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Assessing Gender Equity among Businesses in Ethiopia: Implications for Gender Profitability Gap

Kidist Gebreselassie and Lamessa T. Abdisa

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Executive Summary

There is mounting evidence of gender gap in sectoral and occupational sorting and business performance such that sectors dominated by men outperform those by women. Based on this, previous studies point to a need for identifying hinderances and enablers to female participation in male-dominated sectors as a way of enhancing female entrepreneurs' performance. However, there are also evidences of gender gap persisting among female and male-owned enterprises both operating in traditionally male-dominated sectors. The present study, therefore, is aimed at evaluating gender profitability gap through identifying drivers of female and male entrepreneur's sorting into sectors in general and male-dominated and high return ones in particular. Based on data from ESS (2018/2019), the study estimated multinomial logit model to identify drivers of gendered sectoral sorting, probit model to identify predictors of female participation in male-dominated and high return sectors and OLS profit model to examine profit gaps between female and male-owned enterprises operating in male-dominated and high return sectors.

The study found that marital status, household size, having children below the age of 5 years, and parental occupation are important drivers of sectoral sorting among women and men entrepreneurs. Female and male entrepreneurs who are married and those with larger household size are more likely to engage in agricultural businesses. On the other hand, female-headed households (separated, divorced, widowed) are less likely engaged in agricultural businesses while men of such attribute are less likely engaged in manufacturing businesses. These findings may reflect the role of mutual support (labor and other) networks (or lack thereof) for female engagement in agricultural businesses. The number of children below the age of 5 years, which seemed to matter for limiting women's engagement in agricultural businesses, is not found to be important for men's, indicating multiple responsibilities among female entrepreneurs including roles in the care economy influencing their business decisions. In the same vein, the finding of a higher likelihood of association of parental occupation in agriculture with men and women sorting into agricultural businesses is consistent with the expectation that existing enterprises tend to reproduce their likes. Note, however, that this may not be the case when migration is involved. Longer duration of migration of household members appears to go against female engagement in agricultural businesses; however, the variable does not seem to matter for men's sectoral choice. Apart from the obvious implications in terms of access to non-agricultural (migration) resources reinforcing non-agricultural businesses, this finding may indicate the role

of migration in increasing bargaining power for making decisions, which makes a difference for women enterprise owners. Similarly, access to non-farm income as a start-up capital appears to be less likely associated with female and male engagement in agriculture.

Overall, women in agricultural businesses appear to be younger, better educated, hiring more workers as well as having accessible savings, a business license, and operational sites away from the homestead, whereas none of these seems to matter for men sorting into agriculture. On the other hand, manufacturing businesses tend to be operated around the house-yard for both male- and female-owned ones and with a lower likelihood of having a business license for those owned by women and with no association with a license for those owned by men. Based on these, manufacturing businesses seems to have more of a household enterprise setup and agricultural ones a proper firm setup. The finding of the house-yard serving as an operational site for both male and female-owned manufacturing enterprises may be an indication of lack of access to work premises, particularly for sectors demanding separation of production and sales sites. In addition, intensity of operation is less likely associated with sorting into manufacturing and agricultural businesses, compared to service businesses, for both male and female owners, which may imply that the service sector is operated more intensively in both cases. From these, the lower intensity of operation in manufacturing may be partly explained by its operation around the house-yard and its informal household enterprise setup with a lower likelihood of having a business license. On the other hand, findings further reveal a favorable role of intensity of operation for enterprise profit.

In addition, experience is found to be important for men and women sorting into manufacturing businesses and for men in agricultural businesses; while it is less likely associated with female engagement in agriculture. This may be an indication of agriculture being recently expanding as a business venture among female business owners. The finding that men in male-dominated sectors are less likely engaged in agriculture while women in male-dominated sectors are less likely engaged in both agriculture and manufacturing, compared to service sector, indicates that the service sector tends to be male-dominated. Based on this, efforts to enhance female participation in male-dominated sectors may better target interventions of relevance to the service sector.

The finding of a larger household being associated with a higher likelihood of female engagement in male-dominated and in high return sectors may indicate that with business growth, the benefits of larger household (e.g., labor, other

support) may outweigh its costs. Also, marital status (i.e., being a widow, divorced, separated), having children below the age of 5 years, and having other female members also in business reduces the likelihood of female engagement in male-dominated sectors. However, these variables do not seem important for predicting female participation in high return sectors. Moreover, higher intensity of enterprise operation is associated with female engagement in high return sectors but not with her engagement in male-dominated sectors. These findings may point to two things. First, it may indicate that with increasing business growth and as enterprises transition into top quartile profit status, the influence of household profile on business decisions may disappear while some form of labor support may still be useful. This is also consistent with the finding that female-owned enterprises in high return sectors are less likely operated around the homestead, hence a potential to transition from household enterprise status into a full-fledged enterprise one. Second, it means that not all male-dominated sectors are of high return (or of top quartile profit) and may not even be generating higher actual profits; hence the differential factors driving female participation. This may also show some time lapse before female-owned enterprises in male-dominated sectors generate high returns and that current (or actual) return may not be all that matters for females sorting into male-dominated sectors. Hence, a potential role for other factors, e.g., expected returns, market infrastructure, risks, for female engagement in male-dominated sectors, which warrants further investigations.

The present study did not find evidence of gendered profit gap after controlling for individual, household, firm, and context-specific characteristics. The finding is consistent for the profit gap between female and male-owned enterprises operating in male-dominated sectors as well as between female and male-owned enterprises operating in high return sectors. Part of the explanation for the findings of the present study derives from the findings on predictors of participation in male-dominated and high return sectors. Having looked at some of the peculiarities of females engaged in male-dominated sectors and those in high return sectors, one notes some patterns showing that such women have better resource endowments, alternative income sources, and are less vulnerable to risks. For instance, larger household size, longer duration of migration of members, and higher cost in salaries/wages are more likely associated with female engagement in high return sectors whereas number of hired workers and operational site around the house-yard are less likely associated with female engagement in high return sectors. Moreover, women with larger household size, longer duration of migration of members, and better assets/wealth are more likely engaged in male-dominated

sectors whereas those who are female household heads (widowed, divorced, separated) and with small children are less likely. These peculiarities imply better support systems (e.g., labor, information, additional income sources, assets/wealth) and lower vulnerabilities (e.g., demand for unpaid care work, lack of spousal support and cultural pressure on female-headed households) particularly among female enterprise owners in male-dominated sectors. Based on these, given access to equal opportunity, female business owners can perform as well as male.

The findings warrant a number of considerations to enhance equal opportunities for female business owners in terms of access to flexible labor arrangements, work premises, information on business opportunities, and access to paid care services. The finding of more likely association of female participation in high return sectors with increase in salaries/wages but less with increase in number of hired workers indicates tendency toward more engagement per worker than more hired workers among females in high return sectors. Accordingly, increasing access to flexible labor market arrangements beyond number of workers for hire is an option for increasing intensity of operation among female owners. In addition, based on the finding of the role of operational site for predicting female participation in high return sectors, granting access to work premise could be an area of intervention to enhance female-owned enterprises sorting into high return sectors.

The finding on the role of migration and business ownership by other household members for female participation in male-dominated sectors suggests a need for granting access to information on alternative business opportunities and related support. This may enhance better informed business decisions among females and help break the cycle of female enterprise owners reinforcing each other into traditionally female-concentrated and low return sectors. Drawing on the finding of effect of widowhood, divorce, and separation as well as having children below the age of 5 in reducing female participation in male-dominated sectors, providing access to subsidized paid care services may be considered to help reduce women's burden of unpaid care work and enhance their participation in male-dominated sectors.

1. Introduction

Micro, small, and medium scale enterprises play a crucial role in stimulating economic growth in developing economies. They contribute to developing entrepreneurship, GDP, job creation and poverty reduction (Robson et al., 2009; Abor and Quartey, 2010). Such enterprises create more than 60% job and 60% of GDP in developing economies (IFC, 2011). In line with this, the role of female entrepreneurs has been increasing in sub-Saharan Africa, with the region hosting the highest rate of female entrepreneurship in the world (World Bank, 2012; cited in Alibhai et al., 2017). However, the performance of these female-operated enterprises is not very encouraging.

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; Brixiová and Kangoye, 2015; Hardy and Kagy, 2018; Islam et al., 2018; Goldstein et al., 2019; Gonzalez and Poulin, 2019). Evidence further show that the performance of female-owned enterprises depends on the specific sectors they operate in (Hallward-Driemeier, 2013; Bardasi et al., 2011; cited in Goldstein et al., 2019), which themselves are gendered (Blau and 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 (Campos et al., 2018; Alibhai et al., 2015; Alibhai et al., 2017; Goldstein et al., 2019). Evidence seems to be mixed regarding performance gap between male- and female-owned enterprises both operating in male-dominated sectors. 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) did not find evidence of sales gap. However, entry into male-dominated sectors does not seem to be an option available to all female entrepreneurs.

A number of gender related constraints were identified as hindrances for entry of female entrepreneurs into high-return, male-dominated sectors. These include lack of access to capital, assets, market entry opportunity, networks, spousal influence on decision regarding choice of sector, harassment, and discrimination (Alibhai et al., 2017) as well as lack of alternative job opportunity (Alibhai et al., 2018) and role models (Campos et al., 2018). Women are also faced with constrained time and mobility (Alibhai et al., 2018) and a responsibility to invest their additional resources and inputs into their spouse's business enterprises

rather than their own (Bernhardt et al., 2017; Field et al., n.d.). In addition, female entrepreneurs tend to work fewer hours than their male cohorts, hire less labor, use less credit, and are less likely to have a business license (Buehren et al., 2019). These gender constraints manifest themselves in the choice of occupations and sectors among female workers (Chowdhury et al., 2018) and entrepreneurs (Blau and Kahn, 2017; Goldstein et al., 2019). As a result, women entrepreneurs tend to be concentrated in sectors which are characterized by low growth (Alibhai et al., 2018), less lucrative (Kevane and Wydick, 2001; McKenzie and Woodruff, 2008; Klapper and Parker, 2010; Bardasi, et al., 2011; cited in Goldstein et al., 2019), informal (Singh, et al., 2001; IMF, 2018) and micro-sized (Campos and Gassier, 2017; UNDP, 2018).

This state of affair is even more worrisome considering the magnitude of the cost of these gender disparities in terms of direct costs to the economy as well as in undermining efforts to close the gender gap. According to Ferrant and Kolev (2016) the costs of gender-based discrimination in social institutions is estimated to be USD 340 billion in sub-Saharan Africa (SSA). It is also estimated that reducing SSA inequality with respect to gender and income to the levels observed in the fast-growing Association of Southeast Asian Nations (ASEAN) region would increase annual economic growth in SSA by an average of 0.9 percentage points (Hakura et al., 2016). The annual cost of gender gaps in business sales in Ethiopia is estimated to be 1.4 percent of total GDP and that of hourly wages 1.9 percent of total GDP (Buehren et al., 2019).

The gendered structural constraints affecting the choice of enterprises as well as access to productive resources and opportunities stifle the impact of small-scale interventions in access to inputs, such as microcredit, in bringing about meaningful growth in female-operated businesses (Alibhai et al., 2018). It is shown that financial and human capital interventions are not as beneficial for female owners as they are for male owners pointing to the gender differences in the barriers faced (De Mel et al., 2008). Moreover, effects to advance gender equality nation-wide would remit eliminating gender disparity in enterprise performance, by correcting for socioeconomic differences. To this end, it is imperative to measure the magnitude of the gap (or lack thereof) and explain it.

Whereas several of the previous studies enabled identifying factors explaining gender gaps in choice of enterprises and business performance, our knowledge is limited about the role of gender norms and discriminatory practices for enterprise choice and performance in Ethiopia. Against the backdrop of these justifications, the present study aims to assess the gender dimensions of enterprise

choice and profitability with a focus on women's participation in traditionally male-dominated sectors. It examines whether the difference in access to key resources, decision making roles, and gender discrimination drives women and men entrepreneurs' choice to operate in different sectors and the implication this has on gender profitability gap in Ethiopia. It attempts to expand on the existing literature on gendered gap by comparing the situation of female-owned enterprises in male-dominated sectors and in high return sectors with those of male owned enterprises in male-dominated sectors. Furthermore, the study investigates the role of social and cultural discriminations as sources of gender profitability gap between men and women owned enterprises. In doing so, it considers the different profiles of women to examine any differences in the business ecosystem due to the diverse needs and constraints they face.

Finally, the findings of the study are useful to inform policy discourse and to channel effective actions at the macro and local levels to enable addressing gender issues in enterprise equity and profitability. It also gives direction for future research on the subject and serves as a useful reference material in the same.

2. Objectives of the Study

The main objective of this study is to assess gender equity among businesses in Ethiopia and examine its implication for a gender profitability gap. In doing so, the current study addresses the following specific objectives:

- Conduct extensive literature review related to gender equity and gender profitability gap among businesses in Ethiopia focusing on Small- and Medium- scale Enterprises (SMEs);
- Identify and characterize women and men dominated sectors. More specifically define the characteristics of women who are more likely to be operating in sectors where potential returns are higher that could help targeting;
- Explore driving factors behind sector selection among women and men entrepreneurs; and
- Examine the profitability of female-owned enterprises that operate in sectors dominated by men and analyze gender profitability gap in such sector(s) and compare Ethiopia's position against the SSA average.

3. A Framework of Gender in Entrepreneurship

3.1 Conceptualizing gender and entrepreneurship

Gender norms and discriminatory practices against women have far-reaching consequences in terms of reproducing gender inequalities in various spheres within and outside the household and in shaping pathways to low-income trap among women. As a result of customary rules and discriminatory practices, women are often faced with social vulnerabilities associated with lack of agency, voice, decision-making, limited bargaining power, which have implications for complacence to discriminatory treatments (Jones et al., 2010). More so when such norms and discriminations are intersected by other structural bottlenecks causing structured disadvantages to women.

These socially constructed norms and behaviours and associated social vulnerabilities shape women's choice of occupations into what is traditionally known as feminine and often informal and unpaid care activities (Burgess, 2013; IMF, 2018; Emebet, 2010; cited in Dejene Mamo, 2020;). Such gendered time allocation often competes with women's time for other productive activities that factor into the System of National Accounts (SNA)[3] with implications for gender inequalities in the labor market and entrepreneurial landscape.

Gender differences in roles and associated discriminatory practices also manifest themselves in disparities in access to productive resources, services, opportunities, and human capital development. Evidence show that women do not enjoy equal rights with men in accessing and controlling resources due to sociocultural norms (Emebet, 2010; cited in Dejene Mamo, 2020; Kumar and Quisumbing, 2015). In particular, female-headed households tend to be more disadvantaged than male-headed ones with respect to ownership of assets and access to and control over key productive resources (Kumar and Quisumbing, 2012). In terms of finance, for example., in Ethiopia, 23% 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).

[3] The activities in the SNA include work for establishments (formal sectors), production of crops & livestock, mining/quarrying, collection of firewood/fuel & water, non-primary production, construction, income generation for HH food-related, non-professional & professional activities (CSA, 2019). On the other hand, extended SNA includes domestic services, care for children & adults, community services, learning activities, and other non-productive/leisure activities (i.e., personal care- including sleeping; socialization e.g., social, game, sport and entertainment; mass media.

Women face limited access to education opportunities due to preference in favour of male over female children with the latter having to shoulder responsibility for household chores affecting their attendance and performance in school (UNICEF, 2018). As a result, completing school has continued to be a challenge for girls. For instance, in Ethiopia, the problem is more pronounced as one goes up in the educational ladder with men enjoying a higher likelihood of enrolment in tertiary education as compared to their female cohorts (IMF, 2018). Due to such gender roles and disparities in access to and control over resources and opportunities, women are often left with limited options to respond to shocks and stresses and sustain their households (Holmes and Jones, 2010).

Evidence shows that such gender-based constraints often underlie existing disparities in the entrepreneurial ecosystem. Some studies found that, in comparison 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 (Brixiová & 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). In the same vein, Gonzalez and Poulin (2019) found, based on ESS (2015-16) data for Ethiopia, that sales among female business managers is lower (by 24%) after controlling for other factors. Looking further into the performances within diverse women profiles, a global study including 11 African countries found that female-owned enterprises operating in male-dominated sectors make higher profit than female-owned enterprises in female-concentrated sectors but lower profit than male-owned enterprises operating in male-dominated sectors (Goldstein et al., 2019). For the case of developed countries and the aggregate dataset, he found a significantly higher profit among male-owned enterprises irrespective of their engagement in male- or female-dominated sectors. Similarly, Alibhai et al. (2017) found that women operating in male-dominated sectors in Ethiopia generate twice as much profit as those operating in female-concentrated sectors. Other studies found no significant difference in performance in terms of sales and profits between female and male-owned enterprises operating in female-dominated sectors.

Approaches pursued in the literature to explain existing gaps in performance and identify key drivers entails examining all potential factors,

individual-, enterprise-, and context-specific (ILO, 2003). Hence, the present study assessed gender equity among businesses in Ethiopia with a focus on female- and male-owned enterprises operating in male-dominated sectors and by unravelling the gender related factors (e.g., cultural, structural, institutional) influencing the entrepreneurial ecosystem.

3.2 Gender equity and gender profitability gap among businesses in Ethiopia: a review

The importance of gender in entrepreneurship research is widely recognized as a result of its far-reaching implications transcending the individual. Labor markets in Ethiopia tend to be gender segregated in terms of participation, sectors, and occupation. Women have a lower (77%) share of labor force participation compared to men (88%); whereas women are overrepresented in informal and unpaid care activities (IMF, 2018). Females constitute about 39% of formal employment and 53% of informal employment whereas males constitute 61% of formal employment and 48% of informal employment (CSA, 2013). Of the employed women, 56% are working in agriculture, hunting, forestry and fishing, 32% in the service sector (other than trade, hospitality, entertainment, arts), and 4% in manufacturing, mining, quarrying and construction, whereas the figure is 72%, 18% and 6% respectively for men (CSA, 2021). Women constitute 62% of all clerical support workers (compared to 38% men), 58% of service and sales workers, 54% of total workers in elementary occupations, and a third (34%) of skilled agricultural, forestry and fishery workers. Categorically, 41.3% of employed women (compared to 58.3% of employed men) are killed agricultural, forestry and fishery workers, 15.3% of employed women (compared to 8.1% men) are service and sales workers, 0.7% of employed women (compared to 0.3% employed men) are clerical support workers, 35.5% of employed women (compared to 22.5% of employed men) are in elementary occupations (CSA, 2021).

From entrepreneurial perspective, empirical evidence shows that female-owned enterprises in Ethiopia exhibited lower growth rates (Wolday Amha, 2015), tend to be micro-sized (Haftu Berihun et al., 2009; UNDP, 2018) and informal (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 (Tassew Woldehanna et al., 2018; Eshetu Bekele and Zeleke Worku, 2008).

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 men 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 in Ethiopia 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., 2015; Alibhai, et al., 2017).

The observed gender disparities in enterprise performance have repercussions in terms of economic setbacks. Estimates show that the annual cost of gender gaps in agricultural productivity amounts to 1.4% of total GDP, the cost of business sales being 1.4 percent of total GDP and that of gender gaps in hourly wages 1.9 percent of total GDP in Ethiopia (Buehren et al., 2019).

Underpinning the observed gender gaps in business participation and performance are the prevalence of gendered constraints related to lack of agency, voice, decision-making, and bargaining power (Jones et al., 2010), which manifest themselves in women's limited access to resources, services, and opportunities. Women in Ethiopia tend to have limited ownership of land and housing and control over a bank account, and a mobile phone (MoWCY, UNICEF Ethiopia and 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., 2015; Alibhai et al., 2017).

Gender constraints that influence business performance among female entrepreneurs include lack of access to business information and training, finance, raw materials and land (ILO, 2003; Endalew Terefe, 2020; Gemechu Mulatu, 2021; Fisseha Gebremariam, 2017; Desta Solomon, 2010; Eshetu Bekele and Zeleke Worku, 2008), and business premises and marketing (ILO, 2003; Fisseha Gebremariam, 2017; Mitiku Assefa and Eldana Cheru, 2018). The role of financial management and accessibility of savings for business profit is also highlighted (Batista et al., 2021).

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). In addition, motivational, interpersonal skills, and gender-based discrimination are identified as potential causes for lower hourly wages among women (Buehren, et al., 2019). Factors that contribute to female entry into sectors that are traditionally male dominated include having spousal support and role models and those that hinder women's entry into male dominated sectors are lack of information on the earning potential of those sectors (Alibhai et al., 2015). Furthermore, specific constraints that hinder performance of female entrepreneurs operating in male-dominated sectors include lack of access to credit and business networks, harassment, and discrimination (Alibhai et al., 2015).

The literature is rich in terms of identifying the gender gaps in business performance by making comparisons between male-owned and female-owned businesses as well as between female-owned businesses operating in traditionally male-dominated sectors and those females in female-concentrated sectors. However, there is little empirical evidence regarding the gender gaps in business performance between female- and male-owned enterprises both operating in male-dominated sectors. To the researcher's knowledge, the only evidence specific to profit gap is the one by Goldstein et al. (2019) who found, based on global dataset (including 11 African countries), that female-owned enterprises in male-dominated sectors generate lower profit than male-owned enterprises in male-dominated sectors. A related study on sales by Campos et al. (2018) found that females in male- dominated sectors make as much as males in male-dominated sectors in Uganda. The present study builds on existing literature to examine any gendered profit gap between female- and male-owned enterprises both operating in male-dominated sectors by using data from Ethiopia.

4. Method and Data

4.1 Modeling sectoral sorting among women and men

This section sets out to model the drivers of an entrepreneurs' choice of enterprises in the context of having a choice to participate. In line with Polacheck (1981) theory of segregation, empirical evidence is mounting on the importance of gender in the choice of occupations and sectors (e.g., Chowdhury et al., 2018; Goldstein et al., 2019). This manifests itself in the form of women's consideration

of non-monetary benefits (e.g., Chowdhury et al., 2018) and job security with increase in age (Ferreira et al., 2021) in the choice of occupations. Some of these choices are driven by women's domestic responsibility.

A multinomial logit regression model is estimated for the empirical analysis based on a McFadden's (1973; cited in Gujarati, 1995) utility theory. Accordingly, entrepreneur i $(i = 1, 2, \dots N)$ derives unobservable utility index, V, from choosing to participate in sector j $(i = 1, 2, \dots J)$ and V is a function of explanatory variables, x. The corresponding multinomial logit regression model is estimated for sector j; $J > 2$, having k predictors:

$$V_{i=}\boldsymbol{x}_i'\delta + e_i \qquad \textbf{(4.1)}$$

Where $\boldsymbol{x}_i'$ is a $(J-1)X\ k$ matrix of predictors, δ is $kX1$ vector of coefficients, e_i is $(J-1)X1$ vector of errors. Given the observable variable, $S_i(V_i)$, which is an indicator for the enterprise-owner $i's$ choice among the alternative sectors, is a function of the latent variable,

$$S_i(V_i) = \begin{cases} 0, & if\ \max(V_i) < 0 \\ j, & if\ \ \max(V_i) = V_{ij} > 0 \end{cases} \qquad \textbf{(4.2)}$$

for $j = 1, 2, \dots, J-1$ and where $S_i(V_i) = 0$ corresponds to the reference category.

The empirical analysis involves estimation of (4.1) for female and male entrepreneurs separately to enable identifying variables that may explain sector choice for women and men. The dependent variable, sector, is constructed to contain three categories representing manufacturing/construction/mining, service/trade, and agriculture. The choice of a particular business sector among women and men is expected to be influenced by a vector of predictors, x, consisting of individual, household, enterprise, and context-specific variables. These include age, education, marital status, number of under-five-year-old children, household size, migration of household members, having other household members owning businesses, parental occupation, assets/wealth, business experience, intensity of operation, accessibility of savings, sources of start-up capital, engagement in male-dominated sectors, business license, enterprise site, location (region), which are basically drawn from the literature.

4.2. Defining male-dominated and high return sectors

Empirical evidence show that gendered sectoral and occupational segregation is a reality with consequences in terms of gender gap in enterprise performance (Goldstein et al. 2019; Chowdhury et al., 2018). Male-owned enterprises perform better than female-owned ones (e.g., Bardasi et al., 2011; cited in Goldstein et al., 2019; Islam et al., 2018). And female-owned enterprises operating in male-dominated sectors perform better than female-owned enterprises operating in female-concentrated sectors (Campos et al., 2018; Alibhai et al., 2015; Alibhai et al., 2017; Goldstein et al., 2019). However, evidences are mixed concerning the performance gap between female- and male-owned enterprises operating in male-dominated sectors, with equal performance in sales reported in Campos et al. (2018) for Uganda and gap in profits is documented in Goldstein et al. (2019) for developing and developed countries.

Characterization of female-owned enterprises operating in male-dominated and high return sectors merits defining male-dominated and high return sectors, as distinguished from female-concentrated and low return ones. This section, therefore, lays the ground for addressing the question of identifying the attributes of women who are likely to participate in high return and male-dominated sectors.

Male-dominated sectors: The theoretical explanation for gendered occupations is introduced in Polachek's (1981; cited in European Communities 2009) theory of segregation which brings in the interplay between women's domestic responsibility causing intermittent employment; hence their preference towards jobs with less penalties. In the same vein, based on a study in Vietnam, Chowdhury et al. (2018) found evidence for occupational sorting driven by women's preference for non-monetary job characteristics, e.g., shorter work hours and paid leave, as compared to their men counterparts. Also, Ferreira et al. (2021) identified the importance of gender-age interaction in the choice of occupations with older females sorting to the public sector and younger males to the private sector.

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 and competition within a given industry (Weinstock, 1982; cited in Pavic et al., 2016). For the purpose of the present study, instead of the market share of firms, we introduce the idea of the rate of participation of male owners (proportion of male

enterprise owners in the sector) to help distinguish between male-dominated and female-concentrated sectors. Each sector is treated independently so that the identification of degree of male-dominance (or otherwise) in ownership or participation is sector-specific. Analytically, the concentration ratio (in our case, the male entrepreneur, m, concentration ratio), CR_m, for sector j ($j = 1, 2, \dots, J$), is given by,

$$CR_m^J = \frac{\sum_{i=1}^{n} E_i^j}{n_j}; \text{ such that}$$
$$E_i^j = \begin{cases} 1, & if\ enterprise\ i\ in\ sector\ j\ has\ a\ male\ owner \\ 0, & otherwise \end{cases} \quad \textbf{(4.3)}$$
$$N = \sum_{j=1}^{J} n_j$$

where E stands for the enterprise index, n_j for the number of enterprises in sector j, and N is the total number of enterprises, i ($i = 1, 2, \dots, N$), in the sample. The value of CR, in (4.3), may range from 0 to 100 with a CR of 1 for sector j indicating complete male-domination in the sector and a CR of 0, a complete female-concentration. On the other hand, a CR of 0.5 is an indication of gender equality in enterprise ownership concentration in the sector. For empirical analysis of participation in male-dominated sectors, we analyze the outcome given as:

$$S^j = \begin{cases} male - dominated, & if\ CR_m^J > 0.5 \\ female - concentrated, & if\ CR_m^J < 0.5 \end{cases} \quad \textbf{(4.4)}$$

As given in (4.4), the jth sector, S^j, is identified as male-dominated if more than 50% of enterprises in that sector are owned by men. 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. However, unlike the present study which takes an objective measurement from the ESS survey data, their index of male-dominated sectors is constructed based on self-reporting by female-enterprise owners.

High return sectors: In order to identify high return sectors, the present study, draws from 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 fifths (20th percentiles) and reporting the proportions of income that accrue to each level. This gives rise to five income quintiles (1 being lowest earning and 5

highest), each quintile consisting of 20% of the population[4]. Adapting Haughton and Khandker's (2009, p. 103) approach of measuring income disparities by constructing five profit (or return) categories, the present study makes a slight adjustment to identify enterprises which make top 25% profits (or top quartile) to benchmark high return (or high profit) enterprises.

We follow Langford's (2006, p. 5) preferred method (or Method 4) in his detailed exposition of the alternative methods available in the literature for computing percentiles. Accordingly, the Pth percentile value puts a P percent of the dataset below and (100-P) percent of the dataset above. Consider $p = \frac{P}{100}$, then, for instance, the 25th percentile (or the lowest quartile) corresponds to $p = 0.25$. In order to calculate the Pth percentile value, calculate np, where n is the sample size. The value of the Pth percentile depends on whether or not the np is an integer as given in (4.5)[5]:

$$P^{th}percentile\ value = \begin{cases} \frac{\#(np)+\#(np+1)}{2}, & if\ np\ is\ an\ integer \\ \dot{\#}\lceil np \rceil, & if\ np\ is\ not\ an\ integer \end{cases} \quad \textbf{(4.5)}$$

Where $\lceil np \rceil$ denotes rounding up to the nearest integer. Thus, we count those numbers to arrive at the actual value of the desired income percentile. Thus, the 75th percentile (or 3rd quartile, hence $p = 0.75$) is the number that separates the lowest 75% of the group from the highest 25%. For the case of top quartile, (4.5) can be rewritten as:

$$75^{th}percentile\ value = \begin{cases} \frac{\#(0.75n)+\#(0.75n+1)}{2}, & if\ 0.75n\ is\ an\ integer \\ \dot{\#}\lceil 0.75n \rceil, & if\ 0.75n\ is\ not\ an\ integer \end{cases} \quad \textbf{(4.6)}$$

Once high return enterprises are identified, they are linked to the corresponding sectors to enable identifying high return (or high profit) sectors from the rest. Thus, the jth ($j = 1, 2, \dots, J$) sector, S^j, are categorized as high return, HR, or low return, LR, as follows:

[4] Haughton and Khandker (2009, p. 103) also discuss decile dispersion ratio which involves dividing up the population into 10 income groups.

[5] An alternative to this is given as $\#(np + 0.5)$ and rounding up except when it is left unrounded in the case of having a value of half an odd integer (Haughton & Khandker 2009, p. 103)

$$S^j = \begin{cases} HR, & RE_i^j > the\ 3rd\ quartile \\ LR, & otherwise \end{cases} \quad \textbf{(4.7)}$$

Where RE_i^j stands for the profit of enterprise i in sector j. Hence, enterprises generating a return in excess of the 3rd quartile are categorized as high return.

Empirical model for female participation in male-dominated sectors: Each of the dependent variables identified for the study, female participation in male-dominated sectors and female participation in high return sectors, have binary outcomes, indicating participation (or lack thereof) which is often estimated using probit or logit probability models. We examined predictors of female entrepreneurs' participation in male-dominated sectors as well as participation in high return sectors by using probit estimations.

Let S_i^{MD} denotes the binary observed dependent variable of female entrepreneurs' participation in a male-dominated sector (or female participation in any of the sectors with $CR_m^J > 0.5$) of enterprise i, corresponding to (4.4) above defined as:

$$S_i^{MD} = \begin{cases} 1, & if\ S_i^{MD*} > 0 \\ 0, & if\ S_i^{MD*} \leq 0 \end{cases} \quad \textbf{(4.8)}$$

where S_i^{MD*} is the unobserved (latent) variable that reflects female entrepreneurs' participation in male-dominated enterprises that is determined by a vector of explanatory variables, x, with corresponding parameters β and ε_i is the error term. The corresponding probit model for analyzing the likelihood of female participation in male-dominated sectors can be specified as:

$$S_i^{MD} = x_i'\beta + \varepsilon_i \quad \textbf{(4.9)}$$

where the dependent variable, S^{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. The explanatory variables, x , that may explain female participation in male-dominated sectors could be enterprise-specific, owner-specific, and external factors faced by the enterprise (see Section 4.4 for a detailed discussion of the variables).

Empirical model for female participation in high return sectors: the following probit model, corresponding to (4.9), is specified to examine the likelihood of female participation in high return sectors:

$$S_i^{HR} = x_i'\alpha + e_i \quad \textbf{(4.10)}$$

where the observed dichotomous dependent variable of female-owned enterprise $i's$ participation in high-return sector, S_i^{HR} , corresponding to (4.7) above is given by

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

where S_i^{HR*} is the unobserved (latent) variable that reflects female participation in high return enterprises determined by a vector of explanatory variables, x, similar to those included in the probit for participation in male-dominated sectors. The dependent variable, S^{HR}, takes a value of 1 if a female-owned enterprise operates in a high return sector (i.e., Profit in excess of the top quartile level) and 0 if a female-owned enterprise operates in low return sector; α stands for the estimated parameters and e_i is the stochastic error term which is assumed to be distributed as normal, identical, and independent across the N enterprises in the sample.

4.3. Modeling gender profitability gap

The prevalence of a profit gap between male and female operated enterprise is established in the literature (Bardasi et al., 2011; cited in Goldstein et al., 2019; Islam et al., 2018). It is further highlighted that female-owned enterprises operating in male-dominated sectors perform better than those in female-concentrated sectors (Campos et al., 2018; Alibhai et al., 2017; Alibhai et al., 2018; Goldstein et al., 2019). However, a sizable profit gap still remains between male- and female- owned enterprises even when both are operating in male-dominated sectors (e.g., Goldstein et al., 2019).

The gender profitability gap was analyzed in the framework of the general profit model given by (4.11) where profit, Y_i, for entrepreneur (or enterprise) i ($i = 1, 2, \dots N$) is a function of a number of observed explanatory variables, x_i and errors, e_i, which include unobserved determinants of profit.

$$Y_i = \eta x_i + e_i \quad \textbf{(4.11)}$$

However, sample selection bias may occur when values of the dependent variables are missing as a result of another process (Greene, 2003). Additional

sources of sample selection bias include unobservability of the dependent variable for part of the relevant population, when the study considers a sub-set of the relevant population, hence the values of the independent variable are unknown (Haughton and Khandker, 2009; Certo et al., 2016). The selection bias may also arise from unobserved variables, such as motivations (Haughton and Khandker, 2009).

A common technique for addressing such sample selection bias is by using two-stage approaches (Wooldridge, 2013) and Heckman's (1979) two-step procedure which first estimates the participation equation followed by the outcome equation. This technique is typically applied for analyzing the wage offer of married women where wage is only observable for those women who are participating in the labor force.

$$Y_i^* = \eta x_i + e_i \quad \textbf{(4.12)}$$

Y_i^* is not observed for non-participation in business due to exit or decision not to join for reasons related to expected profit during the study year, i.e., the participation equation which describes an individual decision to participate in business, s_i, is specified as a probit model (4.13), which is a more simplified notation of (4.9):

$$s_i{}^* = \gamma z_i + v_i \quad \textbf{(4.13)}$$

Where z consists of additional variables beside x, to enable identifying the profit effect in (4.12). Thus, two latent equations (4.12) and (4.13) jointly determine the profit for those participating in business such that

$Y_i = Y_i^*$, if $s_i{}^* > 0$ and $Y_i =$., if $s_i{}^* \leq 0$ **(4.14)**

$$E(Y_i|s_i, x_i) = E(Y_i|z_i, x_i, \gamma_i) = \eta x_i + E(e_i|z_i, x_i, \gamma_i)$$

$$E(Y_i|s_i, x_i) = \eta x_i + E(e_i|s_i = 1) = \eta x_i + E(e_i|v_i > -\gamma z_i)$$

Once the participation equation, (4.13), is estimated, then The Inverse Mills Ratio (Heckman, 1979) can be derived:

$$\lambda_i = \frac{\emptyset(\gamma Z_i)}{\Phi(\gamma Z_i)} \quad \textbf{(4.15)}$$

where Φ is the cumulative distribution function of the standard normal distribution and $\emptyset$ is the corresponding density function. Then, λ_i, included in the final profit model to control for self-selection and estimated using OLS as given in (4.16):

$$Y_i = \eta x_i + \tau \lambda_i + \epsilon_i \quad \textbf{(4.16)}$$

If the coefficient on Mills lambda is statistically equal to zero, there is no evidence of sample selection and OLS results on (4.11) are consistent.

Empirical profit model: The ESS4 data used for the present study has a potential selectivity issue arising from the consideration of survivor enterprises in business during the survey period but not those that may have exited business nor those who decided not to join for reasons related to the expected profits. Hence, the study applied the Heckman (1979) sample selection model to identify and correct for potential selection bias in the data due to unobservability of enterprise profits for those who are not currently participating in business. The empirical model consists of two equations, the participation (participation in business or enterprise ownership) and the intensity (enterprise profit) equations which are often estimated in two-steps. The empirical Heckman model for participation in business follows a probit maximum likelihood estimation, as given in (4.17):

$$s_i^* = z_i \hat{\gamma} + v_i \quad \textbf{(4.17)}$$

The participation equation (4.17) is positive if the participation variable, s_i, takes a value of 1, i.e., if the i^{th} individual is participating in business and 0 if the if not participating in business). γ is a vector of unknown parameters, v_i the errors and z_i is a vector individual, household and context-specific variables explaining participation in business.

Assuming a linear profit model and having $\lambda_i = \frac{\phi(Z_i\hat{\gamma})}{\Phi(Z_i\hat{\gamma})}$ included to control for self-selection in the second stage, the empirical profit model for estimation can be specified as:

$$Y_i = \hat{\eta} x_i + \hat{\tau} \lambda_i + \in_i \quad \textbf{(4.18)}$$

Where Y_i stands for the annual profit of the i^{th} enterprise (or owner) and is not observed for individuals who are not currently participating in business. Annual profit, Y_i is calculated as the difference between total annual revenue and cost of the enterprise. Total annual revenue is aggregated from the data on average monthly sales when enterprise is active. Total annual enterprise costs is calculated as a sum of the annual costs in salaries and wages, purchases of goods for sale, raw materials, transport, rent, and all other operating costs, amount paid for license, income/profit tax, and other business tax paid in the past 12 months and all spent only for the enterprise, x is a vector of individual, household, enterprise and context-specific variables that may affect enterprise profits. It includes gender, age, education level, experience, type of sector, source of initial capital, number of employees, accessibility of savings, access to credit, region that are discussed in Section 4.4. In addition, a number of enterprise specific variables are included in the model. Additional variables for the participation equation (to be included in z) are marital status, having children below the age of 5 and access to support networks (see Section 4.4 for details).

In the empirical estimation, λ_i, the Inverse Mills Ratio (the term capturing the effect of the selection bias on enterprise profit) in (4.18) was not statistically significant, i.e., lack of evidence of selection bias. Hence, the OLS profit model, (4.11), was estimated by omitting λ_i. Respecifying (4.22) by explicitly accounting for the dummy variable for participation in male dominated sector, MD_i, to identify any profit gap between female-owned and male-owned enterprises both operating in male-dominated sectors:

$$Y_i = \hat{\pi}^G MD_i + \hat{\pi} x_i \ + e_i \qquad \textbf{(4.19)}$$

The profit gap between female and male-owned enterprises both operating in male-dominated sectors, is computed by taking the mean profit for these two types of enterprises. The mean profit of a female-owned enterprise operating in a male-dominated sector is given by:

$$E(Y_i|x_i, MD_i = 1) = \hat{\pi}^G + \hat{\pi} x_i \qquad \textbf{(4.20)}$$

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

$$E(Y_i|x_i, MD_i = 0) = \hat{\pi} x_i \qquad \textbf{(4.21)}$$

The mean profit gap between male and female entrepreneurs operating in male-dominated sectors is obtained by taking the differences between (4.20) and (4.21):

$$E(Y_i|x_i, MD_i = 1) - E(Y_i|x_i, MD_i = 0) = \hat{\pi}^G \quad \textbf{(4.22)}$$

The actual mean profit gap in (4.22) depends on the sign and magnitude of $\hat{\pi}^G$in the empirical estimation. The same procedure is applied in estimating the profit model for females and males participating in high-return sectors by testing for potential selectivity bias in the data due to unobservability of enterprise profits for those who are not currently participating in business.

4.4. Variables considered for sectoral sorting and performance among women and men

Previous studies show sectoral segregation by gender with some sectors being male-dominated while other are female-concentrated (e.g., Campos and Gassier, 2017; Goldstein et al., 2019). This pattern is often matched by gender differences in business performance (Alibhai et al., 2017; Kevane and Wydick, 2001; McKenzie and Woodruff, 2008; Klapper and Parker, 2010; Bardasi, et al., 2011; cited in Goldstein et al., 2019). Eliminating the gendered sectoral sorting and performance entails identifying the drivers of such behavior as well as estimating the magnitudes of the performance gaps. This section presents the variables, drawn from the literature, which potentially affect female entrepreneur's choice of specific industrial sectors identified for the study as well as their participation in male-dominated sectors and enterprise profit to enable measuring gender gaps in the same. They are discussed in what follows.

Experience: the role of experience in earnings has been recognized since Mincer introduced the popular model, Mincer's earnings equation (Polacheck, 2007), in which he modeled earnings over a life cycle alongside education. His earnings model included experience and experience squared, the latter to account for a potential non-linear relationship of experience and earning. Empirically, recent studies such as Alibhai et al. (2017), Endalew Terefe (2020), Batista et al. (2021) provide evidence of a favorable effect of experience on enterprise performance among female-owned enterprises. Experience, measured in number of years since business establishment, is expected to have a positive effect on female participation in male-dominated sectors and performance.

Intensity of business operation: evidence shows that the intensity of business engagement affects performance among female entrepreneurs (Buehren et al., 2019). The expectation is that increasing the intensity of operation contributes to higher profit and particularly if additional intensity increases there are constraints limiting it. The variable is measured in average number of days of the enterprise was active over the last 12 months.

Sector: the priority areas of existing Micro and Small Enterprise (MSE) Development Strategy of Ethiopia identifies four major sector categories, namely, manufacturing, distributive trade/service, construction and agriculture (Pinto, 2019). Based on this, the present study identifies three industrial sectors manufacturing/ construction/ mining; service/trade; and agriculture by merging construction and mining with manufacturing. Sectors are also categorized as male-dominated and female-concentrated; high return and low return (see discussion in Section 3.2.2) constituting the dependent variable.

Gendered occupational and sectoral sorting explains a significant proportion of enterprise performance in terms of wages (Chowdhury et al., 2018) and profits (Goldstein et al. 2019; Chowdhury et al., 2018). Sector variable is included among the predictors of enterprise profit because of the expectation that some sectors are more lucrative than others. The three identified sectors, agriculture, manufacturing/construction, and service/trade (see discussion in Section 3.2.3) are captured in the model in two dummy variables.

Females in male-dominated sectors, females in high return sectors: Evidence show that female-owned enterprises generate lower profit than male-owned ones (e.g., Alibhai, et al., 2015; Hardy & Kagy, 2016). Female-owned enterprises operating in male-dominated sectors generate higher profit than those in female-concentrated sectors (Campos et al., 2018; Alibhai, et al., 2017; Goldstein et al., 2019). There is evidence of female-owned enterprises operating in male-dominated sectors generating lower profit than male-owned enterprises operating in male-dominated sectors for developing and developed country contexts (Goldstein et al., 2019). There is also evidence of female- and male-owned enterprises performing the same in terms of sales (Campos et al., 2018). Women's limited access to productive resources, services and opportunities is expected to limit their likelihood of engagement in high return sectors compared to their male cohorts; hence, a potential profit gap. Whether the profit gap persists among women and men operating in male-dominated and in high return sectors is examined by assigning a value of 1 if the female-owned enterprise is operating in male-

dominated/ high return sectors and 0 if the male-owned enterprise is operating in male-dominated/ high return sectors.

Age: Studies indicate that with increase in age, females tend to choose jobs which offer greater degree of job security than others (e.g., Ferreira et al., 2021). It follows that if male-dominated sectors are more risky and less secured, then women may not choose them. On the other hand, with age, female entrepreneurs get more experience and confidence in business and may decide to join male-dominated sectors and perform well. While age gives some experience that may contribute to business performance, productivity may decline with increase in age, after a certain threshold, showing diminishing marginal returns to increasing age. Some empirical evidences on the correlation of age and female-owned business performance are offered in e.g., Goldstein et al., (2019) and Endalew Terefe (2020). The variable is measured in years and its effect on profit may depend on the net effect of the favorable profit effect of hands-on experience and that of the adverse effects of getting old. Its effect on female participation in male-dominated sectors may depend on the relative strengths of the opposing dimensions. Age is measured in years.

Education: education may influence the choice of enterprises and sectors through enhancing exposure to information and ability to comprehend. Based on this, education is expected to have a favorable effect on the decision to participate in male-dominated sectors. The role of education for productivity and business growth is also established in the literature on human capital (Schultz, 1961). Some recent studies have found a favorable effect of education on women's enterprise performance (e.g., Alibhai et al., 2017; Goldstein et al., 2019; Endalew Terefe, 2020). Education, measured in years of completed formal schooling, is hypothesized to have a positive effect on profitability of businesses.

Household size: access to production inputs is important in determining returns. Household size variable is included in the model because of the expectation of its potential contribution in supplying labor for the enterprise in the context of small household enterprises in particular. On the downside, large household size may become a burden for the household enterprise. The variable is measured as the total number of household members.

Marital status: Previous studies have included marital status in examining covariates of enterprise participation and performance (e.g., Alene, 2020; Alibhai et al., 2017; Goldstein et al., 2019). However, all of them defined the variable as married or otherwise. In recognition of the heterogeneity of women and the differential needs, priorities, and constraints faced by female household heads

(widowed, divorced and separated), the present study attempted different categorization as female headed or otherwise to help capture any peculiarities in enterprise participation. The expectation is that female heads of households have both challenges (in terms of paucity of resources and support networks, increased household care burden competing for time and resources with the enterprise, and cultural expectations and pressure related to access to resources and decisions) and opportunities (in terms of relative autonomy in decision-making) that may influence their choice of enterprise. The variables is coded 1 if the owner is widowhood, divorced, or separated and 0 otherwise.

Children aged below 5: cultural norms in many societies dictate that caring for children constitutes a woman's domestic responsibility. Some studies (e.g., Alibhai et al., 2017) have explicitly accounted for the effect of having little children in their empirical model and found evidence of an unfavorable effect. Having small children is expected to have an adverse effect on a woman's participation in male-dominated sectors due to the increased demand for unpaid care work competing with her limited time. The variable took a value of 1 if the entrepreneur has a child who is under 5 years of age and 0 otherwise.

Migration of members: As far as migration is concerned, it is expected to contribute through financial and non-financial remittances, the latter in what is called social remittance including ideas, values, practices and social capital (Levitt, 1998; cited in IOM, 2014). It has a potential to expand business opportunities by bringing new information, ideas, practices, experience, and additional source of income, which may have favorable implications for making better informed business decisions and enhancing the capacity to implement decisions. The variable is measured as the duration (in months) of any household member being away from home during the study period.

Support networks: play a considerable role in dealing with risks, particularly in poverty contexts (Haughton & Khandker, 2009). There are some empirical evidences, e.g., Campos et al. (2018); Alibhai et al. (2017, 2018); Goldstein et al. (2019), on the favorable role of support networks on female enterprise performance and participation in male-dominated sectors. The variable takes a value of 1 if a female enterprise owner had a role model or female household members also owning business and 0 otherwise.

Duration in the current dwelling: the length of stay in the current dwelling, in years, is also included in the model to capture any trends regarding the mobility of women participating in male-dominated and in high return sectors.

License: in Ethiopia, 53% of women and 41% of men are employed in the informal sector (CSA, 2021). Having a business license is expected to enhance claiming rights for government support opportunities that may enhance business performance. The formality of the enterprise is captured by including a variable that indicates whether the enterprise is legally registered and licensed in the model. The variable takes a value of 1 if the enterprise is registered and has a license and 0 otherwise.

Enterprise size: size is expected to affect performance through its effect on the productive resource constraints. Some evidence of a favorable effect of initial capital on enterprise profit can be found in Quartey (2003); Hayelom Abrha (2020); Batista et al. (2021). Due to lack of data on enterprise capital, the variable hired workers (in number of employees) and cost in salary and wages (ETB) during the year were considered as indicators for enterprise size.

Access to credit: The role of finance in business growth cannot be emphasized (Haughton and Khandker, 2009). Access to finance contributes to easing the liquidity constraint that female entrepreneurs may be facing to start and expand business. Some evidence of a favorable effect of access to credit on MSE performance in general can be found in e.g., Quartey (2003) and Gemechu Mulatu (2021) and on the growth of female owned enterprises in particular in e.g., Endalew Terefe (2020). The variable takes a value of 1 if the female entrepreneur had access to credit during the period of one year prior to the survey and 0 otherwise.

Location: the importance of a firm's location for business performance is linked to the access to infrastructure and basic services (e.g., Loewe et al., 2013; Wolde and Geta, 2015) and access to a larger market (e.g., Nathan, 2015) which both are better in larger urban centers than in smaller towns. Several studies have found urban centers to have a positive effect on business performance (e.g., Hayelom Abrha 2020). Moreover, some sectors may be naturally suited to certain locations as a result of the type of resources and inputs they entail. The variable is coded 1 if the enterprise is located in Addis Ababa and Dire-Dawa (larger cities with better infrastructure and basic services) and 0 otherwise and is expected to have a favorable role for the likelihood of female participation in male-dominated sectors and performance.

Enterprise site: in line with the argument on the role of location for enterprise decision and performance (e.g., Loewe et al., 2013; Wolde and Geta, 2015; e.g., Abrha 2020) and the observation of some enterprises operating around the house due to lack of access to land and workspace, an additional variable is included to capture the effect of the operational site of the enterprise on business

performance. The variable takes a value of 1 if the enterprise is operated around the house-yard and 0 otherwise.

In addition, variables that capture accessibility of savings (e.g., use of ATM and mobile and online banking), sources of startup capital, land size, assets/wealth (ownership of additional building beside the dwelling unit), enterprise's share in household income, and length of stay in the current dwelling, are included in the model. Variables such as land size and migration of household members are included based on the observation of a looming larger constraint in accessing land and the increasing role of migration in Ethiopia.

4.5. Data

4.5.1 Source of data

In order to attain the objectives of the research, data is needed on covariates of business enterprise participation and profits, comprising the characteristics of owners, enterprises, and the context in which they are operating. In particular, data is needed on potential predictors of business participation (e.g., gender, age, marital status, education, household size, number of children, other household members' engagement in business), and of business profits (e.g., gender, education, experience and size of enterprise, intensity of operation, accessibility of finance, wealth/assets type of sector). Various surveys[6] were explored in terms of availability and accessibility of latest enterprise data on variables of relevance for the study, based on which ESS 2018/19 was selected for the assessment.

[6] CSA's 2017/18 Small-Scale Manufacturing Survey, 2020 Large and Medium Scale Manufacturing Surveys, and the 2021 Labor Force and Migration Survey were also considered. The 2017/18 Small-Scale Manufacturing Survey and 2020 Large and Medium Scale Manufacturing Surveys generate relevant data pertaining to small-scale manufacturing establishments and medium and large-scale manufacturing establishments, respectively. Whereas it consists of data on type, enterprise size, investment, employees, persons engaged, education, access to training finance, value added and value of production at full capacity, various service, use of raw materials and inputs and transactions (domestic and international), receipts, costs, fixed assets and stocks, and license. However, it lacks individual and household-specific data on marital status, household size, and no. of children, parental occupation, other household members' engagement in NFE, and support networks, which the literature identifies as important predictors of female participation in male-dominated and high return sectors. The 2021 Labor Force and Migration Survey, which consists of data on various types of industries and occupation, may enable estimating female and male enterprise participation (albeit with missing variables on parental background, source of start-up capital/ support network, scale of operation, experience). However, it does not have data on enterprise revenue and costs, that are needed for estimating the gender profitability gap.

ESS 2018/19 (ESS4) 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 dataset is relatively more comprehensive in terms of availing data on a number of enterprise-, household- and context-specific variables needed to estimate the gender profitability gap, identify predictors of female participation in male-dominated sectors and the drivers of sectoral sorting among male and female entrepreneurs that would help in addressing the research objectives. However, it has some drawbacks related to lack of data on some relevant variables and accuracy of data. For instance, data is lacking on size of start-up capital, for which the present assessment used hired labor as a proxy. In addition, even the data on sources of start-up capital seems to have some issues with the way the question is framed and/or conceptualized, which returned a number of responses that their businesses do not require any start-up capital. Moreover, some five-digit figures were also identified for the year of enterprise establishment, which the assessment dropped as outliers. The dataset consists of a total of 7315 enterprise owners after cleaning for outliers.

4.5.2. 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 some of the individual and household-specific variables such as average age, education, household size, number of under 5-year-old children, and duration of migration among female and male owned enterprises (see Table 4.1). Sizable differences are observed in marital status, having other female household members also owning businesses, accessibility of savings, ownership of a mobile phone and asset holding. About half of the enterprise owners operating in male-dominated sectors are married as compared to 42% among those in female-concentrated sectors. About 48% of enterprise owners in male-dominated sectors and 53% of those in female concentrated sectors have other female household members also owning a business enterprise.

Accessibility of savings, proxied by use of remote banking services such as ATM, online and mobile banking, seems to be higher (11%) among business owners in male-dominated sectors compared to 8% those in female-concentrated ones. Similarly, ownership of a mobile phone is slightly higher (61%) among business owners 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.

Table 4.1: 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)
Individual and household characteristics					
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)
No. of under 5 children in the HH	No. of children who are below 5 years-old in the household	378	0.58 (0.78)	1236	0.549 (0.75)
Migration of household members	No. of months since a 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 in the HH	1 = if owner has under 5-year-old children; 0 otherwise	167 (10.3%)		509 (9.3%)	
Occupation of father in agriculture	1 = if owner's father is engaged in agriculture; 0 otherwise	941 (57.9%)		3356 (60.9%)	
Business ownership by other female members	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%)	
Account ownership	1 = if owner has a bank account; 0= otherwise	435 (26.8%)		1376 (25.0%)	
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%)	

Source: Based on ESS 2018/19. Note: difference in number of observations is due to variable specific cleaning.

4.5.3. Enterprise attributes

This section describes enterprises operating in female and male-dominated sectors in terms of experience, intensity of operation, contribution to household income, license, site of operation, source of business start-up capital, geographic location and profit. The average years of experience in business is about 6 years for both types of enterprises (see Table 4.2). Enterprises in female-concentrated sectors are operated for an average of 180 days per year as compared to about 175 days in the case of male-concentrated sectors. On average, the use of hired labor (hence wages and salaries costs) among enterprises in male-dominated sectors is about 60% of those in female-concentrated sectors.

Results further show that 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% among those in male-dominated sectors) secured their business start-up capital from an existing agricultural income source. Locationally, about 26% of the enterprises operating in male-dominated sectors are located in Addis-Ababa and Dire-Dawa compared to 20% for female-concentrated sectors, with potential implications for access to opportunities that cities offer. In terms of performance, on average, enterprises operating in female-concentrated sectors generate a higher annual profit (51,299.6 ETB) than those in male-concentrated sectors (50,877.8 ETB). Profit is measured as the difference between annual revenue (average monthly sales when enterprise was active multiplied by the number of months enterprise was active) and total annual costs[7] (annual wages and salaries, rents, raw material costs, transport, other operating costs, taxes, licensing costs). While some (unconditional-) profit differentials are 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 5.6.

7Total revenue and costs are computed for the 12 months prior to the survey. Total revenue is measured for the months the enterprise was operational during those months.

Table 4.2: Enterprise characteristics across male-dominated and female-concentrated sectors

Variable name	Measurement	Male-dominated sector+s		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)

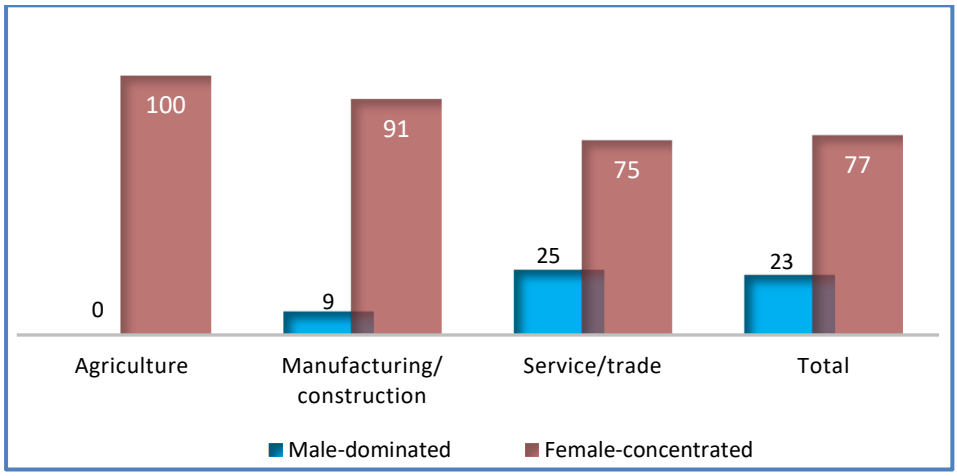
Source: Based on ESS 2018/19. Note: difference in number of observations is due to variable specific cleaning.

4.5.4. Sectoral sorting among women and men

The ESS4 dataset provides enterprise data on 41 sub-sector categories which the present study categorized in to 3 major sectors aligned to the key industry categories, *viz*., agriculture, manufacturing/construction/mining, and service/trade (see Table A1 for data disaggregated by sub-sector). For example, the manufacturing/construction/mining sector consists of enterprises operating food & beverages, textile and apparel, leather, pharmaceutical, wood and metal etc. manufacturing, construction and mining/ quarrying activities; agriculture sector consists of crop and livestock enterprises. On the other hand, service/trade sector includes enterprises operating in wholesale and retail trade, transport, accommodation, sports & entertainment, legal, professional services, education, health, rental, repair, security.

The distribution of sectors does not show much difference among men and women enterprise owners. About 23% of the sample enterprises are male-dominated whereas the rest 77% are female-concentrated (see Figure 4.1 and Table 4.2). The entire sample of agricultural enterprises are female-concentrated. Nearly 91% of the enterprises in manufacturing/construction sector and 75% of those in the service/trade sector are female-concentrated compared to 9% and 25% male-concentrated, respectively. Overall, about 84% of the sample women (compared to 86% men) are engaged in the service/ trade sector, 15% (13% men) in manufacturing/ construction and 0.9% (0.8% men) in agriculture (see Table 4.3). Overall, females constitute majority (53%) of sample enterprise owners compared to 47% men.

Figure 1: Sectoral participation by gender



Source: Based on ESS 2018/19.

4.5.5. Scale of operation of enterprises across major industrial sectors

The size of hired labor is taken as an indicator for enterprise size, with the expectation that larger enterprises hire more workers. The overwhelming majority (83%) of the female and male-owned enterprises across all studied sectors, manufacturing/construction, service/trade, and agriculture, do not hire any labor (see Table 4.3). Overall, only 2% of enterprise owners hire in excess of 10 workers and 15% hire below 10 workers, which indicates that majority (83%) of sample enterprises are operated by owners and/or their households as household enterprises.

Table 4.3: Hired workers in enterprises across major industrial categories by sex of owners

	No. of hired workers[8]	Female-owned		Male-owned		Sectoral participatio	
		Freq	%	Freq	%	% Female	% Male
Manufacturing/ construction	0	513	88.6	402	88.2		
	1-9	60	10.4	46	10.1		
	Sub-total (<10)	573	98.9	448	98.2		
	At least 10	6	1.0	8	1.8		
	Total	579	100.0	456	100.0	14.9	13.3
Service/ trade	0	2682	82.2	2459	83.2		
	1-9	521	15.9	444	15.0		
	Sub-total (<10)	3202	98.2	2903	98.2		
	At least 10	58	1.8	52	1.8		
	Total	3261	100.0	2955	100.0	84.2	85.9
Agriculture	0	21	60.0	19	65.5		
	1-9	14	40.0	10	34.5		
	Sub-total (<10)	35	100.0	29	100.0		
	At least 10	0.0	0.0	0	0.0		
	Total	35	100.0	29	100.0	0.9	0.8
Total	0	3216	82.9	2880	83.7		
	1-9	595	15.4	500	14.5		
	Sub-total (<10)	3811	98.3	3380	98.3		
	At least 10	64	1.7	60	1.7		
	Grand total	3875	100.0	3440	100.0	53	47

Source: Based on ESS 2018/19.

8 The present study followed CSA's standard grouping of manufacturing enterprises into small and large scale based on the number of workers the enterprises are engaging, only to categorize enterprises based on the number of hired workers in our case.

In terms of sector, none of the agricultural enterprises hire in excess of 10 workers, whereas only 1% of female-owned and 2% of male-owned manufacturing/construction enterprises and 2% of male and female-owned service/trade enterprises hire at least 10 workers. All agricultural enterprises that men and women own are small-scale with 60% of female-owned and 66% of male-owned ones not hiring any labor and those who are hiring do so below 10 workers. About 89% of female-owned and 88% of male-owned manufacturing enterprises do not hire any labor and only 10% hire less than 10 workers. Hired labor participation seems to be larger in the service sector (compared to the other sectors) with 16% of female-owned and 15% of male-owned enterprises hiring between one and 9 workers.

4.5.6. Participation in male-dominated and high return sectors

Results show that 20.5% of female business owners engage in male-dominated sectors and 77% in female-concentrated sectors while the remainder 2.4% engage in parity sectors (where there is no dominance of either sex) (see Table 4.4). About 24% of male business owners engage in male-dominated sectors, 73% in female-concentrated sectors and the rest (2.7%) in parity sectors. This shows that majority of sample male and female business owners 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%.

As far as participation in high return sectors is concerned, 25% of female business owners are operating in high return sectors whereas 75% are in low return sectors. The proportion is the same for male business owners operating in high and low return sectors as well. Overall, women make up 53.5% of business owners engaged in high return sectors whereas men constitute 46.5%.

Table 4.4: 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	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

Source: Based on ESS 2018/19.

4.5.7. Statistical tests and corrective measures

Prior to estimating the OLS profit model, various tests were carried out on the data including normality, heteroscedasticity, and multicollinearity tests. Normality test was conducted by using visual checks and skewness and kurtosis levels as the common statistical tests for normality, Shapiro-Wilk, and Shapiro-Franchesca tests, which are built for a maximum of 2000 and 4000 observations, respectively, are not suited for the number of observations used in the present study. As a way of correcting for the identified non-normality issue, some outlier observations were dropped, and variables were transformed. Transformation of variables was conducted by applying Box-Cox test for identifying better fitting specification of the dependent variable, profit. The test results indicated that a logarithmic specification is better fitting for the profit data compared to a linear one. Then the functional transformation of the right hand-side variables is decided by comparing R2 values of the log-linear and log-log model specifications. Accordingly, a log-log model was found to be better fitting for the empirical profit model, although it implied losing a number of observations. This is also intuitive as the change in profit with respect to changes in inputs is plausibly thought of in terms of elasticity rather than constant effects.

Heteroscedasticity was tested by using Breuch-Pagan and White's tests, which both rejected the null hypothesis of constant variance of residuals. Correction for heteroscedasticity was conducted by applying White's heteroscedasticity robust standard errors in the estimation. In addition, a test for multicollinearity of the explanatory variables was conducted by using the Variance Inflation Factor (VIF). The test was conducted by applying a tolerance level of not more than 10 for the VIF and not more than 0.2 for 1/VIF and there was no multicollinearity of the variables considered in the estimated models.

5. Results and Discussion

5.1. Drivers of sector selection among men and women

This Section addresses specific objective that deals with identifying the main drivers of sectoral choice among women and men. The analysis involves estimating the multinomial logit model given by (4.1) in Section (4.1.1). The empirical model consists of a number of individual, household, enterprise and context-specific variables that potentially predict sectoral sorting, across agriculture, manufacturing/construction and service/trade, among women and men enterprise owners. The model is estimated for women-only sample (results presented in Section 5.1.1) and men-only sample (results presented in Section 5.1.2). Two models are estimated for each with the aim of identifying any differential sectoral sorting associated with female participation in male-dominated sectors, column (2), and in high return sectors, column (4) of Tables 5.2 and 5.3.

5.1.1. Sectoral sorting among women

The section addresses the objective of identifying predictors of sectoral sorting among female enterprise owners by estimating the multinomial logit model given in (4.1), for women only sample. Estimation results are presented in Table 5.1 and discussed in what follows.

Predictors of female participation in manufacturing businesses: variables that are found to be positively associated with female entrepreneurs' participation in manufacturing sector are experience in business and site of operation (see Table 5.1). Experience is positively associated with the likelihood of female engagement in manufacturing/construction sector indicating that more experienced female business owners are more likely engaged in manufacturing sector compared to the service sector. This may be due to the sectoral differences in potential returns associated with increasing women's experience and the risk of loss associated with

exiting or changing sectors, which both may increase the likelihood of women's stay in business for a longer period. It may as well be that manufacturing is relatively long-standing as a business venture.

Results further show that female-owned manufacturing enterprises are more likely operated around the house yard in comparison to service-related ones. This may be an indication of a constraint on access to production site, which may need to be separated from its sales site in the case of manufacturing enterprises compared to service-related enterprises (whose production and sales often takes place at the same site). This is also consistent with the finding that majority (89%) of female-owned manufacturing enterprises as compared to 82% of service and 60% of agricultural ones are not hiring any labor (Table 4.4); hence being operated by owner and/or household labor and possibly as household enterprises. Thus, in the context of constraints on access to sites for business operations and costs associated with securing separate production and sales sites among small-scale female entrepreneurs, those in the manufacturing sector may resort to using their house yard as a production site.

Having a business license, intensity of operation, and operating in male-dominated sectors are negatively associated with female engagement in manufacturing sector. Female-owned enterprises with a business license are less likely belonging to the manufacturing sector. This finding coupled with the one of manufacturing enterprise operations around the house yard may indicate that enterprises operated around the house yard are not licensed (or are informal). Whether or not this lack of licensing for home-based businesses is due to owners' choice or other external factors is left for further investigation. In addition, higher intensity of work is associated with a lower likelihood of female-owned enterprises belonging to the manufacturing sector (compared to the service sector) indicating that female-owned manufacturing enterprises are operated with lower intensity than those in the service sector. This is perhaps to be expected given that majority (89%) of female-owned manufacturing enterprises do not hire labor, the 11% that hire do so with a minimum average (1.0 workers), compared to an average of 1.8 workers in service enterprises. Besides, female owned manufacturing enterprises tend to operate around the homestead (possibly alongside other responsibilities and rent-free) which altogether contribute to reducing intensity of operation.

Females operating in male-dominated sectors are less likely engaged in the manufacturing sector (compared to the service sector), which may be an indication that the manufacturing sector is not typically male-dominated with only 9% being male-dominated (see Figure 1) compared to 25% in the case of the service sector.

On the other hand, female engagement in high return sectors is not found to be associated with engagement in manufacturing sector, which may indicate that female engagement in male-dominated sectors may not be necessarily the same as their engagement in high return sectors.

Predictors of female participation in agricultural businesses: Having other agricultural income sources for business start-up capital and parental occupation in agriculture are both positively associated with female engagement in agricultural businesses (compared to service sector businesses). Intuitively, having a background in agriculture reinforces entry into agricultural business ventures, owing to the relative advantages of familiarity, experience and acquired skills, as compared to service-related businesses. However, the situation is apparently different with migration.

The finding of a lower likelihood of association of duration of migration of members with female engagement in agricultural businesses may indicate that the expected benefits of migration (e.g., access to income, information and opportunities) is contributing less to agricultural businesses compared to service businesses. This may relate to the influence of city lives in countries of migration destination and need for diversifying income sources, which both induce investments in non-farm businesses even among the migrants of rural origin. This finding is also consistent with that of the negative association of securing business start-up capital from non-farm sources with the likelihood of female engagement in agricultural businesses.

Results further show that having a business license is more likely and operational site is less likely associated with female engagement in agricultural businesses. The findings may indicate that the nature of agricultural business enterprises may likely enforce formality, under normal conditions, due to the need for acquiring land for the business. Moreover, depending on the size of land involved, agricultural businesses are more likely located away from the homestead.

The higher likelihood of female engagement in agricultural businesses with the increase in hired labor is also consistent with the finding that a larger proportion (40%) of the female-owned agricultural enterprises are operated by hired labor compared to 18% of service-related enterprises and 11% of manufacturing enterprises (see Table 4.3). However, the fact that all 40% of agricultural businesses in the sample are hiring below 9 workers (the average being one worker), compared to some larger hiring in other sectors, indicates that agricultural enterprises may not be the most intensively operated, which is also reflected in the negative association of higher intensity of operation with agricultural sectors.

The role of larger household size and marital status (positive association of being married and negative association of being out of a wedlock) were also evident for the likelihood of female engagement in agricultural sector. These may be indicative of the role of household support (through labor, finance, and other support) for female engagement in agricultural enterprises. This may as well be an indication of larger household size and lower divorce rates among agricultural communities, which becomes relevant if majority of the agricultural enterprise owners are from rural communities. On the other hand, with the increase in the number of children under the age of 5, women have a lower likelihood of engagement in agriculture, possibly due to the implications for increase in demand for care work.

Female enterprise owners operating in male-dominated sectors and those in high return sectors are less likely to engage in agricultural enterprises, which may indicate that agriculture is neither a typically male-dominated nor a high return sector.

Table 5.1: Multinomial logistic regression for predictors of sectoral sorting among women

Variables	Females in male-dominated sectors		Females in high return sectors	
	Robust coef.	RRR	Robust coef.	RRR
Manufacturing/ construction				
Experience in business	0.04 (0.025)	1.04 (0.026)	0.039 (0.023)*	1.039 (0.024)*
Intensity of operation	-0.003(0.002)**	0.997(0.002)**	-0.003(0.002)*	0.997(0.002)*
Licensed	-2.268(0.821)***	0.104(0.085)***	-1.673(0.68)**	0.188(0.128)**
Site of business operation	2.735(0.648)***	15.41(9.983)***	2.129(0.517)***	8.407(4.345)***
Females in male dominated sectors	-18.314(0.383)***	0.0(0.0)***		
Females in high return sectors			0.479(0.508)	1.614(0.82)
2. Service (base outcome)				
3. Agriculture				
Age	-0.328(0.069)***	0.72(0.05)***	-0.374(0.06)***	0.688(0.042)***
Education	0.903(0.07)***	2.466(0.172)***	0.999(0.089)***	2.716(0.242)***
Household size	6.617(0.382)***	747.984(285.454)***	7.184(0.457)***	1318.51(602.612)***
No. of under 5 children in the HH	-20.507(1.138)***	0.0(0.0)***	-21.81(1.106)***	0.0(0.0)***
Migration of household members	-0.52(0.045)***	0.595(0.027)***	-0.56(0.036)***	0.571(0.02)***
Dwelling duration	0.895(0.051)***	2.446(0.125)***	0.807(0.062)***	2.241(0.138)***
Marital status				
No more married	-18.298(1.361)***	0.0(0.0)***	-16.094(1.918)***	0.0(0.0)***
Married	15.042(1.21)***	3409354.0(4124494.0)***	16.968(1.573)***	23400000.0(36800000.0)***
Occupation of father in agriculture	7.517(1.14)***	1839.776(2096.433)***	3.865(1.356)***	47.681(64.658)***
Experience in business	-0.85(0.185)***	0.428(0.079)***	-1.164(0.145)***	0.312(0.045)***

Intensity of operation	-0.05(0.005)***	0.951(0.005)***	-0.048(0.004)***	0.953(0.004)***
Hired labor	0.105(0.009)***	1.111(0.01)***	0.097(0.014)***	1.102(0.015)***
Licensed	7.714(1.473)***	2238.815(3298.083)***	6.725(1.345)***	833.119(1120.471)***
Site of business Operation	-13.03(1.992)***	0.0(0.0)***	-13.872(1.094)***	0.0(0.0)***
Location	-17.775(2.093)***	0.0(0.0)***	-13.663(2.348)***	0.0(0.0)***
Source of start-up capital				
Agri. income	12.419(1.233)***	247526.9(305292.6)***	18.075(1.325)***	70800000.0(93800000.0)***
Non-farm income	-8.173(1.319)***	0.0(0.0)***	-0.418(1.336)	0.659(0.88)
Family/relatives	0.769(2.334)	2.158(5.039)	5.842(2.143)***	344.635(738.489)***
Females in male-dominated sectors	-10.779(1.377)***	0.0(0.0)***		
Females in high return sectors			-4.298(1.698)**	0.014(0.023)**
No. of obs.	321		326	
Wald chi2(15)	4640.96		1222.56	
Prob>chi2	0.0000		0.0000	
Pseudo R2	0.3565		0.2561	

NB: Standard errors in parentheses The symbols ***,**,* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Only significant and key variables are reported in the table. The entire list of the variables included in the model can be found in Table A2 of the annex.

Source: Based on ESS 2018/19.

5.1.2. Sectoral sorting among men

The section is aimed at identifying drivers of sectoral choice among male enterprise owners by estimating the model given in (4.1) for men only sample (see Table 5.2 for estimation results).

Predictors of male participation in manufacturing businesses: results show that intensity of operation is less likely associated with male business owners' participation in manufacturing enterprises implying a smaller number of days of working in such enterprises compared to service-based enterprises (see Table 5.2). As in the case of female-owned manufacturing businesses, male-owned enterprises operating around the homestead are more likely to belong to manufacturing sector than to the service sector and that increasing years of business experience is more likely to be associated with men's sorting into manufacturing enterprises. Parental occupation in agriculture is less likely associated with men's engagement in the manufacturing sector which is intuitive considering the role of familiarity, experience, and skills for starting business enterprises.

Predictors of male participation in agricultural businesses: larger household size and being married are positively associated with male owners' participation in agricultural business enterprises. As in the case of female's agricultural business owners, larger household size is expected in agricultural communities. This may indicate the role of family support networks, through the provision of labor, finance and other needed support, for sector choice. Similarly, the role of family background in the choice of businesses is reflected in such a way that parental occupation in agriculture reinforces men's engagement in agricultural businesses compared to engagement in service-related businesses. Moreover, male business owners that secured business start-up capital from non-farm sources are less likely operating in agricultural enterprises, which may indicate that existing non-farm income sources are likely to attract rather non-farm business enterprises. Male-owned businesses operating in male-dominated sectors are less likely to sort into agricultural businesses, which may indicate that agricultural businesses are not typically male-dominated.

Table 5.2. Multinomial logistic regression for sectoral sorting among men

Variables	Females in male-dominated sectors		Females in high return sectors	
	Robust coef.	RRR	Robust coef.	RRR
Manufacturing/ construction				
Marital status				
No more married	-17.806(0.998)***	0.00(0.0)***	-2.015(1.344)	0.133(0.179)
Occupation of father in agriculture	-1.032(0.391)***	0.356(0.139)***	-0.686(0.354)*	0.503(0.178)*
Experience in business	0.041(0.023)*	1.042(0.024)*	0.063(0.017)***	1.065(0.019)***
Intensity of operation	-0.006(0.001)***	0.994(0.001)***	-0.005(0.001)***	0.995(0.001)***
Site of business operation	2.057(0.35)***	7.823(2.739)***	2.112(0.302)***	8.263(2.497)***
Source of enterprise start-up capital				
Const	-2.435(0.716)***	0.088(0.063)***	-2.484(0.676)***	0.083(0.056)***
Service	(base (outcome)	(base (outcome)	(base (outcome)	
Agriculture				
Household size	0.474(0.242)**	1.606(0.388)**	0.476(0.234)**	1.61(0.376)**
Marital status				
Married	13.982(0.8)***	1181478.0(944632.8)***	14.131(0.754)***	1370716.0(1033670.0)***
Occupation of father in agriculture	14.97(1.495)***	3171055.0(4739733.0)***	14.721(1.198)***	2473932.0(2964739.0)***
Accessibility of savings	-13.881(0.75)***	0.00(0.0)***	-14.209(0.805)***	0.00(0.0)***
Experience in business	0.148(0.093)	1.159(0.107)	0.161(0.093)*	1.175(0.11)*
Intensity of operation	-0.007(0.005)	0.993(0.005)	-0.009(0.005)**	0.991(0.005)**

Location	-14.742(2.75)***	0.0(0.0)***	-14.9(2.442)***	0.0(0.0)***
Source of enterprise start-up capital				
Non-farm income	-15.42(1.15)***	0.0(0.0)***	-15.907(1.348)***	0.0(0.0)***
Family/ friends	-15.62(0.659)***	0.0(0.0)***	-15.832(0.707)***	0.0(0.0)***
Males in male-dominated sectors	-15.143(0.618)***	0.0(0.0)***		
Males in high return sectors			0.98(0.95)	2.664(2.531)
Const	-30.33(1.489)***	0.0(0.0)***	-31.271(1.456)***	0.0(0.0)***
No. of Obs.	735		761	
Wald chi2(15)	2455		1307	
Prob>chi2	0.0000		0.0000	
Pseudo R2	0.2528		0.2338	

NB: Standard errors in parentheses The symbols ***,**,* denote statistical significance at the 1%, 5%, and 10% levels, respectively. Only significant and key variables are reported in the table. The entire list of the variables included in the model can be found in Table A2 of the annex.

Source: Based on ESS 2018/19.

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

5.2.1. Females participating in male-dominated sectors

The Section addresses the objective of identifying and characterizing female-owned enterprises operating in male-dominated sectors in comparison to those operating in female-concentrated sectors. To this end, the empirical model given in (4.9) is estimated in a probit specification where a number of individual, household, enterprise and context-specific variables were included as potential covariates of female participation in male-dominated sectors (see Section 4.4 for list of variables identified from the literature). The variables are household size, marital status, having children under the age of 5, migration of members, parental occupation and having other household members owning business enterprises, site of operation, source of start-up capital, size of enterprise, asset ownership, accessibility of savings, and location. Two models were estimated with two alternative indicators for enterprise size, hired labor and salaries/wages, and results are pretty much similar as given, respectively, in columns (2) and (4) of Table 5.3.

Results show that the variables that positively affect female participation in male-dominated sectors include household size, duration of migration, and ownership of additional buildings (see Table 5.3). Larger household size is associated with a higher likelihood of female participation in male-dominated sectors. This may indicate that women who are operating in male-dominated sectors may be taking advantage of the available household support (labor or other) for carrying out their businesses. In particular, if male-dominated sectors have higher (perceived or actual) demand for labor or other household support, then women with larger household size may be encouraged to join male-dominated sectors.

The likelihood of female participation in male-dominated sectors also increases with the increase in duration of migration of members. The role of migration of household members may be seen in terms of increasing access to income (to finance investment needs and as a fallback position in case of business failure), information/exposure, opportunities, and bargaining for decision. This finding is relevant if we expect that male-dominated sectors demand more capital investment, better information, and empowerment in decision. Ownership of additional buildings, an indicator for assets/wealth, increases the likelihood of female participation in male-dominated sectors. This may indicate that wealthier women are more likely to belong to be operating in male-dominated sectors which may have to do with the risks (perceived or actual) associated with entry into male-

dominated sectors and the risk behavior of females. It may also indicate that female enterprise owners in male-dominated sectors carry out their businesses outside the house-yard.

Having children below the age of 5, other household members' engagement in business, and marital status are found to be negatively associated with female participation in male-dominated sectors. The unfavorable effect of having under 5-year-old children may have to do with placing additional demand on women's care work that competes for their limited productive time, which increases the risk of loss (actual or potential) from entering and staying in male-dominated sectors, thereby preventing women's entry (and competitiveness) in such businesses. This finding is consistent with that of Alibhai et al. (2017). Results further show that women who are no more married (due to widowhood, divorce, and separation), are less likely to engage in male-dominated sectors as compared to other women. This may be indicative of the constraints such women are faced with including lack of spouse's support and increased household responsibilities. The role of support networks for female engagement in male-dominated sectors is also reflected in previous studies (e.g., Campos et al., 2018; Alibhai et al., 2017; Goldstein et al., 2019).

Female enterprise owners belonging to households with other female members also engaging in businesses are less likely to participate in male-dominated sectors, which may be indicative of the role of household members and support networks in the decision regarding the choice of enterprises. Previous studies (e.g., Campos et al., 2018; Alibhai et al., 2017; Goldstein et al., 2019) indicated the role of other role models and support networks e.g., spouse's assistance, for enhancing female participation in male-dominated sectors. 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.

Table 5.3: Probit for female participation in male-dominated sectors (vs. females in female sector)

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

5.2.2. Females participating in high return sectors

The Section identifies and characterizes female-owned enterprises operating in high return sectors in comparison to those operating in low return sectors. This involves estimating the empirical model given in (4.10) in a probit specification by controlling for the relevant variables as given in Section 5.2.1.

In order to analyze female participation in high return sectors, the upper profit quartile (38,650 ETB)[9] was taken as a benchmark for high return. Thus, female and male entrepreneurs generating an annual profit of at least 38,650 ETB are considered as high profit earners. As given in Table 4.4, about 53.5% of the top quartile profit earning enterprises are operated by women whereas the remaining 46.5% are by men.

Having compared the findings on predictors of female participation in male-dominated and in high return sectors, some differences are noteworthy. A higher intensity of enterprise operation[10] is associated with a higher likelihood of female participation in high return sectors. This finding is consistent with the expectation that higher enterprise returns result from higher intensity of operation of the enterprises.

On the other hand, the operational site of the enterprise, size of hired labor, cost in salaries/wages, and duration of residence in the current dwelling are found to be negatively associated with female owners' participation in high return sectors. Female-owned enterprises that are operated around the homestead are less likely belonging to high return categories. This may be an indication that female business owners operating around the house may need to attend to multiple household responsibilities alongside their businesses which may compromise business performance. Although this may as well have to do with lack of access to work premises among female entrepreneurs, previous studies (e.g., Chowdhury et al., 2018) also suggest that in terms of occupational sorting, females tend to choose occupations that offer some degree of flexibility to enable accommodating domestic responsibilities at the expense of higher earnings. With the growth in business performance among female entrepreneurs, one may also expect enterprises to move away from the homestead as they transition from a household enterprise status into a full-fledged firm status; hence the negative association of working at home with the likelihood of her engagement in high return sectors.

[9] 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.

[10] The variable intensity of enterprise operation, which is considered important for predicting participation in high return sector, is included in the probit model for female participation in female dominated sectors.

Table 5.4: Probit for female participation in high return sectors (vs. females in low return sectors)

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

Female-owned enterprises that hire more labor have lower likelihood of sorting into high return sectors and those that incur higher costs in salaries and wages have higher likelihood of sorting into high return sectors. This finding coupled with that of (i) the positive association of household size with female engagement in high return sector and (ii) the higher likelihood of intensity of female-owned enterprises in high return sector has the following implications. First, females in high return sectors may tend to increase household labor for increasing intensity of their businesses than increasing the number of hired workers. The pressure to provide for a larger household size may induce more household effort to boost business returns among such female business owners, hence, their higher probability of belonging to high return sectors. Second, when it comes to increasing intensity through labor hiring, females in high return sectors may have preference toward increase in engagement per hired worker, hence higher cost in salaries/wages, than increase in number of hired workers. It may also indicate that increasing the number of hired workers is becoming counter-productive for females in high return sectors.

Female business owners who lived longer in their current dwellings are less likely to participate in high return sectors. This may be because women who stayed long in the community may need to conform to community expectations and may refrain from embarking on high return businesses, particularly if such businesses are associated with high risks and are traditionally of men's domains. It may also mean that women engaging in high return sectors have recently moved from other places.

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

5.3. Gender profitability gap

This section sets out to address the last objective of the study by comparing profit differential between female and male-owned enterprises both operating in

male-dominated sectors. In addition, comparison of profit gaps was made between female and male-owned enterprises both operating in high return sectors.

Since the study deals with enterprise owners during one year prior to the survey, it does not consider those female owners who may have exited or decided not to join male-dominated sectors, for reasons related to the expected profits. This indicates a potential selectivity bias in the sample. Hence, (4.17) and (4.18) were estimated in two-step Heckman model (Heckman 1979) in order to check and correct for any selectivity bias in the participation of female enterprise owners in male-dominated and in high return sectors while estimating the profit model. This procedure is recommended when the aim is in predicting the value of the dependent variable that would be observed in the absence of selection.

Based on this, enterprise profit is modeled as a function of variables such as experience, intensity of operation, education, age, household size, type of sector and dummy variables indicating access to various services and assets. Additional variables in the profit equation which are not included in the participation equation are squared experience, sector, and source of capital. On the other hand, the likelihood of participation of female-owned enterprises in male-dominated sectors (i.e., the likelihood of the profit being observed) is a function of various individual and household-specific variables including marital status, having a child below the age of five, duration of migration of household members, duration in the current dwelling, other household members' ownership of enterprises, which are not included in the profit model. The post-estimation Mills lambda was not found to be significant indicating that there is no issue of selectivity bias implying OLS estimations are consistent. Hence, the profit models, (4.19) is estimated by using OLS technique omitting the Inverse Mills ratio.

Two different specifications of model (4.19) were estimated for examining profit gap between female and male-owned enterprises operating in male-dominated sectors as well as between female and male-owned enterprises operating in high return sectors. In each case, two models are estimated by taking different indicators for enterprise size, i.e., hired labor and wages/salaries and results are presented in Table 5.5. In addition, test of difference of means has been conducted on both the conditional predicted profit and unconditional profit (see Table 5.6).

Table 5.5: Annual profit for female and male entrepreneurs operating in male-dominated and in high return sectors

(1) Variables	Females in male-dominated sectors: hired labor (2) and salaries/wages (3) as indicators for enterprise size		Females in high-return sectors: hired labor (4) and salaries/wages (5) as indicators for enterprise 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 trade[11]			-1.498(0.295)***	-1.374(0.325)***

[11] STATA dropped the sector category, *service trade*, from estimation in columns (2) and (3) due to insufficient observations/ variations.

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 income[12]			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
	F(19, 69) = 1.36	F(19, 89) = 2.23	F(21, 176)= 0.22	F(21, 183)= 5.86
Prob>F	0.000	0.000	0.000	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.
Source: Based on ESS 2018/19.
[a]STATA dropped the sector category, *service trade*, from estimation in columns (2) and (3).

[12] b*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, i.e., *females in male-dominated sectors*.

The null hypothesis of no differences in mean annual profits between female and male enterprise owners operating in male-dominated sectors could not be rejected in both the cases of conditional predicted annual profit and unconditional annual profits (see Table 5.6). This is found to be the case under the assumption of equal variance of annual profits (in the population) for females and males operating in male-dominated sectors as well as after allowing for heteroscedastic variances of annual profits. Based on this, the mean annual profits are equal for female and male enterprise owners both operating in male-dominated sectors. Similarly, the null hypothesis that the mean annual profits are equal for female and male enterprise owners operating in high return sectors could not be rejected for both the conditional predicted annual profits and the unconditional annual profits under each of the assumptions of equal and heteroscedastic variances in annual profits.

Based on the foregoing, the study found no evidence of significant profit gap between female and male-owned enterprises operating in male-dominated sectors. The finding is consistent for both (i) the individual test of significance of the dummy variable *females in male-dominated sectors* in the profit model (see Table 5.5); (ii) the test of difference of conditional mean predicted profit between women and men operating in male-dominated sectors (see Table 5.6); and (iii) the test of difference of unconditional mean profit between women and men operating in male-dominated sectors. Similarly, no evidence of significant profit gap is found between female and male-owned enterprises operating in high return (the upper quartile profit) 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 Uganda, although his analysis is based on unconditional sales. On the other hand, Goldstein et al. (2019), using a global dataset consisting of 97 countries including 11 SSA countries, found a significant profit gap between female- and male-owned enterprises operating in male-dominated sectors. The bulk of the literature on the field deals with profit gap between male-owned and female-owned enterprises (e.g., Brixiova and Kangoye, 2015; Hardy and Kagy, 2018; Gonzalez and Poulin 2019) and between females operating in male-dominated sectors and those in female-concentrated ones (e.g., Campos et al., 2018; Alibhai et al., 2015; Alibhai et al., 2017; Goldstein et al., 2019).

Table 5.6: 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[1]	Conditional mean predicted profit[2]	Unconditional mean profit	Conditional mean predicted profit[1]	Conditional mean predicted profit[2]	Unconditional mean profit
1. Equal variances of annual profit between female- and male-owned enterprises in male-dominated sectors						
Female-owned	10.706	10.255	9.428	12.004	11.950	11.617
	(0.288)	(0.228)	(0.092)	(0.075)	(0.074)	(0.031)
Male-owned	9.951	9.681	9.309	12.144	12.044	11.597
	(0.389)	(0.297)	(0.093)	(0.062)	(0.088)	(0.033)
Mean difference between females & males (H0: 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
2. Unequal variances of annual profit between female- and male-owned enterprises in male-dominated sectors						
Female-owned	10.706	10.255	9.428	12.004	11.950	11.617
	(0.288)	(0.228)	(0.092)	(0.062)	(0.074)	(0.031)
Male-owned	9.951	9.68051	9.309	12.144	12.044	11.597
	(0.389)	(0.297)	(0.093)	(0.075)	(0.088)	(0.033)
Mean difference between females & males (H0: 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 H0	Do not reject H0	Do not reject H0	Do not reject H0	Do not reject H0	Do not reject H0
Decision: Assumption[2]						

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

Source: Based on ESS 2018/19.

An important explanation for this comes from the findings of the unique attributes of females operating in male-dominated and in high return sectors discussed in Section 5.2. The results show that women with larger household size, longer duration of migration of members, and better wealth are more likely to engage in male-dominated sectors whereas women with under-five-year-old children and those who are widowed, divorced and separated are less likely to engage in male-dominated sectors. Add to this, higher intensity of operation among female-owned enterprises operating in high return sectors. This shows that women joining male-dominated sectors are in less vulnerable positions with better opportunities for alternative income. It looks like such women have prepared themselves well by securing fallback positions, in terms of alternative income sources, information, wealth, and family support (labor or other) to join male-dominated sectors.

In addition, these profiles of women also have committed to put more effort into their businesses as reflected by the higher intensity of operation among female-owners in high return sectors. Conversely, women engaging in male-dominated sectors seem to have prevented their unpaid care roles from interfering in their business performances. This is reflected by the lower likelihood of engagement in male-dominated sectors by women with under-five-year-old children as well as those with limited support but more domestic demand for unpaid care work due to divorce, separation and widowhood. This may be due to the perceived (or actual) risks and resource demands associated with joining male-dominated and high return sectors; hence, the need to take necessary precautions in terms of additional income, information, wealth, and family support (labor or other) as well as securing fallback position.

Our finding may as well indicate that given access to equal opportunity as men, women have the potential to perform equally well. Underpinning this view is that entry into male-dominated and high return sectors is not easy for women as shown by the finding of only 20% of female-owned enterprises being engaged in male-dominated sectors (see Table 4.4). Women who have made it to male-dominated and high return sectors may have passed critical hinderances; hence a potential to perform well.

Results on the rest of the predictors of profit such as experience in business (and its squared term), intensity of operation, size of hired labor/ wages & salaries, enterprise share in household income, assets/wealth and location have the expected signs and significance, albeit with some variations with change in indicators for enterprise size.

6. Conclusions

Evidence suggests gendered profit gap among female and male-owned enterprises but also persisting among female and male-owned enterprises in traditionally male-dominated sectors. The present study, therefore, is aimed at evaluating gender profitability gap as well as identifying predictors of sectoral sorting among female and male-owned enterprises based on data from ESS (2018/2019). The analysis involved estimating multinomial logit; probit; and OLS estimations to identify predictors of sectoral choice among men and women, female engagement in male-dominated and high return sectors and evaluating gendered profit gap (between female and male-owned enterprises operating in male-dominated sectors and those operating in high return sectors) respectively. The main conclusions drawn from the findings of the study are presented in what follows.

Findings show the importance of marital status, household size, having under-five-year-old children and parental occupation in predicting sectoral sorting among women and men entrepreneurs. Women who are married and those with larger households have a higher likelihood of engagement in agricultural businesses while female heads of households (due to widowhood, divorce, separation) have a lower likelihood of engagement in agricultural businesses. On the other hand, men who are widowed, divorced, and separated are less likely engaged in manufacturing businesses. This illuminates the role of family support (labor and other) networks for engagement in agricultural enterprises. Having under-five-year-old children is less likely associated with female engagement in agricultural businesses, while it was not important for predicting male's engagement, indicating the interplay of women's care roles with business decisions. Consistent with expectations, parental occupation in agriculture is more likely associated with men and women sorting into agricultural enterprises. On the other hand, longer duration of migration of household members is less likely associated with females sorting into agricultural sector; but not significant for predicting men's sectoral choice. This may indicate the role of migration for better bargaining power, information and alternative income sources, which seems to matter for female enterprise owners' sectoral sorting. Moreover, the finding of non-farm (migration) resources reinforcing non-farm enterprises is also reflected in the lower likelihood of association of non-farm sources of start-up capital with female and male engagement in agriculture.

Overall, women in agricultural businesses appear to be younger, better educated, hiring more workers as well as having accessible savings, a business license, and

operational site away from the homestead, whereas none of these seems to matter for men sorting into agriculture. On the other hand, manufacturing enterprises tend to be operated around the house for both male and female owners and with a lower likelihood of having a business license among female-owned ones. From these, manufacturing enterprises seems to have more of a household-enterprise setup while agricultural enterprises have a firm setup. With the house-yard serving as an operational site for both male and female-owned manufacturing enterprises, lack of access to work premises may be a common constraint. In addition, intensity of operation, which has a favorable effect on enterprise profit, is less likely associated with sorting into manufacturing and agricultural businesses for both male and female owners, indicating a higher intensity in the service sector.

Business experience appears important for men and women sorting into manufacturing enterprises and for men in agricultural businesses; while it is less likely associated with female engagement in agriculture. This may be an indication of agriculture recently peaking up as a business venture among women. Women and men engaged in male-dominated sectors are less likely sorting to agricultural enterprises, compared to service, and women in male-dominated sectors are also less likely sorting into manufacturing businesses, which may indicate that the service sector is male-dominated in this particular study.

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 owners' decision to sort away from male-dominated sectors. On the other hand, female-owned enterprises belonging to high return sectors tend to be operated with higher intensity and total salaries/wages costs and less around the homestead, which may be an indication of enterprise growth.

Larger household size is found to associate with a higher likelihood of female engagement in male-dominated and in high return sectors, which may indicate that with the growth of businesses, the benefits of larger household size (e.g., in labor, other support) may outweigh its costs. The finding of a higher likelihood of association of duration of household members' migration with female sorting into male-dominated and high return sectors may have to do with the role of migration in increasing access to support in terms of financial and non-financial remittance to those women.

Marital status, number of under-five-year-old-children and having other female household members also owning business, are important for predicting

female participation in male-dominated sectors, but not for her participation in high return sectors. Also, higher intensity of enterprise operation is likely associated with female engagement in high return sectors but not with her engagement in male-dominated sectors. These findings may indicate that as the enterprise transitions into a top quartile profit status, the influence of household members on business decision-making may fade away, while some form of labor support may still be useful. This is also consistent with the finding that female-owned enterprises in high return sectors are less likely operated around the house-yard, hence, a potential to transition from household enterprise into a full-fledged enterprise status with the growth of profits. This may also mean that not all male-dominated sectors are of high return (or of top quartile profit); hence the differential factors driving female participation in each. This may indicate some time lapse before female-owned enterprises in male-dominated sectors generate high return and that current (or 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, established market infrastructure, risks etc., for female engagement in male-dominated sectors.

The present 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, after controlling for individual, household, firm, and context-specific characteristics. Despite limited literature specifically addressing the performance gap between female and male-owned enterprises both operating in male-dominated sectors, evidence appears to be mixed. The finding of the present study is consistent with that of Campos et al. (2018) for sales gap in Uganda but in conflict with that of Goldstein et al. (2019) for profit gap in developed and developing countries. Part of the explanation for the present finding can be traced from the peculiarities of females engaged in male-dominated sectors and those in high return sectors. Those are women with larger household size, longer duration of migration of household members, better assets/wealth who are more likely engaged in male-dominated sectors whereas those with small children and are widowed, divorced and separated are less likely. These peculiarities imply that 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 (e.g., high demand for unpaid care work, lack of spousal support), which enables them to perform as well as men. A caveat to the family support relates to less likely participation in male-dominated sectors among females, who have other female household members also owning businesses, with

implications for female enterprise owners reinforcing entry into traditionally female-concentrated sectors.

7. Policy Implications

The chapter discusses implications for research, practice, and policy of relevance to drivers of sectoral sorting among women and men as well as of participation and performance among female-owned enterprises operating in male-dominated and high return sectors. It is focused on identifying key issues that need to be addressed to enable better understanding and improving the situation of female-owned enterprises operating in male-dominated and in high return sectors.

The finding of some divergences between predictors of female participation in male-dominated sectors and in high return sectors has some implications. First, it indicates that participation in male-dominated sectors is not exactly the same as participation in high return sectors and that the importance of some household variables may disappear with the growth of businesses into high return categories. Hence, one needs to acknowledge the different predictors implying different interventions. Second, it points to the need to look beyond current (or actual) profit as a driver of female participation in male-dominated and high return sectors. Motives other than current profit, e.g., expected/perceived profits, established markets and networks, convenience, risks, prestige, etc., need to be further explored to fully explain female business owners' participation in male-dominated sectors. Moreover, based on the finding of service sector being male-dominated in this particular study, efforts to enhance female participation in male-dominated sectors may better target interventions of relevance to the service sector.

The finding of lack of significant profit gap between female and male-owned enterprises operating in male-dominated and in high return sectors may also mean that given equal opportunities as men, women have the potential to perform as well. Areas of consideration for equal opportunities for female business owners include access to flexible labor arrangements, work premises, information on business opportunities, and access to paid care services. The evidence suggests the role of intensity of operation for business profit and for the likelihood of female participation in high return sectors and the latter's association more with the increase in salaries/wages but less with number of hired workers. This may be an indication of tendency toward more engagement per worker than more hired workers among females in high return sectors. Hence, increasing access to flexible labor arrangements is a potential area of intervention to enhance female

participation in high return sectors. Given the finding of a lower likelihood of the house-yard serving as an operational site for females in high return sectors, but a higher likelihood for manufacturing enterprises, granting access to work premise is an important area of intervention to enhance female-owned enterprise sorting into high return sectors. Such interventions may also enhance growth of manufacturing sector in general as operational site is a common problem for both female and male-owned manufacturing enterprises. In line with this, considering the more informal and household enterprise orientation of the manufacturing enterprises often lacking a business license, among female owners in particular, granting a business license may be an area in stimulating growth of manufacturing enterprises.

The finding shows that female business owners with longer duration of migration of household members are more likely sorting into male-dominated and high return sectors and away from agricultural businesses. In addition, larger household size increases the likelihood of female participation in male-dominated and in high return sectors. Such role of migration and large household size for decisions in sectoral sorting among women emanates from its benefits in terms of increased access to information on business opportunities, additional income, and family support (labor or other). Based on this, efforts to enhance the participation and performance of female-owned enterprises may investigate supporting women in the form of access to information on alternative (or additional) business opportunities and support (in terms of accessible labor). Such access to information on business opportunities and support systems enhance better informed business decisions and help break the cycle of female business owners reinforcing each other into traditionally female-concentrated and low return sectors.

The findings further show that having children below the age of 5 years and being a widow, divorcee, separated influences female enterprise owners' choice of sectors and limits their participation in male-dominated sectors. This is indicative of the role of demand for female's unpaid care work in influencing business decisions regarding sectoral sorting among female business owners. Thus, efforts to influence female business decisions and performance may consider interventions in investments to address the existing care deficits, e.g., through increasing access to subsidized care services, thereby enhancing female participation in male-dominated sectors.

Annex

Table A1: Sectoral sorting (concentration ratio) among men and women in the sample

sub-Sector	Male		Female		Total	Sex ratio	
	#	%	#	%	64	Male (%)	Female (%
Crop and animal production, hunting	29	0.84	35	0.9	23	45.3	54.7
Mining of metal ores	12	0.35	11	0.28	3	52.2	47.8
Other mining and quarrying	1	0.03	2	0.05	182	33.3	66.7
Manufacture of food products	82	2.38	100	2.58	464	45.1	54.9
Manufacture of beverages	185	5.38	279	7.2	2	39.9	60.1
Manufacture of textiles	1	0.03	1	0.03	144	50.0	50.0
Manufacture of wearing apparel	72	2.09	72	1.86	1	50.0	50.0
Manufacture of leather and related	1	0.03			34	100	0
Manufacture of wood and of products	18	0.52	16	0.41	1	52.9	47.1
Manufacture of basic pharmaceutical	1	0.03			22	100	0
Manufacture of fabricated metal pro	12	0.35	10	0.26	42	54.5	45.5
Manufacture of furniture	17	0.49	25	0.65	77	40.5	59.5
Other manufacturing	34	0.99	43	1.11	43	44.2	55.8
Repair and installation of machinery	20	0.58	23	0.59	38	46.5	53.5
Construction of buildings	18	0.52	20	0.52	2	47.4	52.6
Specialized construction activities	2	0.06			48	100	0
Wholesale and retail trade and repair	25	0.73	23	0.59	17	52.1	47.9
Wholesale trade, except for motor vehicles	7	0.2	10	0.26	3643	41.2	58.8
Retail trade, except for motor vehicles	1732	50.35	1911	49.32	371	47.5	52.5
Land transport and transport via pl	191	5.55	180	4.65	38	51.5	48.5

Accommodation	15	0.44	23	0.59	636	39.5	60.5
Food and beverage service activities	261	7.59	375	9.68	6	41.0	58.9
Information service activities	4	0.12	2	0.05	14	66.7	33.3
Legal and accounting activities	7	0.2	7	0.18	1	50.0	50.0
Architectural and engineering activities			1	0.03	2	0	100.0
Scientific research and development	1	0.03	1	0.03	36	50.0	50.0
Other professional, scientific and	17	0.49	19	0.49	34	47.2	52.8
Rental and leasing activities	18	0.52	16	0.41	142	52.9	47.1
Employment activities	66	1.92	76	1.96	4	46.5	53.5
Travel agency, tour operator, Reser	1	0.03	3	0.08	29	25.0	75.0
Security and investigation activities	14	0.41	15	0.39	9	48.3	51.7
Office administrative, office support	4	0.12	5	0.13	7	44.4	55.6
Public administration and defense	2	0.06	5	0.13	3	28.6	71.4
Education			3	0.08	6	0	100.0
Human health activities	5	0.15	1	0.03	7	83.3	16.7
Social work activities without acco	4	0.12	3	0.08	14	57.1	42.9
Creative, arts and entertainment acc	6	0.17	8	0.21	26	42.9	57.1
Sports activities and amusement and	13	0.38	13	0.34	19	0.5	0.5
Activities of membership organizations	10	0.29	9	0.23	11	52.6	47.4
Repair of computers and personal an	5	0.15	6	0.15	1050	45.5	54.5
Other personal service activities	527	15.32	523	13.5	7315	50.2	49.8
Total	3440	100	3875	100		47.0	0.52.9

Source: Based on ESS 2018/19.

Table A2: Multinomial logistic regression for predictors of sectoral sorting among women

Sector				
Variables	**Robust coef.**	**RRR**	**Robust coef**	**RRR**
Manufacturing/ construction				
Age	-0.007(0.024)	0.993(0.023)	-0.007(0.02)	0.993(0.02)
Education	'-0.039(0.039)	0.962(0.038)	-0.026(0.034)	0.975(0.033)
Household size	0.083(0.1)	1.087(0.108)	0.094(0.096)	1.099(0.106)
No. of under 5 children in the HH	-0.297(0.377)	0.743(0.28)	-0.263(0.346)	0.769(0.266)
Migration of household members	-0.041(0.066)	0.96(0.064)	-0.058(0.076)	0.943(0.072)
Dwelling duration	-0.013(0.019)	0.988(0.019)	-0.005(0.018)	0.995(0.018)
Marital status				
No more married	2.293(1.545)	9.901(15.3)	1.158(0.922)	3.184(2.935)
Married	1.694(1.501)	5.442(8.169)	0.628(0.923)	1.875(1.729)
Occupation of father in agriculture	0.024(0.497)	1.024(0.509)	0.296(0.43)	1.344(0.578)
Accessibility of savings	0.324(0.639)	1.382(0.883)	0.287(0.535)	1.333(0.713)
Experience in business	0.04(0.025)	1.04(0.026)	0.039(0.023)*	1.039(0.024)*
Intensity of operation	-0.003(0.002)**	0.997(0.002)**	-0.003(0.002)*	0.997(0.002)*
Hired labor	-0.0(0.003)	1.0(0.003)	0.001(0.003)	1.001(0.003)
Licensed	-2.268(0.821)***	0.104(0.085)***	-1.673(0.68)**	0.188(0.128)**
Site of business Operation	2.735(0.648)***	15.41(9.983)***	2.129(0.517)***	8.407(4.345)***
Location	-0.072(0.587)	0.931(0.546)	-0.66(0.536)	0.517(0.277)
Source of enterprise start-up capital				
	-0.749(0.626)	0.473(0.296)	-0.563(0.561)	0.57(0.32)

	-0.453(0.577)	0.636(0.367)	-0.309(0.507)	0.734(0.372)
	'-0.114(0.472)	0.892(0.421)	0.316(0.421)	1.372(0.578)
Female in male dominated sectors	-18.314(0.383)***	0.0(0.0)***		
Female in high return sector			0.479(0.508)	1.614(0.82)
Const	-4.18(1.388)***	0.015(0.021)***	-3.419(1.08)***	0.033(0.035)***
2.Service	(base(outcome)	(base(outcome)	(base(outcome)	(base(outcome)
3.Agri				
Age	-0.328(0.069)***	0.72(0.05)***	-0.374(0.06)***	0.688(0.042)***
Education	0.903(0.07)***	2.466(0.172)***	0.999(0.089)***	2.716(0.242)***
Household size	6.617(0.382)***	747.984(285.454)***	7.184(0.457)***	1318.51(602.612)***
No. of under 5 children in the HH	-20.507(1.138)***	0.0(0.0)***	-21.81(1.106)***	0.0(0.0)***
Migration of household members	-0.52(0.045)***	0.595(0.027)***	-0.56(0.036)***	0.571(0.02)***
Dwelling duration	0.895(0.051)***	2.446(0.125)***	0.807(0.062)***	2.241(0.138)***
Marital status				
No more married	-18.298(1.361)***	0.0(0.0)***	-16.094(1.918)***	0.0(0.0)***
Married	15.042(1.21)***	3409354.0(4124494.0)***	16.968(1.573)***	23400000.0(36800000.0)***
Occupation of father in agriculture	7.517(1.14)***	1839.776(2096.433)***	3.865(1.356)***	47.681(64.658)***
Accessibility of savings	3.805(2.093)*	44.923(94.01)*	2.429(2.501)	11.351(28.385)
Experience in business	-0.85(0.185)***	0.428(0.079)***	-1.164(0.145)***	0.312(0.045)***
Intensity of operation	-0.05(0.005)***	0.951(0.005)***	-0.048(0.004)***	0.953(0.004)***
Hired labor	0.105(0.009)***	1.111(0.01)***	0.097(0.014)***	1.102(0.015)***
Licensed	7.714(1.473)***	2238.815(3298.083)***	6.725(1.345)***	833.119(1120.471)***
Site of business Operation	-13.03(1.992)***	0.0(0.0)***	-13.872(1.094)***	0.0(0.0)***

Location	-17.775(2.093)***	0.0(0.0)***	-13.663(2.348)***	0.0(0.0)***
Source of start-up capital				
Agri. income	12.419(1.233)***	247526.9(305292.6)***	18.075(1.325)***	70800000.0(93800000.0)***
Nono-farm income	-8.173(1.319)***	0.0(0.0)***	-0.418(1.336)	0.659(0.88)
Family/relatives	0.769(2.334)	2.158(5.039)	5.842(2.143)***	344.635(738.489)***
Females in male dominated sector	-10.779(1.377)***	0.0(0.0)***		
Female in high return sector			-4.298(1.698)**	0.014(0.023)**
Cons	-64.41(4.195)***	0.0(0.0)***	-67.38(3.953)***	0.0(0.0)***
No. of obs.	321		326	
Wald chi2(15)	4640.96		1222.56	
Prob>chi2	0.0000		0.0000	
Pseudo R2	0.3565		0.2561	

NB: Standard errors in parentheses The symbols ***,**,* denote statistical significance at the 1%, 5%, and 10% levels, respectively.
Source: Based on ESS 2018/19.

Table A3: Multinomial logistic regression for sectoral sorting among men

Variables	Robust coef.	RRR	Robust coef.	RRR
Manufacturing/ construction				
Age	0.005(0.013)	1.005(0.013)	-0.003(0.012)	0.997(0.012)
Education	0.04(0.028)	1.041(0.029)	0.017(0.026)	1.018(0.027)
Household size	-0.063(0.084)	0.939(0.079)	-0.08(0.077)	0.923(0.071)
No. of under 5 children in the HH	0.137(0.286)	1.147(0.328)	0.182(0.247)	1.2(0.297)
Migration of HH members	-0.045(0.041)	0.956(0.039)	-0.053(0.041)	0.949(0.039)
Dwelling duration	0.006(0.016)	1.006(0.016)	0.001(0.014)	1.001(0.014)
Marital status				
No more married	-17.806(0.998)***	0.00(0.0)***	-2.015(1.344)	0.133(0.179)
Married	0.513(0.58)	1.67(0.968)	0.703(0.55)	2.02(1.112)
Occupation of father in agriculture	-1.032(0.391)***	0.356(0.139)***	-0.686(0.354)*	0.503(0.178)*
Accessibility of savings	-0.452(0.423)	0.636(0.269)	-0.508(0.368)	0.602(0.221)
Experience in business	0.041(0.023)*	1.042(0.024)*	0.063(0.017)***	1.065(0.019)***
Intensity of operation	-0.006(0.001)***	0.994(0.001)***	-0.005(0.001)***	0.995(0.001)***
Hired labor	-0.006(0.02)	0.994(0.02)	-0.014(0.02)	0.986(0.02)
Licensed	-0.377(0.347)	0.686(0.238)	-0.478(0.321)	0.62(0.199)
Site of business operation	2.057(0.35)***	7.823(2.739)***	2.112(0.302)***	8.263(2.497)***
Location	-0.462(0.483)	0.630(0.304)	0.344(0.369)	1.410(0.521)
Source of enterprise start-up capital				
Agri. income	0.583(0.365)	1.791(0.654)	0.514(0.328)	1.672(0.548)
Non-farm income	-0.085(0.43)	0.918(0.394)	-0.201(0.375)	0.818(0.307)

Family/friends	-0.202(0.561)	0.817(0.459)	0.136(0.463)	1.146(0.531)
Male dominated sector	-0.223(0.356)	0.800(0.284)		
Male in high return sector			-0.027(0.333)	0.973(0.324)
Const	-2.435(0.716)***	0.088(0.063)***	-2.484(0.676)***	0.083(0.056)***
Service	(base(outcome)	(base(outcome)	(base(outcome)	
Agriculture				
Age	-0.12(0.087)	0.887(0.077)	-0.119(0.089)	0.888(0.079)
Education	0.079(0.079)	1.083(0.085)	0.108(0.089)	1.114(0.099)
Household size	0.474(0.242)**	1.606(0.388)**	0.476(0.234)**	1.61(0.376)**
No. of under 5 children in the HH	-0.233(0.533)	0.793(0.422)	-0.4(0.52)	0.67(0.349)
Migration of household members	0.166(0.117)	1.181(0.139)	0.15(0.092)	1.162(0.106)
Dwelling duration	-0.012(0.036)	0.988(0.036)	0.012(0.038)	1.012(0.038)
Marital status				
No more married	-0.145(1.74)	0.865(1.505)	-0.614(1.311)	0.541(0.71)
Married	13.982(0.8)***	1181478.0(944632.8)***	14.131(0.754)***	1370716.0(1033670.0)***
Occupation of father in agriculture	14.97(1.495)***	3171055.0(4739733.0)***	14.721(1.198)***	2473932.0(2964739.0)***
Accessibility of savings	-13.881(0.75)***	0.00(0.0)***	-14.209(0.805)***	0.00(0.0)***
Experience in business	0.148(0.093)	1.159(0.107)	0.161(0.093)*	1.175(0.11)*
Intensity of operation	-0.007(0.005)	0.993(0.005)	-0.009(0.005)**	0.991(0.005)**
Hired labor	-0.586(0.501)	0.557(0.279)	-0.601(0.404)	0.548(0.222)
Licensed	-0.678(0.804)	0.508(0.408)	-0.567(0.851)	0.567(0.483)
Site of business Operation	0.461(1.358)	1.585(2.152)	1.024(1.325)	2.784(3.688)
Location	-14.742(2.75)***	0.0(0.0)***	-14.9(2.442)***	0.0(0.0)***

Source of enterprise start-up capital				
Agri. Income	-1.318(0.968)	0.268(0.259)	-1.233(1.121)	0.291(0.326)
Non-farm income	-15.42(1.15)***	0.0(0.0)***	-15.907(1.348)***	0.0(0.0)***
Family/ friends	-15.62(0.659)***	0.0(0.0)***	-15.832(0.707)***	0.0(0.0)***
Male dominated sector	-15.143(0.618)***	0.0(0.0)***		
Male in high return sector			0.98(0.95)	2.664(2.531)
Const	-30.33(1.489)***	0.0(0.0)***	-31.271(1.456)***	0.0(0.0)***
No. of Obs.	735		761	
Wald chi2(15)	2455		1307	
Prob>chi2	0.0000		0.0000	
Pseudo R2	0.2528		0.2338	

NB: Standard errors in parentheses The symbols ***,**,* denote statistical significance at the 1%, 5%, and 10% levels, respectively.
Source: Based on ESS 2018/19.

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