries and wages have a higher likelihood of belonging to high return sectors. This finding coupled with that of (i) positive association of household size with the likelihood of female engagement in high return sector; and (ii) higher intensity of operation being likely associated female-owned enterprises belonging to high return sector has some implications. First, females venturing in high return enterprises may tend to increase household labor for intensifying their operations than hiring more workers. The pressure to provide for a larger household may also induce increasing household labor to boost business returns among such women. Second, when the need to use the labor market arises, females in high return sectors may prefer increasing engagement per hired worker, hence higher cost in salaries/wages, than increasing the number of hired workers.

The other household-specific variables, having under-five-year-old children and other female household members also owning business enterprises, and marital status, which were significant in predicting the likelihood of female participation in male-dominated sectors, were not found to be important for predicting female engagement in the top quartile profit category. This may indicate that with business growth and as the female-owned enterprise transitions from a household enterprise status into a top quartile profit status, the influence of household characteristics on business decision-making may disappear.

## 6. Discussions

The bulk of the literature in the field of gender gap in business performance deals with profit gap between men-owned and women-owned enterprises (e.g. Brixiova & Kangoye, 2015; Hardy & Kagy, 2018; Gonzalez & Poulin, 2019) and between women operating in male-dominated sectors and those in female-concentrated ones (e.g. Campos et al., 2018; Alibhai et al., 2017; Goldstein et al., 2019). The scanty evidence regarding performance gap between male- and female-owned enterprises both operating in male-dominated sectors seems to be mixed. Whereas Goldstein et al. (2019) reported a significant profit gap between male- and female-owned enterprises operating in male-dominated sectors in both developing and developed country contexts, Campos et al. (2018) found, based on data from Uganda, that women business owners were earning as much sales as their men cohorts when both are operating in male-dominated sectors.

Our study did not find evidence of gendered profit gap, between female and male-owned enterprises operating in male-dominated sectors as well as those operating in high return sectors, both before and after controlling for individual, household, firm, and context-specific characteristics. This finding is consistent with that of Campos et al. (2018) for sales gap in Uganda but unlike to that of Goldstein et al. (2019) for profit gap in developed and developing countries. Part of the explanation for the present finding is traced from the peculiarities of females engaged in male-dominated sectors and those in high return sectors.

Women who are widowed, divorced, separated, with under-5-year-old children, and belonging to households with other female members also owning businesses are less likely sorting into male-dominated sectors. These indicate the role of household care responsibilities and female role models in influencing female entrepreneurs' decision to sort away from male-dominated sectors. The importance of male role models and support networks, e.g. spouse's assistance, for enhancing female entry into male-

dominated sector was also highlighted by other studies (e.g. Campos et al., 2018; Alibhai et al., 2017; Goldstein et al., 2019). The present finding is slightly different in that female entrepreneurs who belong to households with other female members also owning business enterprises are less likely engaged in male-dominated sectors. This may show that the gender of the role model matters for women's choice of enterprises in such a way that female role models may have a higher likelihood of reinforcing entry into female-concentrated sectors.

Based on our finding of a larger household, and a longer duration of migration of household members being associated with a higher likelihood of female participation in high return sectors, it can be argued that women in high return sectors are able to capitalize on the opportunities presented by household size and migration of members. Women sorting into male-dominated and high return sectors tend to have better access to support systems (labor, information, additional income sources) and lower vulnerabilities (in terms of demand for unpaid care work, lack of spousal support), which enhances their performance. Based on this, given access to equal opportunity, women can perform as well as men. A caveat to the family support relates to a less likely participation in male-dominated sectors among female owners, who have other female household members also owning businesses, with implications for female owners reinforcing each other into female-concentrated sectors.

It also became evident that female-owned enterprises belonging to high return sectors tend to be operated with higher intensity, less at homestead, and with higher costs in salaries/wages (but with less employee size). The evidence of higher intensity of operation among women operating high return enterprises relative to those of low return enterprises is intuitive. This finding is consistent with that of Goldstein et al. (2019) who found that women in male-dominated sectors work more hours per week relative to female-owned firms in female-concentrated sectors. The evidence of higher cost in salaries/wages (and less employee size) being associated with a higher likelihood of women's participation in high return enterprises indicates enterprise growth and tendency toward more per worker engagement than more employees among those women. This finding is unlike previous studies (e.g. Alibhai et al., 2017), who found higher employment potential among women operating in male-dominated sectors where employment is treated as an outcome variable. The difference may be due to the fact that our study looked at the association of salaries/wages size (or employment) with the likelihood of participation of businesswomen in high return sectors for the overall sample. On the other hand, Alibhai et al. (2017) compared differences in employment size between female-owned enterprises in male-dominated and female-dominated sectors only for a sub-sample of top profit earning female enterprises. We also found that locating enterprises around the homestead is less likely associated with female participation in high return enterprises indicating that women operating high return enterprises are able to locate their enterprises away from the homestead.

Furthermore, the finding of differential factors explaining female participation in male-dominated and in high return sectors has some implications. It may mean that not all male-dominated sectors are of high return (or of top quartile profit). It may as well indicate some time lapse before female-owned enterprises in male-dominated sectors generate high return and, thus, current (actual) profit may not be all that matters for female engagement in male-dominated sectors. Hence, the potential role of other factors, such as expected returns, market infrastructure, risks etc., for women sorting into male-dominated sectors. It may also indicate a potential for female-owned enterprises to transition from a household enterprise into a full-fledged enterprise status, with the growth of profits to the top quartile level, where enterprise attributes (e.g. intensity of operation, enterprise site), rather than household attributes (e.g. marital status, small children, and other household members in business), matter most.

## 7. Conclusion and policy implications

A number of studies have been conducted in Ethiopia and elsewhere, revealing gender disparities in business performance between male and female owned enterprises. There is also mounting evidence of performance gaps between female owned enterprises operating in traditionally male-dominated sectors and those in female-concentrated sectors. However, there are limited studies that specifically examined how female owned enterprises are faring as compared to their male counterparts when both are operating in male-dominated sectors. The few available studies on the topic are conducted elsewhere and

offer mixed evidence indicating gender gaps in profits in favor of men (Goldstein et al., 2019), on the one hand, and absence of gender gaps in sales (Campos et al., 2018), on the other.

The present study did not find evidence of a gender gap in profit, between female and male-owned enterprises operating in male-dominated sectors as well as those operating in high return sectors. This holds true both before and after controlling for the relevant individual, household, firm, and context-specific characteristics.

The finding of lack of significant profit gap between female- and male-owned enterprises operating in male-dominated and in high return sectors point to the role of access to equal opportunities for female business owners for promoting gender equality in business performance. This finding may be an indication that participating in traditionally male-dominated sectors offers women better access to opportunities and resources needed to succeed in those sectors. Based on this, characterizing women sorting into male-dominated sectors is useful to guide future interventions for enhancing women's participation in male-dominated sectors and bridging the gender gap in business performance. In line with this, the finding of factors associated with female participation in male-dominated and in high return sectors, from the probit model, offered some useful insights.

The finding of a larger household and a longer duration of migration associated with a higher likelihood of female participation in male-dominated and in high return sectors has important implications. It may indicate the role of household size and migration in terms of offering better family support (labor or other), access to information on business opportunities and technology and additional income sources, which can be leveraged to enhance female participation in male-dominated and high return sectors. Thus, it can be argued that women in high return sectors capitalize on the opportunities presented by a larger household size and a longer duration of migration of household members. Based on this, efforts to enhance the participation and performance of female-owned enterprises may consider supporting women in the form of access to labor in alternative labor arrangements, information on alternative business opportunities and income sources. Such access to information on business opportunities and support systems enhances better informed business decisions and help break the cycle of female business owners reinforcing each other into traditionally female-concentrated and low return sectors.

Furthermore, the finding enabled characterizing women operating high return enterprises with useful implications for potential areas of support towards reducing gender gaps in enterprise returns. The evidence of a higher intensity of enterprise operation being associated with a higher likelihood of female participation in high return enterprises may indicate that women operating high return enterprises are able to intensify their enterprise operations. The finding also shows the role of intensity of operation for enterprise profit and a tendency toward more engagement per worker than more hired workers among women operating high return enterprises. This reinforces our earlier finding on the role of access to flexible labor arrangements for enhancing female engagement in high return enterprises. Given the finding of a lower likelihood of the house-yard serving as an operational site for females in high return sectors, granting access to work premise is an important area of intervention to enhance female-owned enterprises sorting into high return enterprises.

The findings further indicate women's unpaid care work in influencing women's decision to participate in male-dominated sectors. Thus, efforts to influence female business decisions and performance may consider interventions to address the existing care deficits, e.g. through increasing access to paid care services, thereby enhancing female participation in male-dominated and in high return sectors.

## Notes

1. A variant of this is found in Alibhai et al. (2017) who considered ownership (or management) in excess of 75% for distinguishing male-dominated sectors from female-concentrated ones in a subjective categorization of gender concentration by (sub-)sector.
2. Total revenue and cost are computed for the 12 months prior to the survey. Total revenue is measured for months the enterprise was operational during the year; some fixed costs, e.g., rents, are measured for the entire year.
3. Detailed description of the variables included in the empirical profit model can be obtained up on request.
4. The survey constitutes the latest of the four waves that the CSA conducted in collaboration with the World Bank Living Standard Measurement Survey (LSMS) to serve as a baseline survey for a new cohort of ESS panel II. The data is available at <https://doi.org/10.48529/sxbm-w115>.

5. The official exchange rate in 2023 was US\$1 to ETB 53.5.
6. Prior to estimating the empirical profit model, statistical tests, normality, heteroscedasticity, selectivity, and multicollinearity tests, were conducted on the data and corrective measures were taken. Non-normality issue was addressed by cutting outlier observations and variable transformation (into log-log specification, it led to loss of some observations) and heteroscedasticity by applying White's heteroscedasticity robust standard errors in estimation. There were no issues of selectivity (based on test of significance of Mills Lambda) and collinearity (based on tolerance level below 10 for VIF).
7. The upper (or third) quartile profit is the same as the 75th percentile, the value above which the top 25% of profit earning enterprises lie.
8. The performance of the model is also taken into account in making the decision for including and excluding a potential variable.
9. The variable intensity of operation, which is more important for predicting participation in high return sector, is included in the probit for female participation in female-dominated sectors.

## Acknowledgements

The authors gratefully acknowledge the insightful comments from the two anonymous reviewers, Prof. GOODNESS AYE, and the valuable feedback provided by participants at the GPG project dissemination workshop, where an earlier version of this paper was presented.

## Authors' contribution

- Kidist Gebreselassie: Study design, data acquisition, analysis, and interpretation, drafting the manuscript, revising the manuscript,
- Lamessa T. Abdisa: Conception, study design, critical review, revising, and editing of the previous version of the manuscript.
- The authors do not used AI assisted technologies.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Declaration

This article does not contain any studies involving human participants or animals performed by any of the authors.

## Funding

Financial support for this study was provided by the Bill & Melinda Gates Foundation (BMGF) as part of their 'Global Foundational Analysis to Close the Gender Profitability Gap (GPG)' project, administered by the Ethiopian Economics Association (EEA).

## About the authors

**Kidist Gebreselassie** holds a PhD in social sciences from Wageningen University. She is a senior lecturer and researcher at Addis Ababa University, College of Social Sciences, Center for African and Oriental Studies.

**Lamessa T. Abdisa** an economist with a PhD from the University of Milan, is a senior researcher in the Research & Policy Analysis Division of the Ethiopian Economics Association.

## Data availability statement

The data used in this study is the publicly available the 2018/19 Ethiopia Socioeconomic Survey (ESS) 2018/19 (ESS4) also available on reasonable request to the corresponding author.

## References

- Abor, J., & Quartey, P. (2010). Issues in SME development in Ghana and South Africa. *International Research Journal of Finance and Economics*, 39, 218–228.

- Alibhai, S., Buehren, N., & Papineni, S. (2018). Better loans or better borrowers? Impact of meso-credit on female-owned enterprises World Bank Policy Research working Paper, (8511).
- Alibhai, S., Buehren, N., Papineni, S., & Pierotti, R. (2017). Crossovers: Female entrepreneurs who enter male sectors, evidence from Ethiopia. World Bank Policy Research working Paper, (8065).
- Amha, W. (2015). Growth of youth-owned MSEs in Ethiopia: Characteristics, determinants and challenges. *Ethiopian Journal of Economics*, 24(2), 93–128.
- Assefa, M., & Cheru, E. (2018). Factors affecting the growth of women-operated micro and small enterprises (MSEs) in Ethiopia. *Üniversitepark Bülten*, 6(1), 56–66. <https://doi.org/10.22521/unibulletin.2017.61.5>
- Bardasi, E., Sabarwal, S., & Terrell, K. (2011). How do female entrepreneurs perform? Evidence from three developing regions. *Small Business Economics*, 37(4), 417–441. <https://doi.org/10.1007/s11187-011-9374-z>
- Bekana, D. M. (2020). Policies of gender equality in Ethiopia: The transformative perspective. *International Journal of Public Administration*, 43(4), 312–325. <https://doi.org/10.1080/01900692.2019.1628060>
- Blau, D., & Kahn, M. (2017). The gender wage gap: extent, Trends, and explanations. *Journal of Economic Literature*, 55(3), 789–865. <https://doi.org/10.1257/jel.20160995>
- Brixiova, Z., & Kangoye, T. (2015). Gender and constraints to entrepreneurship in Africa: New evidence from Swaziland, IZA Discussion Papers, No. 9273, Institute for the Study of Labor (IZA), Bonn. Retrieved August 10, 2022, from: <http://hdl.handle.net/10419/114149>
- Buehren, N., Gonzalez, P., & Copley, A. (2019). *What are the economic costs of gender gaps in Ethiopia? Gender innovation policy initiative for Ethiopia*. World Bank.
- Campos, F., & Gassier, M. (2017). Gender and enterprise development in Sub-Saharan Africa: a review of constraints and effective interventions. World Bank Policy Research Working Paper, (8239).
- Campos, F., Goldstein, M., McGorman, L., Boudet, A. M. M., & Pimhidzai, O. (2018). Breaking the metal ceiling: Female entrepreneurs who succeed in male-dominated sectors. In S. Anderson, L. Beaman, & J-P. Platteau (Eds.), *Towards gender equity in development* (pp. 167–191). <https://doi.org/10.1093/oso/9780198829591.003.0008>,
- Chowdhury, I., Johnson, H. C., Mannava, A., & Perova, E. (2018). Gender gap in earnings in Vietnam: Why do vietnamese women work in lower paid occupations?. World Bank Policy Research Working Paper, (8433). <https://doi.org/10.1596/1813-9450-8433>
- Endalew, Z., Terefe, H., Dejene, M., & Kumar, A. (2021). Distribution and association of agro ecological factors influencing garlic rust (*Puccinia allii*) epidemics in Eastern Amhara, Ethiopia. *Indian Phytopathology*, 74(1), 157–170. <https://doi.org/10.1007/s42360-020-00297-w>
- European Communities. (2009). Development of econometric methods to evaluate the gender pay gap using Structure of Earnings Survey data. Eurostat methodologies and working papers.
- Goldstein, P. M., Martinez, G., & Papineni, S. (2019). Tackling the global profitarchy: gender and the choice of business sector. Policy Research Working Paper, (8865). <http://documents.worldbank.org/curated/en/734371558715932769/Tackling-the-Global-Profitarchy-Gender-and-the-Choice-of-Business-Sector>
- Gonzalez, P., & Poulin, M. (2019). Ethiopia Gender Diagnostic Report: Priorities for Promoting Equity. Gender Innovation Lab: World Bank. Retrieved December 8, 2022, from [https://www.researchgate.net/publication/331962599\\_ETHIOPIA\\_GENDER\\_Diagnostic\\_Report\\_PRIORITIES\\_FOR\\_PROMOTING\\_EQUITY](https://www.researchgate.net/publication/331962599_ETHIOPIA_GENDER_Diagnostic_Report_PRIORITIES_FOR_PROMOTING_EQUITY)
- Hallward-Driemeier, M. (2013). *Enterprising women: Expanding economic opportunities in Africa*. World Bank Publications.
- Hardy, M., & Kagy, G. (2018). Mind the (profit) gap: Why are female enterprise owners earning less than men? *AEA Papers and Proceedings*, 108, 252–255. <https://doi.org/10.1257/pandp.20181025>
- Houghton, J., & Khandker, S. R. (2009). *A handbook on poverty and inequality*. The World Bank.
- IMF. (2018). The federal democratic Republic of Ethiopia. *Selected Issues*. November 2018. <https://doi.org/10.5089/9781484338506.002>
- Islam, A., Gaddis, I., Palacios-Lopez, A., & Amin, M. (2018). The labor productivity gap between female and male-managed firms in the formal private sector. *World Bank Policy Research Working Paper* (8445).
- Kevane, M., & Wydick, B. (2001). Microenterprise lending to female entrepreneurs: sacrificing economic growth for poverty alleviation? *World Development*, 29(7), 1225–1236. [https://doi.org/10.1016/S0305-750X\(01\)00032-8](https://doi.org/10.1016/S0305-750X(01)00032-8)
- Klapper, L. F., & Parker, S. C. (2010). Gender and the business environment for new firm creation.
- McKenzie, D., & Woodruff, C. (2008). Experimental evidence on returns to capital and access to finance in Mexico. *The World Bank Economic Review*, 22(3), 457–482. <https://doi.org/10.1093/wber/lhn017>
- MOWCY, UNICEF Ethiopia and SPRI. (2019). Gender equality, women's empowerment, and child wellbeing in Ethiopia.
- Mulatu, G. (2021). *An econometric investigation of determinants of growth of micro and small scale enterprises in Ethiopia*. The Case Robe Town, West Bale Zone!.
- Nordman, C. J., & Vaillant, J. (2014). Inputs, gender roles or sharing norms? Assessing the gender performance gap among informal entrepreneurs in Madagascar.
- Ogundana, O. (2022). Obstacles facing women-owned enterprises: A case for Sub-Sahara African women. *World Review of Entrepreneurship, Management and Sustainable Development*, 18(5/6), 529–544. <https://doi.org/10.1504/WREMSD.2022.125631>
- Ojong, N., Simba, A., & Dana, L. P. (2021). Female entrepreneurship in Africa: A review, trends, and future research directions. *Journal of Business Research*, 132, 233–248. <https://doi.org/10.1016/j.jbusres.2021.04.032>



- Pavic, I., Galetic, F., & Piplica, D. (2016). Similarities and differences between the CR and HHI as an indicator of market concentration and market power. *British Journal of Economics, Management & Trade*, 13(1), 1–8. <https://doi.org/10.9734/BJEMT/2016/23193>
- Polachek, S. W. (1981). Occupational self-selection: a human capital approach to sex differences in occupational structure. *The Review of Economics and Statistics*, 63(1), 60–69. <https://doi.org/10.2307/1924218>
- Robson, J. P., Haugh, M. H., & Obeng, A. B. (2009). Entrepreneurship and innovation in Ghana: enterprising Africa. *Small Business Economics*, 32(3), 331–350. <https://doi.org/10.1007/s11187-008-9121-2>
- Simba, A., Kalu, E. U., Onodugo, V., Okoyeuzu, C. R., & Ogundana, O. M. (2022). Women entrepreneurs in Nigeria. In *Women entrepreneurs in Sub-Saharan Africa: Historical framework, ecosystem, and future perspectives for the region* (pp. 155–172). Springer International Publishing. [https://doi.org/10.1007/978-3-030-98966-8\\_8](https://doi.org/10.1007/978-3-030-98966-8_8)
- Singh, S. P., Reynolds, R. G., & Muhammad, S. (2001). A gender-based performance analysis of micro and small enterprises in Java, Indonesia. *Journal of Small Business Management*, 39(2), 174–182. <https://doi.org/10.1111/1540-627X.00016>
- Terefe, E. A. (2020). Determinants that influence the performance of women entrepreneurs in micro and small enterprises in Ethiopia. *Journal of Innovation and Entrepreneurship*, 9, 24. <https://doi.org/10.1186/s13731-020-00132-6>
- UNDP. (2018). *A study on women in the manufacturing sector in Ethiopia: opportunities, challenges and strategic interventions*.
- Weinstock, D. S. (1982). Using the herfindahl index to measure concentration. *The Antitrust Bulletin*, 27(2), 285–301. <https://doi.org/10.1177/0003603X8202700201>
- Woldehanna, T., Amha, W., & Yonis, M. B. (2018). Correlates of business survival: Empirical evidence on youth-owned micro and small enterprises in Urban Ethiopia. *IZA Journal of Development and Migration*, 8(1), 1–26. <https://doi.org/10.1186/s40176-018-0122-x>
- World Bank. (2013). *Montenegro gender diagnostic: Gaps in endowments, access to economic opportunities and agency*. Report 78678.