

Assessing Gender Gap in Wage and Self-Employment: Evidence from Ethiopia

Helen Berga¹ and Lamessa T. Abdisa²

Article History: Received: 25 January 2022; Revised: 24 October 2022;
Accepted: 04 November 2022

Abstract

This study analyzes the status of the gender gap in labor force participation in Ethiopia. The factors that influence men's and women's decision to work and how much to work in wage and self-employment are assessed. The study mainly used data from the recent round of the Ethiopia Socioeconomic Survey (ESS 2018/19). The Heckman selection model is used to analyze factors that affect the participation of women in wage and self-employment. To decompose gender gaps in economic outcomes (i.e. wage and sales), the study applied the Blinder-Oaxaca decomposition method. The participation of women in wage employment is found to be significantly lower than men while controlling for individual and household level predictors. Women with tertiary education show higher participation in wage employment compared to women with no such education. Age, household headship, and wealth are additional factors that positively associate with women's participation in wage employment. Marriage, residence in rural areas, having a large family size, and non-labor income are factors associated with lower participation of women in wage employment. The participation of women in ownership of non-farm household enterprises is found to be relatively higher than men while relevant individual, household, and business level characteristics are accounted for. The business sales of women-owned businesses are significantly lower than those owned by men. Women's ownership of non-farm enterprises is negatively associated with their level of education. Though having tertiary education is negatively associated with participation in self-employment, its effect on business sales is positive. Sales are also positively associated with a business license, the number of hired workers, and operating costs. Family size and residing in rural areas are factors associated with less participation of women in self-employment. The Blinder-Oaxaca decomposition analysis results show that the unconditional wage gap between men and women is estimated to be 62.7%. Of this

¹ PhD, Department of Economics, Addis Ababa University

² PhD, Ethiopian Economics Association

gender wage gap, 26.2% is explained while the remaining 73.8% is unexplained. Differences in age, education, religion, marital status, household headship, wealth, and occupation account for the explained part of the wage gap. Likewise, the unconditional sales gap for non-farm enterprise owners is estimated at 80.6% where 36% of it is explained by model predictors. Education, religion, wealth, business license, operating cost, and residence are factors that contributed to the explained part of the sales gap. Narrowing the gender gap in labor market participation and economic outcomes will require interventions ranging from improving the education status of women to shaping the role and responsibilities of women in society.

Keywords: Gender gap, Wage Employment, Self-employment; Heckman Selection Model; Blinder-Oaxaca Decomposition, Ethiopia

JEL Classification: J16; J21; J31

1. Introduction

Women account for about half of the human capital in countries across the world with equal productive capacity and potential to contribute to economic development as men. In Ethiopia, women constitute close to 50% of the total population and an estimated 46.6% of the labor force (WDI, 2019). However, their involvement in measured economic activity is way below its potential. According to Ethiopian Statistics Service (ESS, 2021), women make up 61.5% of the economically inactive population, while men only make up 38.5%. The employment-to-population ratio shows a notable gender gap in economic activity standing at 50.1% for women and 68.9% for men. In addition, among unemployed persons, women account for 65%, which is almost double compared to the amount of unemployed men (34.9%). In addition, the relatively larger percentage of young women are found to be unemployed whereas the female and male youth unemployment rates were estimated to be 16.4% and 7.4%, respectively (ESS, 2021). The same tendencies of gender disparities in economic activity are also observed at the regional level (see CSA, 2006, 2014; ESS, 2021).

Women in Ethiopia work fewer hours than men with a reported average of 25.9 hours per week compared to 31.7 hours per week worked by their men counterparts (ESS, 2021). Gender disparities are also observed in the type of occupation and sectors where women often concentrate on informal, low-skilled, and low-paid or unpaid jobs. Indeed, women account for only 32.3% of

professionals and 25.4% of managers (ESS, 2021). Women dominate clerical support (61.9%), service and sales (58.1%), personal care (97.5%), and elementary jobs like cleaning and helping (53%). Compared to men (41%), a relatively higher percentage of women (53.7%) also work in the informal sector of the economy (ESS, 2021). Working in informal sectors with little regulation as well as in elementary jobs which require less skill entails women having low pay, job insecurity, limited access to social protection coverage like health and safety insurance, pensions, and maternity leaves (International Development Research Center (IDRC), 2020). Gender gaps in key economic outcomes are also significant where 51% and 42% of the wage and income gender gaps respectively remain undisclosed (WEF, 2019).

Though women possess the promising potential to be entrepreneurs thereby contributing to job creation and economic growth, there is a substantial gender gap regarding their participation and the performance of enterprises owned by them. The 2015 World Bank Enterprise Survey of Ethiopia shows that women participated as owners and top managers only in 36.2% and 4.5% of the surveyed enterprises respectively (World Bank, 2014). A significant gender gap is also observed in the growth (Amha, 2015; Gebreeyesus, 2007) and survival (Woldehanna et al., 2018) of businesses where women-owned firms show relatively low growth and survival rate compared to their men counterparts. Women entrepreneurs face various impediments including lack of access to finance, business training, information, networks, managerial and technical skills, previous business experience, access to raw materials, and limited time due to the high burden of household and family responsibilities (Abagissa, 2013; Alene, 2020; Assefa & Cheru, 2018; Eshetu & Zeleke, 2008; Gebremariam, 2017; Solomon, 2010; ILO, 2003).

Such gender gaps in economic activities and outcomes are rooted in cultures, social norms, and structural conditions which shape the roles, responsibilities, and positions of women in society. Women in Ethiopia often bear the high burden of household chores with no monetary return and face labor market segregation as they largely participate in informal sectors which are not officially counted as economic activity. They also have a low level of education as well as limited ownership of, and access to productive resources and services, such as land, finance, training, and time curtailing their ability and potential to partake in

economic activities (IDRC, 2020; MOWCY, UNICEF Ethiopia, & SPRI, 2019).³ Bringing gender parity in socio-economic systems thus requires measures ranging from changing cultural and social norms to devising and implementing transformational gender policies. Change in social norms which redefine the role and position of women in a household and society are needed to safeguard the betterment of women in education, employment, and overall economic activity. Gender transformative policy which treats gender issues as a special focus area instead of following a simple holistic approach that integrates them within already existing development policy models' is also very essential to meet targets that lead to gender balance in various spheres (Bekana, 2020).

This study aims to estimate and decompose gender gaps in economic outcomes of wage employment and self-employment. In addition, the study also examines the key gendered barriers that hinder women's participation in the labor force (wage employment and entrepreneurship) in Ethiopia. Understanding factors that influence the labor force participation of women either in wage employment or self-employment in Ethiopia can offer important policy insights for raising economic growth and well-being. Examining women's decision to work, how much to work, and in which sectors to work as well as the factors that influence her decision to participate in the labor market are crucial to design policies that can address obstacles that discourage women from working or devise new ways that encourage women's participation in the labor market.

2. Empirical Framework

The vast body of literature on women's involvement in the labor market identified several variables which affect women's labor market participation rate and can be broadly classified as micro and macro-level factors. The macro literature focuses on the role of economic development and various policies on women's aggregate labor supply (Christiansen et al., 2016; Gaddis & Klasen, 2014; Klasen, 2019; Altarawneh, 2020). Such studies often use time-series data and analyze cross-country differences in Female Labor Force Participation (FLFP). One area of study which captures researchers' attention is the U-shaped (feminization U)

³ The 2020 World Economic Forum's Gender Gap Index indicated that even if Ethiopia achieved a remarkable improvement by closing 70.5 percent of its gender gap (largely accounted by increase in women's presence in political institutions), the country is still far from ensuring gender parity in education and economic opportunities.

hypothesis which dates back to Sinha (1967). The hypothesis suggested that the relationship between FLFP and economic development follows a U-shape. In particular, the hypothesis states that FLFP first declines at the early stages of industrialization and starts to rise again at later stages of economic development. The reason behind such a relationship is that at early stages of economic development, agriculture is the main economic activity and women participation is high because most women work in family farms. Working in family farms enables women to combine economic activity with other household chores such as taking care of children.

As the economy transits from agriculture dominated to industry-led, FLFP decreases due to the dwindled role of the agricultural sector as the main employer of women and shifts the structure of the economy towards a more formal sector. The rationales for such a trend of FLFP include low education attainment, socio-cultural restraints, and high manual labor requirement of industrial jobs, all of which limit women (especially married women with children) from working outside the home and exploit emerging employment opportunities in the industrial and other formal sectors (Boserup, 1970; Goldin, 1995). Also, industrialization and the thriving of the formal sectors boost overall productivity and household earnings mainly by male household heads having a negative income effect on the female labor supply (Klasen, 2019). With continued structural change inducing expansion of the service sector, education opportunities, family planning and childcare services, FLFP starts to increase again. At later stages of economic development, women will have a higher chance of participation in the labor market given their improved education, declining fertility rate, and increased availability of service sector and part-time jobs. The U-shaped hypothesis of FLFP was tested by several empirical studies and proved to hold in most cases (Clark et al., 2003; Fatima & Sultana, 2009; Gaddis & Klasen, 2014; Goldin, 1995; Luci, 2009; Mammen & Paxson, 2000; Psacharopoulos & Tzannatos, 1989; Tam, 2011).

Another strand of literature from the macro perspective analyzes the effect of gender-sensitive public policies on FLFP. Gender-sensitive public policies can take various forms including investing in women's education and basic infrastructures (such as water, electricity, and road), providing adequate and affordable childcare services, allowing paid parental leave, and avoiding discriminatory tax provisions (Christiansen et al., 2016; Fabrizio et al., 2020). Lack of knowledge and skill is the main constraint for women to participate in the labor

force. Hence, policies that support women's education and provide them with greater educational opportunities are shown to increase FLFP, particularly in developing countries (Heath & Jayachandran, 2017; Sackey, 2005). Women in developing countries, especially those in rural areas, are mainly responsible for fetching water and collecting firewood. Policies that are designed to improve access to these basic services have a significant positive effect on women's participation in the labor market by reducing the burden of unpaid work and freeing up her time to participate in income-generating activities (Dinkelman, 2011; Koolwal & van de Walle, 2013). Also, better road access and improved transportation service are indicated to increase FLFP more so than men (Lei et al., 2019). Moreover, policies that enable women to undertake household responsibilities in parallel with market work such as paid parental leave and subsidized childcare services can lift women's participation in the labor market (see e.g., Andersen & Havnes, 2019; Blau & Kahn, 2013; Kalb, 2018). Such policies are important for women to maintain a work-life balance. In advanced nations, empirical evidence shows that income taxation also has a significant influence on FLFP (Christiansen et al., 2016; Fabrizio et al., 2020).⁴

At the micro level, various empirical studies have tried to explain FLFP by differences in personal, demographic, household, social, and labor market characteristics. Education is the most important factor in affecting FLFP where women with more education are likelier to participate in the labor force than those with less or no education (Ackah et al., 2009; Khanie, 2019; Sackey, 2005; Yakubu, 2010). Education enhances women's incentive to participate in the labor market as it raises the chance of getting better jobs with high earnings compared to household work (Becker, 1975; Eckstein & Lifshitz, 2011; Schultz, 1961). The higher earning potential which comes with education increases the opportunity cost of not working inducing more labor supply by women. Also, education is an investment in human capital and educated woman has to work to compensate for the cost of the investment (Khanie, 2019; Psacharopoulos & Tzannatos, 1989). Studies conducted across Europe revealed that countries with higher women's educational attainment exhibit a smaller gender gap in employment (Pissarides et al., 2005). Empirical studies also show that women's investment in education can

⁴ In countries with joint taxation system, the income of married women is taxed highly because taxes are calculated by combining husband's and wife's income resulting an adverse effect on women's labor supply decisions (Bick & Fuchs-Schündeln, 2017).

give more return than men's (Psacharopoulos & Tzannatos, 1989). The positive effect of education on women's labor supply also comes through a reduced fertility rate. Particularly, studies show that women with more education tend to have fewer children which increases their chance of participating in the labor market (Lam & Duryea, 1999; Mujahid, 2014; Sackey, 2005).

The women's age, marital status, and fertility rate are additional factors that shape the participation of women in the labor market. Age is an important factor in determining FLFP where women who are within the age of childbearing and rearing often have a lower participation rate than those outside such age (Eckstein & Lifshitz, 2011; Heckman & MaCurdy, 1980; Uwakwe, 2004). Married women with children (with large families) have a lower participation rate because family responsibilities and taking care of children increase the value of time spent on domestic activities. The more time a woman spent on home production, the less time she has to spend for market work (Bloom et al., 2009). Especially, the presence of young children (aged 5 or below) in the household adversely affects the labor force participation of women. Some empirical studies, however, show that having more children can increase women's participation in the labor force due to the increased income needed to cover the expense of a large family size. Household assets, husband's income and participation in economic activities, and place of residence (urban vs. rural) are also additional factors that affect women's participation in the labor market (Hosney, 2015).

Social norms, attitudes, and religion can also affect women's participation in the labor market. Social norms and attitudes toward women's role in society can adversely affect women's employment. In developing countries, women (especially married women) are considered homemakers primarily responsible for household activities of taking care of their husband, children, cleaning and cooking (Fernández, 2013; Khadim & Akram, 2013; Psacharopoulos & Tzannatos, 1989). Such patriarchal systems constrain women from participating in paid economic activities (Güven-Lisaniler & Bhatti, 2005; Mukherjee, 2015). Stereotypes about gender roles not only affects women's participation rate but also their sector of participation where women are often perceived to be unfit for higher managerial positions and occupations requiring technical skills. Religion could also affect FLFP where empirical evidence shows that countries with strong religious views about the role of women in society exhibit lower women participation rates in the labor market (Psacharopoulos & Tzannatos, 1989).

3. Methodology and Data

3.1. Labor Force Participation and Earning

To investigate factors that influence labor force participation, this study applied the Heckman sample selection model. The Heckman procedure (also called Heckit model) is a method used to estimate regression models which suffers from sample selection bias due to incidental truncation where the dependent variable is only observable for certain outcome of another variable (Wooldridge, 2013). Classically, the model is applied to estimate female labor supply models where women's wage or hour of work is only observed if she decides to participate in the labor market.

The Heckman model includes two separate equations, the sample selection equation and the outcome equation.

Considering a linear wage equation;

$$w_i^* = x_{1i}'\beta_1 + \varepsilon_{1i}$$

Where x_{1i} denotes a vector of exogenous characteristics and w_i^* denotes individual i 's wage. The wage w_i^* is not observed for individuals who are not working. The selection equation which describes whether a woman is working or not is specified as a standard probit model.

$$h_i^* = x_{2i}'\beta_2 + \varepsilon_{2i}$$

With the following observation rule;

$$w_i = w_i^*, h_i = 1 \quad \text{if } h_i^* > 0$$

$$w_i \text{ not observed, } h_i = 1 \quad \text{if } h_i^* \leq 0$$

Where w_i is the individual's actual wage and the binary variable is h_i , simply indicates working or not working. The model is completed by distributional assumption on unobserved errors $(\varepsilon_{1i}, \varepsilon_{2i})$, usually a bivariate normal distribution with expectations of zero, variances σ_1^2, σ_2^2 , respectively and covariance σ_{12} . The

variables in x_1 and x_2 can be the same or different depending on model specification (Verbeek, 2004).⁵

The conditional expectation of the outcome variable, given that individual i is working, is given by;

$$\begin{aligned} E\{w_i|h_i = 1\} &= x'_{1i}\beta_1 + E\{\varepsilon_{1i}|h_i = 1\} \\ &= x'_{1i}\beta_1 + E\{\varepsilon_{1i}|\varepsilon_{2i} > -x'_{2i}\beta_2\} \\ &= x'_{1i}\beta_1 + \frac{\sigma_{12}}{\sigma_2^2} E\{\varepsilon_{2i}|\varepsilon_{2i} > -x'_{2i}\beta_2\} \\ &= x'_{1i}\beta_1 + \sigma_{12} \frac{\phi(x'_{2i}\beta_2)}{\Phi(x'_{2i}\beta_2)} \end{aligned}$$

The conditional expectation of the outcome variable (wage in the above case) equals $x'_{1i}\beta_1$ only if $\sigma_{12} = \rho_{12}$, where ρ_{12} is the correlation coefficient between the two errors. If the error terms from the two equations are uncorrelated, the outcome equation can be consistently estimated by ordinary least squares (OLS). A sample selection bias in the OLS estimator arises if $\sigma_{12} \neq 0$. The term $\phi(x'_{2i}\beta_2)/\Phi(x'_{2i}\beta_2)$ is called the inverse Mill's ratio as well as Heckman's lambda as it denotes $\lambda(x'_{2i}\beta_2)$.

The Heckman sample selection model is often estimated in two steps which are based on the following regression;

$$y_i = x'_{1i}\beta_1 + \sigma_{12}\lambda_i + \eta_i,$$

Where

$$\lambda_i = \frac{\phi(x'_{2i}\beta_2)}{\Phi(x'_{2i}\beta_2)}$$

The error term in the above model equals $\eta_i = E\{\varepsilon_{1i}|x_i, h_i = 1\}$. Given the assumption that the distribution of ε_{1i} is independent of x_i (but not of h_i), η_i is uncorrelated with x_i and λ_i by construction. This means β_1 and σ_{12} will be estimated by running a least squares regression of y_i upon the original explanatory variables x_{1i} and the additional variable λ_i . The unknown element in λ_i which is β_2

⁵ If the variables are the same, i.e., the restriction that $x_{1i}'\beta_1 = x_{2i}'\beta_2$ and $\varepsilon_{1i} = \varepsilon_{2i}$ is imposed the model will be a standard Tobit model (Tobit I).

will be estimated consistently by probit maximum likelihood applied to the selection model (Verbeek, 2004).

Given the cross-sectional structure of the dataset that is for this study, individual's participation in the labor force is specified as follows;

$$FLFP_i^* = \alpha_i + \beta X_i + v_i$$

Where $FLFP_i^*$ is a dummy variable that takes 1 if the individual participates in the labor market and 0 if she does not. The participation equation, $FLFP_i^*$ is positive only if the dummy variable equals one. β is a vector of unknown parameters and v_i is the error term. The decision to participate depends on a vector of explanatory variables X_i . Based on the theoretical and empirical framework in the previous section, women's labor force participation is hypothesized to depend on the following factors;

$$FLFP_i = f\{\text{personal and demographic factors; household factors; geographic location factors}\}$$

Where;

- Personal and demographic factors include education, age, marital status, number of children, head of a household's status, ownership and control of assets, religion
- Household factors include the household's labor and non-labor income, household's assets, number of dependents, husband's education and income (for married women),
- Geographic location factors include the area of residence (urban and rural)

The labor force participation status of an individual ($FLFP_i$) takes the value 1 if the i th woman is in the labor force and zero otherwise. Participation is defined to include an individual declaring a paid job. The selection equation is estimated using a standard probit model.

The wage equation is specified by including the estimated inverse Mill's ratio ($\hat{\lambda}_i$) from the probit model for each period.

$$w_i = Z_i\beta + \hat{\lambda}_i + e_i$$

Where w_i is wage earned by individual i , Z_i are vectors of individuals' specific factors which explain earning and e_i is the error term. w_i is not observed unless the individual is not participating in wage employment.

3.2 Decomposition of gender gaps in key economic outcomes

To decompose gender gaps in economic outcomes, this study applied the Blinder-Oaxaca (1973) decomposition technique based on Jann (2008). The Blinder-Oaxaca technique was originally used in labor economics to decompose earning gaps and estimate the level of discrimination. The method can be used to study labor-market outcomes by groups decomposing mean differences in the outcome variable based on linear regression models in a counterfactual manner. It divides the difference in outcome variable between two groups into a part that is “explained” by group differences in observed predictors (characteristics) and a residual (unexplained) part that cannot be accounted for by observed predictors. This “unexplained” part is often used as a measure for discrimination, but it also incorporates the effects of group differences in unobserved predictors (Jann, 2008).

There are two groups, A and B (women and men in the current study), an outcome variable, Y (wage and sales for this study), and a set of predictors. The main question is how much of the mean outcome or the expected value of the outcome variable, i.e., $E(Y)$, is accounted for by group differences in the predictors.

$$R = E(Y_A) - E(Y_B)$$

Based on a linear model

$$y_g = x_g' \beta_g + \epsilon_g, \quad E(\epsilon_g) = 0 \quad g \in (A, B)$$

where X is a vector containing the predictors and a constant, β contains the slope parameters and the intercept, and ϵ is the error, the mean outcome difference can be expressed as the difference in the linear prediction at the group-specific means of the explanatory variables. That is,

$$R = E(Y_A) - E(Y_B) = E(X_A)' \beta_A - E(X_B)' \beta_B$$

Where $E(\beta_g) = \beta_g$ and $E(\epsilon_g) = 0$ by assumption.

To identify the contribution of group differences in predictors to the overall outcome difference, equation 3.8 can be rearranged and written as;

$$R = \{E(X_A) - E(X_B)\}'\beta_B + E(X_B)'(\beta_A - \beta_B) + \{E(X_A) - E(X_B)\}'(\beta_A - \beta_B)$$

Where;

$E = \{E(X_A) - E(X_B)\}'\beta_B$ amounts to the part of the differential that is “explained” by differences in the predictors (also called the “endowments effect”);

$C = E(X_B)'(\beta_A - \beta_B)$ is the portion of differential attributable to differing coefficients and;

$U = \{E(X_A) - E(X_B)\}'(\beta_A - \beta_B)$ is the unexplained portion of the differential. The sum of C and U measures differential attributed to discrimination.

The estimation of these components is given as;

$$\hat{R} = \bar{Y}_A - \bar{Y}_B = (\bar{X}_A - \bar{X}_B)'\hat{\beta}_B + \bar{X}_B'(\hat{\beta}_A - \hat{\beta}_B) + (\bar{X}_A - \bar{X}_B)'(\hat{\beta}_A - \hat{\beta}_B)$$

Where $\hat{\beta}_A$ and $\hat{\beta}_B$ are the least-squares estimates for β_A and β_B , obtained separately from the two group-specific samples, and the group means \bar{X}_A and \bar{X}_B are estimates for $E(X_A)$ and $E(X_B)$. The study applied the pooled decomposition method which computes the two-fold decomposition using coefficients from a pooled model over both groups as the reference coefficients.

3.3 Explaining observed gender gaps in key economic outcomes

To explain the observed gender gaps in the outcome variable of interest, a detailed decomposition that can subdivide components into the respective contributions of each covariate will be conducted. Such analysis is useful to investigate the detailed contributions of the single predictors or sets of predictors to observed group-wise differences in outcome variables.

Identifying the contributions of the individual predictors to the explained part of the differential is not complicated because the total component is a simple sum of the individual contributions. Individual predictor’s contribution to the explained part is given as;

$$\hat{E} = (\bar{X}_A - \bar{X}_B)'\hat{\beta}_B = (\bar{X}_{1A} - \bar{X}_{1B})'\hat{\beta}_{1B} + (\bar{X}_{2A} - \bar{X}_{2B})'\hat{\beta}_{2B} + \dots$$

Where $\bar{X}_1, \bar{X}_2 \dots$ are the means of the single predictor, and $\hat{\beta}_1, \hat{\beta}_2, \dots$ are the associated coefficients. The first summand reflects the contribution of the group differences in \bar{X}_1 ; the second, of differences in \bar{X}_2 ; and so on. The individual predictor's contribution to the unexplained part can also be decomposed in a similar manner (Jann, 2008).

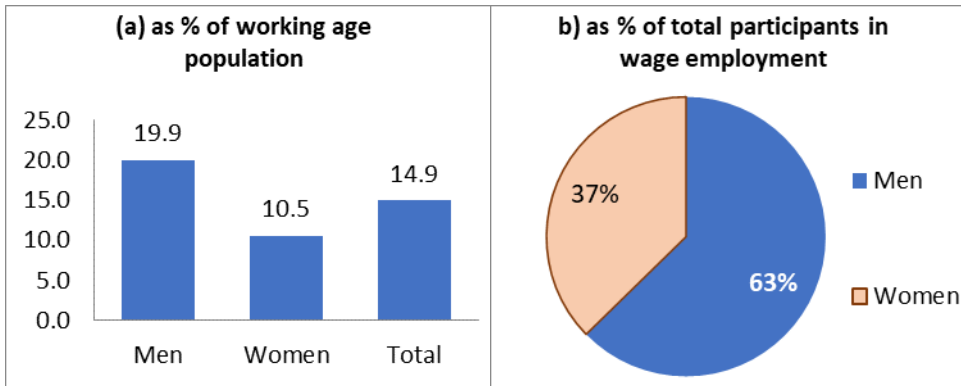
3.4 Data

This study used the Ethiopian Socioeconomic Survey which is collected by the Central Statistics Agency of Ethiopia (CSA) in collaboration with the World Bank Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) team. The Ethiopian Socioeconomic Survey has been conducted in four waves so far; the first wave in 2011/12, the second wave in 2013/14, the third wave in 2015/16, and the fourth wave in 2018/19. The first wave of the survey began as the Ethiopian Rural Socioeconomic Survey in 2011/12 and it covered only rural and small-town areas while the subsequent waves were expanded to include all urban areas. The 2018/19 Ethiopian Socioeconomic Survey is a new panel that is not a follow-up of the previous waves. This study primarily uses the recent Ethiopian Socioeconomic Survey (2018/19) dataset.

4. Participation in Wage and Self-employment

For this study, the working-age population is defined as individuals aged 15 years and older. The total numbers of working-age individuals in the sample are 16,962 out of which 47% are men while 53% are women (Figure 1). Due to the continued dominance of agriculture as the main livelihood for the majority of the population in Ethiopia, the rate of wage employment is limited. Among working-age individuals in the sample, only 15% (2533 individuals) participated in wage employment in 2018-19. From the total working-age population, the percentage of women who participated in wage employment is almost half of those of men. Among those who participated in wage employment, women account for only 37%.

Figure 1: Participants in wage employment



Source: Based on ESS (2018-19)

Table 1 shows around 50% of wage employees only have either primary or secondary education. Compared to men, a larger percentage of women have a diploma as their highest degree while for first and graduate degrees, the percentage of men is higher. Such gender disparity in education achievement often hinders women from securing top-position jobs that also offer better pay. About 61% of wage employees have below tertiary education which is an indication that elementary and non-professional occupations comprise a large share (67%) of the wage employment in the sample. The percentage of legislators, senior government officials, and managers in the sample is generally low with women engaged in such type of occupation 50% less than men whereas women's involvement in elementary occupations is 15 percentage points higher than men. Hence, women have less overall participation in wage employment, and those who participate tend to concentrate on elementary and service-related jobs. Higher representation of women in elementary and service-related jobs indicates that wage employment may not be necessarily empowering for women. Women who are engaged in elementary and low-paying service jobs often work out of distress to support themselves and their families than by choice. Regarding this, Klasen et al., (2019) indicated that in most poor and developing countries where economic growth is short of creating adequate decent jobs, women usually participate in the labor force out of distress. Their study also found that in such economies, women often leave the labor market as soon as it is affordable to do so.

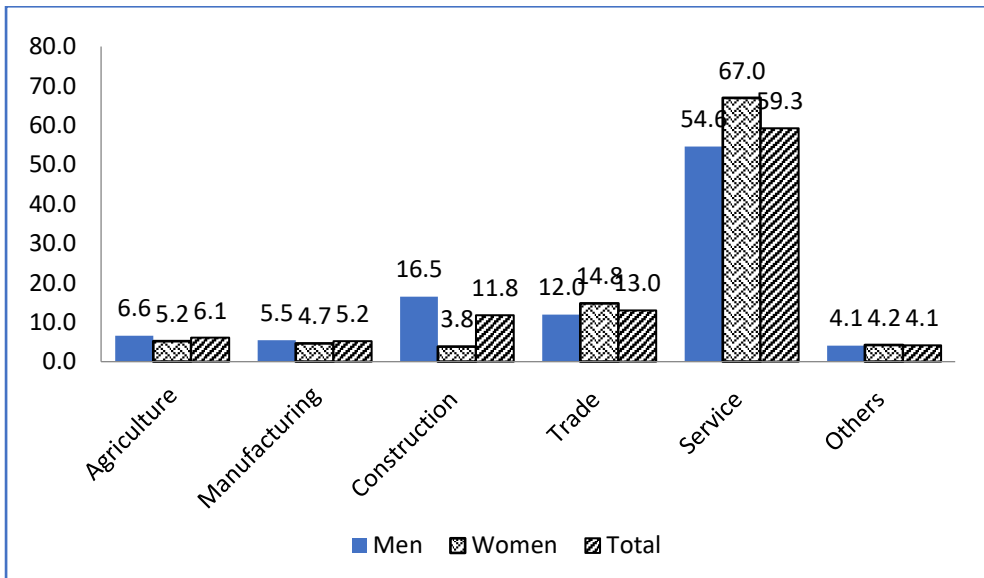
Table 1: Education and occupation profile of participants in wage employment

	Men	Women	Total
Education (%)			
Not Educated	10.83	16.93	13.11
Informal education	0.38	0.21	0.32
Primary Education	24.81	26.03	25.27
Secondary Education	23.8	19.26	22.11
Tertiary (Certificate)	3.97	3.39	3.75
Tertiary (Not completed)	2.27	3.28	2.65
Tertiary (Diploma)	11.08	14.18	12.24
Tertiary (First degree)	18.2	14.18	16.7
Tertiary (Graduate degree)	4.66	2.54	3.87
Types Occupations (%)			
Legislators, senior government officials and managers	3.91	1.8	3.12
Professionals/Science professional	27.7	25.19	26.78
Technicians and associate profession	3.59	2.65	3.24
Clerks, office clerks	1.76	7.94	4.07
Service workers, and shop and market	17.5	18.94	18.05
Skilled agricultural and fishery workers	4.79	3.81	4.42
Craft and related trades workers	17.4	4.13	12.44
Plant and machine operators and assemblers	0.95	0.32	0.71
Elementary occupations, sales, and service	19.5	33.86	24.84
Army/ member of the armed forces	2.71	1.16	2.13

Source: Based on ESS (2018-19)

As it is shown in Figure 2, the service sector dominates participation in wage employment where 59% of participants work in the sector. Women comprise a relatively higher share of participants in the service and the trade sector while men dominate the construction sector. Existing social norms, the unsuitable working environment at construction sites, and lack of adequate knowledge about the sector may be the main reasons for the lower participation of women in the construction sector compared to men. Gender-based discrimination in pay is also noticed in the sector where women daily laborers are often paid less compared to men. Such discrimination together with potential workplace harassment can be discouraging for women from actively participating in the construction sector.

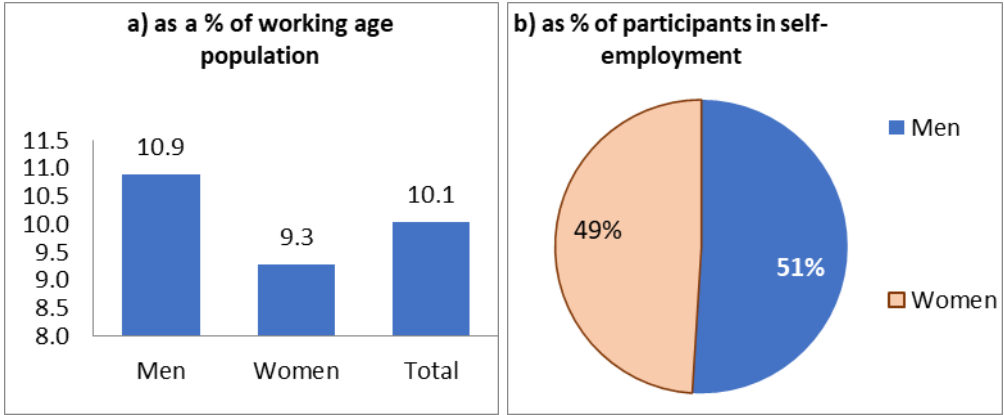
Figure 2: Sector of participation in wage employment



Source: Based on ESS (2018-19)

Note: The service sector includes hotels and restaurants, transport, financial intermediation, public administration, education, health and social services, and other services.

Similar to wage employment, the percentage of individuals engaged in self-employment, which are mainly non-agricultural household business activities is also limited (Figure 3). Only 10% of working-age individuals own non-farm enterprises. There is no significant gender disparity in ownership of non-farm enterprises. This coupled with the limited female participation in wage employment as shown above could indicate the potential prevalence of gender-related hindrances in the wage employment market. Women may be looking for jobs that may offer some flexibility in the work culture, probably to help accommodate their domestic responsibilities and self-employment may provide them with such flexibility. That is, self-employment may offer a better platform for women to maintain a work-life balance.

Figure 3: Participants in self-employment

Source: Based on ESS (2018-19)

Table 2 indicates the education status of non-farm enterprise owners is low where 30% of them are illiterate while 36% of them have only primary education. A significantly higher percentage of self-employed women have no education compared to men. The percentage of non-farm enterprise owners with tertiary education is 11%. The percentage of men entrepreneurs with tertiary education stand at 15% which is significantly higher than women (9%).

Table 2: Education profile of participants in self-employment

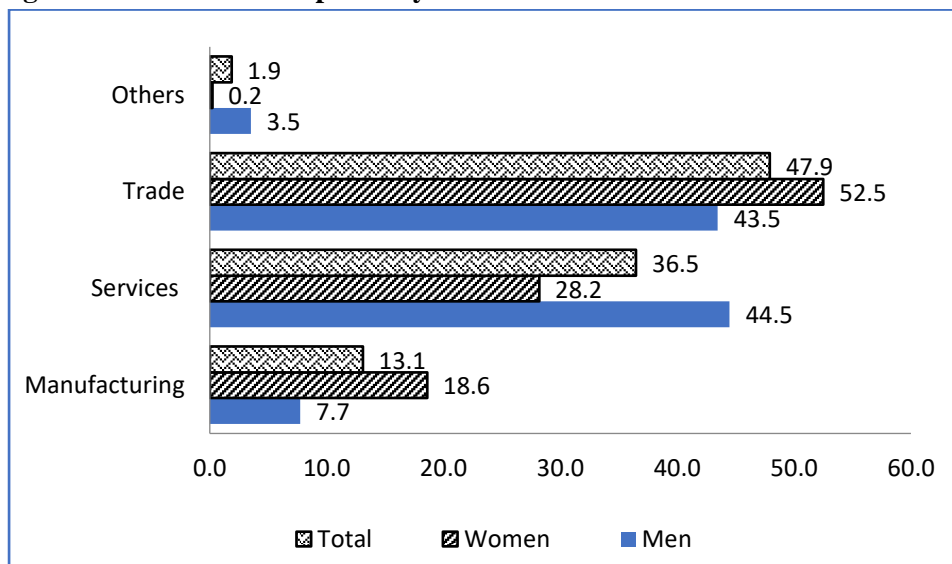
Education (%)	Men	Women	Total
Not Educated	19.91	42.28	30.87
Informal education	1.15	1.32	1.23
Primary Education	39.93	32.69	36.38
Secondary Education	24.17	15.21	19.78
Tertiary (Certificate)	2.19	1.68	1.94
Tertiary (Not completed)	1.04	0.96	1
Tertiary (Diploma)	4.6	3.95	4.28
Tertiary (First degree)	5.41	1.44	3.46
Tertiary (Graduate degree)	1.61	0.48	1.06

Source: Based on ESS (2018-19)

The larger 48% of non-farm enterprise owners work in trade sectors followed by service (37%) and manufacturing sector (13%). The share of women

entrepreneurs working in trade, service, and manufacturing sectors are 53%, 28%, and 19% respectively while men non-farm enterprise owners working in the respective sectors are 44%, 45%, and 8%. Close to half of the non-farm enterprise owners work in the retail trade, women accounting for 55% and men the remaining 45%.

Figure 4: Non-farm enterprises by sector



Source: Based on ESS (2018-19)

About 40% of men-owned enterprises have a business license while the percentage of the licensed business owned by women is only 20%. This shows that women tend to engage more in informal businesses. Women-owned entrepreneurs on average hired three workers less than their men counterparts. This may indicate that women-owned enterprises are smaller in size, create fewer jobs and possess less growth potential. The average monthly sale of women non-farm enterprise owners is also only 31% of that of men. The average total operating cost of women-owned enterprises is also by far low (61% less) compared to men entrepreneurs which might be an indication that women own smaller enterprises relative to men. In general, even though there is no significant ($p = 0.7632$) gender disparity in ownership of non-farm enterprises; women-owned enterprises seem to perform less in terms of business legalization, sales, number of hired workers, and firm size.

Table 3: Characteristics of Men's and Women's Enterprises

Attributes	Men	Women	Total
% of licensed enterprises	40	20	30
Number of Hired workers	4	1	2
Average monthly sales (in Birr)*	15,075.3	4,719.0	99,71.8
Average monthly operating cost (total in Birr)*	21,295.3	8,302.5	14,892.5

Source: Based on ESS (2018-19)

* The self-reported average monthly operating cost is greater than the average monthly sales. The actual figures thus should be taken with caution and may not necessarily imply loss. The numbers are only considered to show the sales and operating cost gap between enterprises owned by men and women.

5. Factors Associated with Labor Force Participation

This section analyzes factors affecting an individual's labor supply decision (in wage and self-employment). The description of explanatory and summary statistics of variables (individual, household, geographical, job, and enterprise-related factors) included in various model specifications is given in the Appendix, Table A1 and A2 respectively.

5.1 Participation in Wage Employment

This section analyzes factors that affect men's and women's participation in wage employment. Table 4 reports results from the Heckman selection model. Column 1, 2, and 3 illustrate estimated coefficients from the outcome (wage) equation, coefficients of the selection equation, and average marginal effects from the selection equation respectively for the model with no female interaction terms. Columns 4-5 show the same results for the model with female interaction terms.⁶ Results from the pooled sample show that there is a sample selection problem in estimating the wage equation given that the coefficient on Heckman lambda is significant. Similar to overall participation in the labor market, women have significantly less participation in wage employment compared to men controlling for education and, other individual and household characteristics. In particular, the participation of women in wage employment is 12% lower than men. Women also

⁶ Only coefficients of significant interaction terms are reported in the table

receive 43% less wage than men while controlling for age (a proxy for experience), education, and type of occupation. Additional factors significantly associated with both women's and men's participation in wage employment include age, education, religion, marital status, household head status, family size, having children aged less than five years in the household, wealth, non-labor income, and residence.

The age of an individual is positively associated with participation in wage employment up to the age of 38 years. Every additional year of age is associated with a 2.5% higher chance of participation in wage employment in primary working age years. Education is also positively associated with participation in wage employment where individuals with a certificate and above level of education are 23.8% more likely to participate in wage employment and earn 25 percent more wage than individuals with no tertiary education. Household heads, individuals from wealthier households, and with children under five years are also more likely to participate in wage employment. Being married, Muslim, living in rural areas, and having a large family size and non-labor income is associated with a lower probability of participation in paid employment. Compared to their male counterparts, married women show less participation while women from wealthier households are more likely to participate in wage employment. The negative influence of marriage on wage employment of women than men may be associated with the increased domestic responsibility (running the household and childcare) of women after marriage which reduces their chance of participation in paid work outside the home. Social norms and traditional gender roles often force married women to take a larger share of the household responsibility compared to their partner. Results from the wage equation show that in addition to education, an age that is included as a proxy for experience is also significantly associated with wage controlling for types of occupations. Every additional year of age (experience) is associated with a 4.8% increase in wage until the age of 45 years.

Looking into the women-only sample, women's participation and wage are significantly associated with age, education, religion, marital status, household headship, family size, the existence of children under five years in the household, wealth, non-labor income, and residence.⁷ Women's additional years of age are associated with a 2.6% higher chance of participation in wage employment and 6%

⁷ The estimation on the women's only sample shows no evidence of a sample selection problem in estimating the wage equation given that the coefficient on the Heckman lambda is insignificant.

higher wage in primary working years of age respectively. Women having a certificate and education also have a 24.4% higher chance of participation and earn 51% higher wages than women with no such education. To further assess the relevance of education for women's participation in wage employment, a separate analysis using categorical education variable is conducted and the results are presented in the Appendix Table A3. The results show that compared to women with primary education, having tertiary education specifically a diploma, first degree and graduate degree matters more for women to participate in wage employment and earn a higher wage. The importance of having tertiary education for women's participation in wage employment is also established by previous studies (see Cameron et al., 2001; Ince, 2010; Khanie, 2019; Wainerman, 1980). Though education, in general, is important in enhancing women's participation in the labor force, it should go beyond primary and secondary education if women want access to better paid jobs. However, given the current status of women's education in Ethiopia is low a short-term policy action should focus on creating job opportunities that take in to account the current education level of women in the country.

Table 4: Participation in wage employment (Heckman Selection Model, pooled sample)

Variables	With no interaction			With interaction		
	(1) Logarithm of Hourly Wage	(2) Participation (coefficients)	(3) Participation (margins)	(4) Logarithm of Hourly Wage	(5) Participation (coefficients)	(6) Participation (margins)
Female	-0.430*** (0.0419)	-0.411*** (0.0308)	-0.126*** (0.00933)	-0.544 (0.342)	-0.112 (0.231)	-0.0348 (0.0714)
Age	0.0480*** (0.00950)	0.0831*** (0.00636)	0.0254*** (0.00194)	0.0508*** (0.0117)	0.0963*** (0.00859)	0.0298*** (0.00266)
Age square	-0.000526*** (0.000120)	-0.00108*** (7.78e-05)	-0.000330*** (2.38e-05)	-0.000544*** (0.000142)	-0.00117*** (0.000100)	-0.000362*** (3.11e-05)
Certificate and above	0.258*** (0.0608)	0.777*** (0.0367)	0.238*** (0.0104)	0.161** (0.0654)	0.742*** (0.0481)	0.230*** (0.0141)
Religion (Base=Christian)						
Muslim		-0.259*** (0.0384)	-0.0781*** (0.0114)		-0.258*** (0.0386)	-0.0789*** (0.0116)
Others		-0.180 (0.198)	-0.0550 (0.0588)		-0.151 (0.197)	-0.0471 (0.0600)
Married		-0.137*** (0.0347)	-0.0421*** (0.0106)		0.0307 (0.0595)	0.00952 (0.0184)
Household head		0.315*** (0.0371)	0.0964*** (0.0113)		0.152** (0.0597)	0.0471** (0.0185)
Family size		-0.0693*** (0.00796)	-0.0212*** (0.00242)		-0.0840*** (0.0106)	-0.0260*** (0.00328)
Children under 5 years		0.127*** (0.0361)	0.0390*** (0.0111)		0.151*** (0.0498)	0.0468*** (0.0154)
Dependency ratio		-0.0239 (0.0267)	-0.00731 (0.00816)		-0.0290 (0.0384)	-0.00899 (0.0119)
Wealth index		0.0118*** (0.00277)	0.00362*** (0.000848)		0.00451 (0.00344)	0.00140 (0.00106)

Non-labor income		-0.0118*** (0.00353)	-0.00362*** (0.00108)		-0.0108** (0.00485)	-0.00335** (0.00150)
Formal credit		-0.0780 (0.132)	-0.0239 (0.0405)		-0.137 (0.173)	-0.0424 (0.0537)
Health problem		-0.0543 (0.0868)	-0.0166 (0.0265)		-0.270** (0.126)	-0.0835** (0.0392)
Rural		-0.686*** (0.0394)	-0.210*** (0.0123)		-0.702*** (0.0402)	-0.218*** (0.0127)
Occupation 3(a)	0.288** (0.127)			0.288** (0.126)		
Occupation 8	0.354*** (0.131)			0.344*** (0.130)		
Occupation 10	-0.321** (0.127)			-0.301** (0.126)		
Lambda		-0.175*** (0.0550)			-0.156*** (0.0543)	
Female and, certificate and above				0.337*** (0.0813)	0.102 (0.0740)	0.0315 (0.0230)
Female and married					-0.394*** (0.0796)	-0.122*** (0.0247)
Female and Wealth index					0.0119*** (0.00420)	0.00369*** (0.00130)
Female and, Illness/Injury					0.425** (0.174)	0.132** (0.0540)
Regional dummy		Yes	Yes		Yes	Yes
Constant	2.210*** (0.248)	-2.078*** (0.122)		2.150*** (0.292)	-2.292*** (0.159)	
Observations	16,773	16,773	2,506	16,773	16,773	2,506

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: ^(a) only occupations which significantly affect wages are reported in the table.

Looking into the women-only sample, women's participation and wage are significantly associated with age, education, religion, marital status, household headship, family size, the existence of children under five years in the household, wealth, non-labor income, and residence.¹⁰ Women's additional years of age are associated with a 2.6% higher chance of participation in wage employment and 6% higher wage in primary working years of age respectively. Women having a certificate and education also have a 24.4% higher chance of participation and earn 51% higher wages than women with no such education. To further assess the relevance of education for women's participation in wage employment, a separate analysis using categorical education variable is conducted and the results are presented in the Appendix, Table A3. The results show that compared to women with primary education, having tertiary education specifically a diploma, first degree and graduate degree matters more for women to participate in wage employment and earn a higher wage. The importance of having tertiary education for women's participation in wage employment is also established by previous studies (see Cameron et al., 2001; Ince, 2010; Khanie, 2019; Wainerman, 1980). Though education, in general, is important in enhancing women's participation in the labor force, it should go beyond primary and secondary education if women want access to better paid jobs. However, given the current status of women's education in Ethiopia is low a short-term policy action should focus on creating job opportunities that take in to account the current education level of women in the country.

Marital status, residence, family size, and non-labor income are factors which associate with less participation of women in wage employment. Previous studies found that marriage (especially early marriage) reduces the educational attainment and literacy of women leading to less chance of securing wage employment (Field et al., 2018; Mariara et al., 2018). Women living in rural areas also show less participation. In rural areas of most developing countries, agriculture is the dominant economic activity and wage employment is scarce. The situation is not different in Ethiopia where women in rural areas of the country face both demand and supply-side labor market constraints to participate in wage employment. Rural women have less education attainment and access to wage

¹⁰ The estimation on the women's only sample shows no evidence of a sample selection problem in estimating the wage equation given that the coefficient on the Hackman lambda is insignificant.

employment than those living in urban areas. Large family size is often associated with an increased burden of household work and responsibilities for women which leads to fewer chances of participation in paid work outside of the home. Having more non-labor household income reduces the pressure to work as long as the family income need is satisfied with non-labor income sources (see Psacharopoulos & Tzannatos, 1989). Household headship and wealth are factors that positively associate with women's participation in wage employment. The responsibility that comes with household headship to provide for dependent family members (and herself) may explain the higher participation of women household heads in wage employment. The positive association between wealth and wage employment can potentially be a reverse causality where wage employment contributes to higher wealth.

Table 5: Participation in wage employment (Heckman Selection Model, Women only sample)

Variables	(1) Logarithm of hourly wage	(2) Participation (coef.)	(3) Participation (margins)
Age	0.0593*** (0.0143)	0.0904*** (0.0107)	0.0262*** (0.00310)
Age squared	-0.000732*** (0.000195)	-0.00126*** (0.000140)	-0.000365*** (4.08e-05)
Certificate and above	0.510*** (0.0895)	0.842*** (0.0569)	0.244*** (0.0157)
Religion (Base=Christian)			
Muslim		-0.200*** (0.0587)	-0.0564*** (0.0161)
Others		-0.255 (0.340)	-0.0708 (0.0882)
Married		-0.361*** (0.0533)	-0.104*** (0.0155)
Household head		0.217*** (0.0612)	0.0627*** (0.0177)
Family size		-0.0746*** (0.0125)	-0.0216*** (0.00364)

Variables	(1) Logarithm of hourly wage	(2) Participation (coef.)	(3) Participation (margins)
Children under 5 years ¹¹		0.0902* (0.0539)	0.0261* (0.0156)
Dependency ratio		-0.00784 (0.0384)	-0.00227 (0.0111)
Wealth index		0.0159*** (0.00409)	0.00462*** (0.00118)
Non-labor income		-0.0122** (0.00523)	-0.00353** (0.00151)
Formal loan		0.0320 (0.203)	0.00925 (0.0589)
Illness/Injury		0.149 (0.120)	0.0432 (0.0348)
Rural		-0.671*** (0.0676)	-0.194*** (0.0201)
Occupation10(a)	-0.373* (0.218)		
Regional dummy		Yes	Yes
lambda		0.00791 (0.0714)	
Constant	1.316*** (0.356)	-2.531*** (0.193)	
Observations	8,859	8,859	930

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: (a) only occupations which significantly affect wages are reported in the table

¹¹ The positive association of having children under five to female participation in wage employment is contrary to expectation but it should be noted that the variable indicates “women who live in households having children under five years old” rather than “women who have children under five years old” because the latter one could not be identified from the dataset. Therefore, the under five children might not be necessarily the woman under consideration. A sensitivity analysis is conducted including an interaction term “household head*children under five years” assuming that for a woman household head, the children under the age of five are most likely to be her own. The coefficient on the interaction term is found to be negative but insignificant.

5.2 Participation in self-employment

This section assesses the gender gap in self-employment and factors which associate with men's and women's decisions of owning non-farm enterprises. The section will also identify the existing gender gap in business sales and the factors which explain such gaps. Table 6 presents estimation results on factors affecting participation in self-employment and sales of non-farm enterprises. When it comes to self-employment (ownership of a non-farm business), women have a 2.2% higher chance of participation than men controlling for various individual and household characteristics. Women entrepreneurs however make 54.4% less average monthly sales than their men counterparts. This is could be due to the small size of women enterprises compared to their men counterparts as indicated by the significantly lower operating cost. Previous studies in Ethiopia also show that women entrepreneurs face various impediments in expanding business sales where most women sell their products and services in local markets having less access to wider and more profitable markets (Alene, 2020; Assefa & Cheru, 2018; Gebremariam, 2017; Abagissa, 2013; Solomon, 2010; Eshetu & Zeleke, 2008). In the current data, about 75% of women non-farm enterprise owners sell their products to local customers. This indicates that women entrepreneurs face limited market and business linkages where most of them transact directly with customers without much use of intermediaries limiting their prospects of networking and growth.

In the pooled sample, age, education, marital status, household headship, family size, wealth, and residence are significant factors which associate with participation in self-employment. Individuals' age, being married and household wealth have a significant positive association with participation in self-employment while education, family size, and living in rural areas have a significant negative association. In particular, individuals having a certificate and above show a 6% less chance of participation in self-employment. Among owners of a non-farm business, the majority have a level of education that is below tertiary where 30% are not educated and 57% have only primary or secondary education (see Table 2). A similar result is found in the women-only sample where women with tertiary education are 5% less likely to participate in self-employment. Only 9.6% of women non-farm business owners have tertiary education. This shows that women with tertiary education are more likely to engage in wage employment than self-

employment. The result is consistent with the higher participation of women with tertiary education in wage employment, which was found in the previous section.

Education however is positively associated with sales of an enterprise where owners having a certificate and above make 36.5% higher sales. A business sale in wealthier households is also 4% higher. Enterprises having business licenses make 21% higher sales than those with no license. The number of hired workers and total production cost are also positively associated with sales. Sale is negatively associated with the regularity of activity whereas enterprises with seasonal business activity show 16.2% fewer sales. In the women-only sample, religion, household head status, family size, and residence also significantly determine participation in self-employment. Muslim women and those having a large family size and living in rural areas have less participation while women household heads have higher participation in self-employment.

Table 6: Participation in self-employment and sales of non-farm enterprises

Variables	Pooled (Men and Women)			Women only		
	(1) Participation (Coeff.)	(2) Participation (margins)	(3) Logarithm of Sales	(4) Participation (Coeff.)	(5) Participation (margins)	(6) Logarithm of Sales
Female	0.142*** (0.0332)	0.0221*** (0.00515)	-0.544*** (0.0876)			
Age	0.0796*** (0.00650)	0.0123*** (0.00101)	0.00602 (0.0180)	0.122*** (0.00995)	0.0179*** (0.00146)	0.00730 (0.0249)
Age square	-0.0010*** (7.79e-05)	-0.00016*** (1.21e-05)	-0.00026 (0.000217)	-0.00153*** (0.000126)	-0.00022*** (1.85e-05)	-0.00028 (0.000314)
Certificate and above	-0.432*** (0.0480)	-0.0670*** (0.00745)	0.365*** (0.130)	-0.353*** (0.0763)	-0.0515*** (0.0112)	0.272 (0.205)
Religion (Base=Christian)						
Muslim	-0.00387 (0.0383)	-0.000601 (0.00594)	0.330*** (0.0939)	-0.118** (0.0556)	-0.0169** (0.00782)	0.514*** (0.131)
Others	-0.252 (0.203)	-0.0340 (0.0236)	-0.533 (0.586)	-0.363 (0.294)	-0.0451 (0.0288)	-0.955 (0.682)
Married	0.0989*** (0.0356)	0.0153*** (0.00552)	0.119 (0.0909)	0.0681 (0.0511)	0.00995 (0.00746)	0.170 (0.126)
Household head	0.690*** (0.0387)	0.107*** (0.00599)	0.122 (0.0988)	0.679*** (0.0549)	0.0992*** (0.00799)	0.0754 (0.132)
Family size	-0.0293*** (0.00790)	-0.00454*** (0.00123)	0.0237 (0.0204)	-0.0312*** (0.0111)	-0.00456*** (0.00163)	0.0309 (0.0276)
Children under 5 years	0.0191 (0.0366)	0.00297 (0.00568)	-0.0659 (0.0932)	0.0271 (0.0507)	0.00395 (0.00742)	-0.188 (0.121)

Dependency ratio	0.0165 (0.0236)	0.00256 (0.00367)	-0.0262 (0.0583)	-8.97e-05 (0.0304)	-1.31e-05 (0.00445)	-0.0460 (0.0726)
Wealth index	0.0172*** (0.00300)	0.00267*** (0.000466)	0.0420*** (0.00790)	0.00555 (0.00423)	0.000811 (0.000619)	0.0385*** (0.0104)
Non-labor income	-0.00279 (0.00366)	-0.000433 (0.000567)	0.0149 (0.00931)	-0.00265 (0.00506)	-0.000388 (0.000739)	0.00249 (0.0121)
Formal loan	0.178 (0.117)	0.0276 (0.0182)	0.146 (0.266)	0.206 (0.168)	0.0301 (0.0245)	0.169 (0.368)
Illness/Injury	0.0710 (0.0771)	0.0110 (0.0120)	-0.225 (0.188)	0.0193 (0.104)	0.00282 (0.0152)	-0.0755 (0.240)
Licensed enterprise			0.215** (0.0972)			0.0995 (0.142)
Seasonal activity			-0.162** (0.0807)			-0.363*** (0.109)
Hired workers			0.00277*** (0.000713)			0.00290 (0.0148)
Log total cost			0.179*** (0.0126)			0.218*** (0.0184)
Rural	-0.467*** (0.0374)	-0.0724*** (0.00580)	-0.546*** (0.0960)	-0.375*** (0.0521)	-0.0548*** (0.00763)	-0.560*** (0.122)
Regional dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.710*** (0.124)		6.315*** (0.354)	-3.264*** (0.181)		5.521*** (0.498)
Observations	16,822	16,822	1,601	8,889	8,889	807
R-squared			0.403			0.421

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

5.3 Decomposing and explaining the wage and sales gap

Results from the Blinder-Oaxaca decomposition analysis are presented in Tables 7 and 8. The unconditional wage gap between men and women is estimated to be 62.7%. The Blinder-Oaxaca decomposition analysis indicated that 26.2% of the gender wage gap is explained by the variables included in the model where the largest share of 73.8% remained unexplained. The decomposition model divides group differences in outcome variables into a part that is explained by differences in observed characteristics between genders (i.e., different levels of endowments) and a residual part that cannot be accounted for by observed predictors. The group differences attributable to different means of observed characteristics between groups are generally called the part of the wage gap that is “explained,” while the residual difference is referred to as the part that is “unexplained.” Assuming there are no unobserved predictors in the model, the “unexplained” part is often used as a measure for discrimination.

Table 7: Wage gap decomposition

Variables	(1) Differential	(2) Decomposition
Mean log wage (Men)	3.180*** (0.0261)	
Mean log wage (Women)	2.553*** (0.0302)	
Difference	0.627*** (0.0399)	
Explained		0.164*** (0.0299)
Unexplained		0.463*** (0.0441)
Observations	2,506	2,506

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

To evaluate how much of the explained and unexplained gender pay gap is attributed to which explanatory variable, a detailed decomposition analysis is

conducted, and results are reported in Table 8. Only coefficients of variables that significantly account for the explained and unexplained wage gap are reported. The explained part of the wage differential is accounted by differences in age (23.2%), education (6.7%), religion (7.8%), marital status (14%), household headship (25.6%), and wealth (32.3%). Together, the two occupation categories (8 – plant and machine operators and assemblers and 10 – army members) account for 56% of the explained wage gap. Factors that significantly contribute to the unexplained gender pay gap are education, marital status, and family size.

Table 8: Factors explaining the wage gap

Variables	(1) Explained	(2) Unexplained
Age	0.209*** (0.0434)	
Age square	-0.171*** (0.0372)	
Certificate and above	0.0110* (0.00657)	-0.0694** (0.0328)
Religion (1=Muslim)	0.0128*** (0.00459)	
Married	0.0231** (0.0116)	-0.101* (0.0526)
Household head	0.0420** (0.0184)	
Family size		-0.233*** (0.0792)
Wealth index	-0.0530*** (0.00976)	
Occupation8	0.0556*** (0.0157)	
Occupation10	0.0364** (0.0147)	
Total	0.164*** (0.0299)	0.463*** (0.0441)
Observations	2,506	2,506

Table 9 and 10 presents the results of the Blinder-Oaxaca decomposition analysis for the sales gap. Similar to wage gap analysis, only coefficients of variables that significantly account for the explained and unexplained sales gap are reported in Table 10. Based on the decomposition model, the unconditional sales gap between men and women non-farm enterprise owners is estimated to be 80.6% where 36% of it is explained by predictors included in the model.

Table 9: Sales gap decomposition

Variables	(1) Differential	(2) Decomposition
Mean log sales (Men)	8.009*** (0.0649)	
Mean log sales (Women)	7.203*** (0.0602)	
Difference	0.806*** (0.0885)	
Explained		0.290*** (0.0748)
Unexplained		0.516*** (0.0926)
Observations	1,601	1,601

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The explained part of the gender sales gap is accounted by the difference in education (9%), religion (5.9%), wealth (17%), business license (14.5%), operating cost (27%), and residence (8.7%). Factors that significantly contribute to the unexplained portion of the gender sales gap are religion, marital status, wealth, seasonality of business activity, and operating cost.

Table 10: Factors explaining the sales gap

Variables	(1) Explained	(2) Unexplained
Above certificate	0.0261*** (0.0100)	
Religion (1=Muslim)	0.0172* (0.0102)	-0.106** (0.0478)
Married		-0.311** (0.146)
Wealth Index	0.0494*** (0.0190)	0.190** (0.0787)
Licensed enterprise	0.0423** (0.0209)	
Seasonal activity		0.125** (0.0541)
Log total cost	0.0785** (0.0305)	-0.469** (0.199)
Rural	0.0253* (0.0140)	
Total	0.290*** (0.0748)	0.516*** (0.0926)
Observations	1,601	1,601

6. Conclusion and Policy Implications

6.1. Conclusion

The participation of women in the labor market shows great disparity across various regions of the world. Such differences are attributed to a range of factors including the level of economic development, education attainment, social norms, fertility rate, national policies, and access to support systems such as child care. Ethiopia is showing notable improvement in addressing gender gap in various social and political domains. However, the gender gap in economic participation is still significant and extra effort is required to increase women's participation in the labor force. In the sight of this, the study analyzes the status of the gender gap in labor force participation and, factors that influence men's and women's decision to work and how much to work in wage and self-employment. The study mainly utilizes the recent round (2018/19) Ethiopia Socioeconomic Survey (ESS) to meet its objectives.

Women are found to have significantly lower participation in wage employment and earn a lower wage than men controlling for individual and household characteristics. Age, education, household headship, and wealth are factors that significantly associate with women's participation in wage employment. In particular, though women's education, in general, is crucial in boosting their participation in wage employment, tertiary education is found to be more relevant than primary and secondary education. Married women show less participation in wage employment compared to their male counterparts. Similarly, residence in rural areas, having a large family size and non-labor income are factors which associate with less participation of women in wage employment. Women household heads and those from wealthier households are more likely to participate in wage employment.

Women have a relatively higher chance of participation in ownership of non-farm household businesses compared to men while controlling for various individual and household characteristics. However, the sales of women-owned enterprises are significantly lower than their men counterparts. Education negatively associates with women's participation in self-employment where women having tertiary education are less likely to own non-farm enterprises. Education however is associated with higher business sales. Additional factors that are positively associated with business sales include a business license, the number of hired workers, and operating costs. Results from the descriptive analysis however show that women-owned enterprises seem to perform less in terms of business legalization, the number of hired workers, and firm size. Moreover, women with large family sizes and those living in rural areas show less participation in self-employment.

The Blinder-Oaxaca decomposition analysis indicated that the unconditional wage gap between men and women is 62.7% where 26.2% of the gender wage gap is explained and the remaining 73.8% is unexplained. Age, education, religion, marital status, household headship, wealth, and occupation are factors that account for the explained part of the wage gap. For non-farm enterprise owners, the unconditional sales gap between men and women is estimated at 80.6% where 36% of it is explained by variables included in the model. The explained part of the gender gap in sales is accounted for by the difference in education, religion, wealth, business license, operating cost, and residence.

6.2 Policy Implications

Education is found to be very important for women's participation in the labor force. The findings from this study show that having tertiary education matters more for participation in wage employment. The participation of women in wage employment is found to be lower compared to men and those who participate tend to concentrate on elementary and service-related jobs. Therefore, if women are to work in better-paid jobs their education attainment should expand beyond primary education. Higher education attainment will result in better earnings, the increased opportunity cost of not working, and a higher chance of getting decent jobs. All of these will serve as a pull factor in helping women to overcome socio-economic constraints limiting them to work in income-generating activities outside of the home. Better education for women is also important in narrowing the observed wage and sales gap between men and women. However, given that the current education level of women in Ethiopia is limited, short-term actions should focus on creating job opportunities that fit the existing education profile of women in the country. In addition, it should be noted that jobs that require a higher level of education are limited in nature and hence simply expanding the education attainment of women will not guarantee them being employed in better jobs. The labor market should be diversified to accommodate women with different levels of education and types of skills.

Similarly, though women have higher participation in ownership of non-farm employment, a large majority of self-employed women work in retail trade. Increasing the active participation of women in the labor market is crucial but ensuring whether the participation is empowering or not should also be given due attention. This is important because in many developing countries women join the labor force due to distress often as a surviving strategy in response to economic hardships and shocks faced by their household. Such economic activities are often disempowering and reinforce the traditional gender role of women. The quality of work that women can access and engage in is thus equally important as the rate of participation. Unless interventions aimed at increasing the economic participation of women go beyond numbers and take the quality of work into consideration, the sustainability of achievements will be in question. Women who participate in the labor market as a coping mechanism to economic shocks often leave the labor market as soon as it is affordable to do so.

Among social factors, marital status is found to be a key factor in influencing women's decision to work and how much to work. In particular, married women show less overall participation in the labor market and particularly

in wage employment. Married women also work fewer hours. Marriage reduces women's participation in the labor market through various channels. First, marriage especially early marriage reduces the educational attainment of women decreasing the chance of getting paid jobs. Second, after marriage, the household responsibility of women increases tremendously with child bearing. If marriage is accompanied by higher fertility, the chance of a woman to participate in economic activities will become even less because the opportunity cost of participating in the labor market will upsurge. Third, social and cultural norms also restrict the labor force participation of married women with children. In Ethiopia, especially in rural areas, the role of married women is often restricted to taking care of families and children. The attitude and education level of the married woman's husband and other family members also shapes her participation in the labor force. Increasing the economic participation of married women thus requires interventions ranging from gradually changing traditional social norms to establishing support systems that assist them to take part in productive economic activities. Gender-sensitive labor policies which include paid maternity leave and adequate and affordable child care services are important to enhance the labor force participation of a married woman. Such interventions are also vital in reducing the double burden faced by working married women.

Non-farm women enterprise owners seem to perform less in terms of sales, business legalization, and firm size. Government support programs thus should give special emphasis to women entrepreneurs. Such programs should encourage non-farm women enterprise owners to legalize their businesses. Having a business license will assist them to go out of the informal sector, expand their production/services, and have better access to finance and other government support services (such as working premises). An intermediary that facilitates and finances the transition of women-owned enterprises from informal to formal, and from micro to small and medium-scale enterprises should be included as part of government support programs. Most women sell their products to immediate local customers. Limited market access means fewer customers, tight competition with local sellers, lower prices, lesser returns, and reduced potential to grow. Women entrepreneurs thus need support to access broader and more rewarding markets. Government and NGO-supported programs can assist women by giving training that enhance women's knowledge and skill on how to build business networks, exploit wider markets and advertise their products/services. Providing the required resource for market expansion, skill training and exhibitions are some of the actions that can be taken by the government and NGOs to expand the market access and sales of women entrepreneurs.

References

- Abagissa, J. (2013). Challenges Confronting Women in Micro and Small Enterprises in Addis Ababa, Ethiopia. *Ethiopian Journal of Business and Economics*, 3(1), 95–139.
- Ackah, C., Ahiadeke, C., & Fenny, A. P. (2009). Determinants of Female Labour Force Participation in Ghana (Global Development Network Working Paper Series No. 14).
- Alene, E. T. (2020). Determinants that influence the performance of women entrepreneurs in micro and small enterprises in Ethiopia. *Journal of Innovation and Entrepreneurship*, 9(24), 1–20. <https://doi.org/10.1186/s13731-020-00132-6>
- Amha, W. (2015). Growth of Youth-owned MSEs in Ethiopia: Characteristics, Determinants and Challenges. *Ethiopian Journal of Economics*, XXIV(2), 93–128.
- Andersen, M., & Havnes, T. (2019). Child Care, Parental Labor Supply and Tax Revenue. *Labor Economics*, 61(101762).
- Assefa, M., & Cheru, E. (2018). Factors Affecting the Growth of Women-Operated Micro and Small Enterprises (MSEs) in Ethiopia. *Abyssinia Journal of Business and Social Sciences Factors*, 3(1), 32–38. <https://doi.org/10.22521/unibulletin.2017.61.5>
- Becker, G. . (1975). *Human capital: A theoretical and empirical analysis, with special reference to education*. Columbia University Press.
- Bekana, D. M. (2020). Policies of Gender Equality in Ethiopia: The Transformative Perspective. *International Journal of Public Administration*, 43(4), 312–325. <https://doi.org/10.1080/01900692.2019.1628060>
- Bick, A., & Fuchs-Schündeln, N. (2017). Quantifying the Disincentive Effects of Joint Taxation on Married Women’s Labor Supply. *American Economic Review*, 107(5), 100–104.
- Blau, F. & Kahn, L. (2013). Female Labor Supply: Why Is the US Falling Behind? (NBER Working Paper 18702).
- Bloom, D. E., Canning, D., Fink, G., & Finlay, J. E. (2009). Fertility, Female Labor Force Participation, and the Demographic Dividend. *Journal of Economic Growth*, 14(2), 79–101.
- Boserup, E. (1970). *Woman’s Role in Economic Development*. St. Martin’s Press, New York.
- Cameron, L. A., Dowling, J. M., & Worswick, C. (2001). Education and labor market participation of women in Asia: Evidence from five countries. *Economic Development and Cultural Change*, 49(3), 459–477. <https://doi.org/10.1086/452511>
- Christiansen, L., Lin, H., Pereira, J., Topalova, P., & Turk, R. (2016). Individual Choice or Policies? Drivers of Female Employment in Europe March (No. IMF Working Paper WP/16/49).

- Clark, R., York, A., & Anker, R. (2003). *Cross-national Analysis of Women in the Labour Market*. In R. Anker & A. Pinelli (Eds.), *Women in the Labour Market in Changing Economies: Demographic Issues* (pp. 13–34). Oxford University Press, CSA. (2006). Report on the 2005 National Labour Force Survey. Statistical Bulletin No. 365, Addis Ababa, May 2006.
- CSA. (2014). Statistical Report on the 2013 National Labour Force Survey, Addis Ababa, March 2014.
- CSA. (2016). Statistical Report on the Urban Employment Unemployment. Statistical Bulletin No. 581, Addis Ababa, August 2016.
- Dinkelmann, T. (2011). The Effects of Rural Electrification on Employment: New Evidence from South Africa. *American Economic Review*, 101(7), 3078–108.
- Eckstein, Z., & Lifshitz, O. (2011). Dynamic Female Labor Supply. *Econometrica*, 79(6), 1675–1726.
- Eshetu, B., & Zeleke, W. (2008). Women entrepreneurship in micro, small and medium enterprises: The case of Ethiopia. *Journal of International Women's Studies*, 10(2), 3–5.
- Ethiopian Statistics Service (ESS). (2021). Statistical Report on the 2021 Labour Force and Migration Survey. Addis Ababa, Ethiopia. <https://doi.org/10.5089/9781513564876.002>
- Fabrizio, S., Fruttero, A., Gurara, D., Kolovich, L., Malta, V., Tavares, M. M., & Tchelishvili, N. (2020). Women in the Labor Force: The Role of Fiscal Policies (MF Staff Discussion Note No. 20/03).
- Fatima, A., & Sultana, H. (2009). Tracing out the U-shape relationship between female labor force participation rate and economic development for Pakistan. *International Journal of Social Economics*, 36(1–2), 182–198. <https://doi.org/10.1108/03068290910921253>
- Fernández, R. (2013). Cultural Change as Learning: The Evolution of Female Labor Force Participation over a Century. *American Economic Review*, 103, 472–500.
- Field, E., Glennerster, R., Nazneen, S., Pimkina, S., Sen, I., & Buchmann, N. (2018). Age at marriage, women's education, and mother and child outcomes in Bangladesh January 2018. New Delhi: International Initiative for Impact Evaluation.
- Gaddis, I., & Klasen, S. (2014). Economic development, structural change, and women's labor force participation: A reexamination of the feminization U hypothesis. *Journal of Population Economics*, 27(3), 639–681. <https://doi.org/10.1007/s00148-013-0488-2>
- Gebreeyesus, M. (2007). Growth of Micro-Enterprises: Empirical evidence from Ethiopia. Ethiopian Development Research Institute (EDRI). Retrieved from <http://www.csae.ox.ac.uk/conferences/2007-EDiA-LaWBiDC/papers/275-Gebreeyesus.pdf>
- Gebremariam, F. M. (2017). Factors Affecting the Growth of Women-Operated Micro and Small Enterprises (MSEs) in Ethiopia. *Üniversitepark Bülten*, 6(1), 56–66. <https://doi.org/10.22521/unibulletin.2017.61.5>

- Goldin, C. (1995). The U-Shaped Female Labor Force Function in Economic Development and Economic History. In S. TP (Ed.), *Investment in Women's Human Capital and Economic Development* (pp. 61–90). University of Chicago Press, Chicago.
- Güven-Lisaniler, F., & Bhatti, F. (2005). Determinants of female labour force participation: a study of North Cyprus. *Review of Social, Economic & Business Studies*, 5/6(January), 209–226. Retrieved from <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Determinants+of+Female+Labour+Force+Participation+:+A+Study+of+North#3>
- Heath, R., & Jayachandran, S. (2017). The Causes and Consequences of Increased Female Education and Labor Force Participation in Developing Countries (NBER Working Paper 22766).
- Heckman, J. J., & MaCurdy, T. E. (1980). A Life Cycle Model of Female Labor Supply. *Review of Economic Studies*, 47(1), 47–74.
- Hosney, S. H. (2015). Factors Influencing Female Labor Force Participation in Egypt and Germany: A Comparative Study. *Turkish Economic Review*, 3(3), 537–541. <https://doi.org/10.1453/ter.v3i3.1029>
- ILO. (2003). *Jobs Gender and Small Enterprises in Africa: Ethiopian Women Entrepreneurs Going for Growth*. International Labour Organization 2003.
- Ince, M. (2010). How the education affects female labor force? Empirical evidence from Turkey. *Procedia - Social and Behavioral Sciences*, 2(2), 634–639. <https://doi.org/10.1016/j.sbspro.2010.03.076>
- International Development Research Center (IDRC). (2020). *Policy mapping : Women's economic empowerment in Ethiopia*. Report by Includovate.
- Jann, B. (2008). The Blinder – Oaxaca decomposition for linear regression models, 8(4), 453–479.
- Kalb, G. (2018). Paid Parental Leave and Female Labor Supply: A Review. *Economic Record*, 94(304), 80–100.
- Khadim, Z., & Akram, W. (2013). Female Labor Force Participation in Formal Sector: An Empirical Evidence from PSLM. *Middle-East Journal of Scientific Research*, 14(11), 1480–1488.
- Khanie, G. (2019). Impact on the Botswana Economy Education and Labour Market Activity of Women in Botswana (BIDPA Working Paper 61). https://doi.org/10.1057/9781137537614_10
- Klasen, S. (2019). What Explains Uneven Female Labor Force Participation Levels and Trends in Developing Countries? *World Bank Research Observer*, 34(2), 161–197. <https://doi.org/10.1093/wbro/lkz005>
- Koolwal, G., & van de Walle, D. (2013). Access to Water, Women's Work, and Child Outcomes. *Economic Development and Cultural Change*, 61(2), 369–405.
- Lam, D., & Duryea, S. (1999). Effects of schooling on fertility, labor supply, and investments in children, with evidence from Brazil. *Journal of Human Resources*, 160–192.

- Lei, L., Desai, S., & Vanneman, R. (2019). The Impact of Transportation Infrastructure on Women's Employment in India. *Feminist Economics*, 25(4), 94–125.
- Luci, A. (2009). Female Labour Market Participation and Economic Growth. *International Journal of Innovation and Sustainable Development*, 4(2/3), 97–108.
- Mamdouh Altarawneh, Y. (2020). Explaining the Gender-Gap in Economic Activity: A Cross-Country Study. *Research in World Economy*, 11(5), 16. <https://doi.org/10.5430/rwe.v11n5p16>
- Mammen, K., & Paxson, C. (2000). Women's Work and Economic Development. *Journal of Economic Perspectives*, 14(4), 141–164.
- Mariara, J., McKay, A., Newell, A., & Rienzo, C. (2018). Gender gaps in the path to adulthood for young females and males in six African countries from the 1990s to the 2010s. *IZA Journal of Development and Migration*. <https://doi.org/10.1186/s40176-018-0124-8>
- MOWCY, UNICEF Ethiopia, & SPRI. (2019). Gender Equality, Women's Empowerment and Child Wellbeing in Ethiopia.
- Mujahid, N. (2014). Determinants of Female Labor Force Participation: A Micro Analysis of Pakistan. *International Journal of Economics and Empirical Research*, 2(5).
- Mukherjee, S. S. (2015). More educated and more equal? A comparative analysis of female education and employment in Japan, China and India (Paper 48).
- Pissarides, C., Garibaldi, P., Olivetti, C., Petrongolo, B., & Wasmer, E. (2005). Women in the Labour Force: How Well is Europe Doing. In T. Boeri, D. Del Boca, & C. Pissarides (Eds.), *European Women at Work*. Oxford University Press.
- Psacharopoulos, G., & Tzannatos, Z. (1989). Female labor force participation: An international perspective. *World Bank Research Observer*, 4(2), 187–201. <https://doi.org/10.1093/wbro/4.2.187>
- Sackey, H. A. (2005). Female labour force participation in Ghana: The effects of education (AERC Research Paper 150).
- Schultz, T. W. (1961). Investment in Human Capital. *The American Economic Review*, 51(1), 1–17.
- Sinha, J. N. (1967). Dynamics of Female Participation in Economic Activity in a Developing Economy. In *Proceedings of the World Population Conference, Belgrade, 1965. Vol. 4, Migration, Urbanization, Economic Development*. New York: United Nations.
- Solomon, D. (2010). Desk Review of Studies Conducted on Women Entrepreneurs in Ethiopia. Private Sector Development Hub/Addis Ababa Chamber of Commerce and Sectoral Associations, 2010.
- Tam, H. (2011). U-shaped Female Labor Participation with Economic Development: Some Panel Data Evidence. *Economics Letters*, 110(2).

- Uwakwe, M. O. (2004). Factors Affecting Women's Participation in the Labour Force in Nigeria. *Journal of Agriculture and Social Research (JASR)*. <https://doi.org/10.4314/jasr.v4i2.2815>
- Verbeek, M. (2004). *A Guide to Modern Econometrics* (2nd ed.). The Atrium, Southern Gate, Chichester, England: John Wiley & Sons Ltd.
- Wainerman, H. C. (1980). The Impact of Education on the Female Labor Force in Argentina and Paraguay. *Comparative Education Review*, 24(2), S180–S195.
- Woldehanna, T., Amha, W., & Yonis, M. B. (2018). Correlates of business survival: empirical evidence on youth-owned micro and small enterprises in Urban Ethiopia. *IZA Journal of Development and Migration*, 8(1), 1–26. <https://doi.org/10.1186/s40176-018-0122-x>
- Wooldridge, J. M. (2013). *Introductory Econometrics: A Modern Approach* (5th ed.). South-Western, Cengage Learning.
- World Bank. (2014). Enterprise Surveys: Ethiopia 2015 Country Profile. International Bank for Reconstruction and Development / The World Bank Group. <https://doi.org/10.1596/32087>
- World Development Indicators, The World Bank, 2019. Last Updated date 02/17/2021. (n.d.).
- World Economic Forum. (2019). Global Gender Gap Report 2020: Insight Report. Retrieved from http://www3.weforum.org/docs/WEF_GGGR_2020.pdf
- Yakubu, Y. a. (2010). Factors Influencing Female Labor Force Participation in South Africa in 2008. *The African Statistical Journal*, 11, 85–104.

Appendix

Table A1: Definitions of Variables included in the Estimation Models

Variables	Description
Individual level factors	
Female	Dummy=1 if female
Age	Age in years
Age square	Square of age
Education	Dummy=1 if an individual has a certificate and above level of education
Religion (base category=Christian)	1 = Muslim, 2 = Others (traditional and pagan)
Marital status	Dummy =1 if an individual is married, 0 otherwise
Household head status	Dummy =1 if an individual is a household head, 0 otherwise
Illness/Injury	Dummy =1 if the individual faced a health problem (illness or injury) within a month's time
Household level factors	
Family size	Number of household members
Children under 5 years	Dummy=1 if there are children aged 5 years and below in the household
Dependency ratio	Household dependency ratio
Wealth index	Household wealth is constructed based assets of the household members
Non-labor income	Household total income from various non-labor sources
Formal loan	Dummy=1 if the household received a formal loan
Job-related factors	
Types of occupation (base category = Legislators, senior government officials, and managers)	1. Legislators, senior government officials, and managers
	2. Professionals/Science professional
	3. Technicians and associate profession
	4. Clerks, office clerks
	5. Service workers and shop and market
	6. Skilled agricultural and fishery workers
	7. Craft and related trades workers
	8. Plant and machine operators and assemblers
	9. Elementary occupations, sales, and service
	10. Member of the armed forces
Geographical factors	
Residence	Dummy =1 if an individual life in a rural area and 0 otherwise
Enterprise related factors	
Licensed enterprise	Dummy=1 if the non-farm enterprise has a business license
Hired workers	Number of workers hired by the non-farm enterprise
Total cost	Total operating cost of the non-farm enterprise
Seasonal activity	Dummy=1 if the enterprise's activity is seasonal

Table A2: Summary Statistics

Variables	Pooled (Men and Women)		Women only sample		Men only sample	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Wage employed	0.149	0.356	0.105	0.307	0.199	0.399
Self-employed	0.100	0.301	0.093	0.290	0.109	0.312
Sex	0.530	0.499	1.000	0.000	0.000	0.000
Age	33.555	15.497	32.966	15.043	34.218	15.968
Certificate and above	0.107	0.309	0.081	0.274	0.135	0.342
Religion (1=Muslim)	0.380	0.485	0.374	0.484	0.387	0.487
Married	0.553	0.497	0.543	0.498	0.565	0.496
Household Head	0.399	0.490	0.238	0.426	0.580	0.494
Family Size	5.129	2.457	5.037	2.448	5.232	2.464
Children under 5 years	0.450	0.498	0.461	0.499	0.438	0.496
Dependency ratio	0.767	0.782	0.802	0.819	0.727	0.736
Wealth Index	4.304	6.900	4.568	7.047	4.006	6.718
Non-labor income	2.580	4.051	2.724	4.119	2.418	3.968
Formal credit	0.012	0.111	0.012	0.108	0.013	0.114
Health problem	0.035	0.184	0.039	0.194	0.031	0.173
Residence (1=Rural)	0.467	0.499	0.452	0.498	0.485	0.500

Table A3: Participation in wage employment (Heckman Selection Model, Women only sample with categorical education variable)

Variables	(1) Logarithm of Hourly Wage	(2) Participation (coeff.)	(3) Participation (margins)
Age	0.0578*** (0.0140)	0.0905*** (0.0107)	0.0260*** (0.00311)
Age Squared	-0.000696*** (0.000190)	-0.00124*** (0.000140)	-0.000357*** (4.07e-05)
Education (Base=Primary Education)			
Not Educated	-0.0870 (0.0827)	-0.130** (0.0644)	-0.0375** (0.0185)
Secondary Education	0.0720 (0.0773)	-0.0185 (0.0613)	-0.00533 (0.0176)
Tertiary (Certificate)	0.148 (0.154)	0.282** (0.129)	0.0811** (0.0372)
Tertiary (Not completed)	0.289* (0.153)	0.182 (0.128)	0.0523 (0.0368)
Tertiary (Diploma)	0.430*** (0.112)	0.884*** (0.0852)	0.254*** (0.0240)
Tertiary (First degree)	0.876*** (0.119)	0.954*** (0.0923)	0.274*** (0.0255)
Tertiary (Graduate degree)	1.070*** (0.186)	1.257*** (0.222)	0.361*** (0.0625)
Religion (Base=Christian)			
Muslim		-0.190*** (0.0593)	-0.0536*** (0.0163)
Others		-0.190 (0.333)	-0.0536 (0.0893)
Married		-0.363*** (0.0538)	-0.104*** (0.0155)
Household head		0.214*** (0.0619)	0.0616*** (0.0178)
Family size		-0.0749*** (0.0126)	-0.0215*** (0.00363)
Children under 5 years		0.0918* (0.0541)	0.0264* (0.0156)

Variables	(1) Logarithm of Hourly Wage	(2) Participation (coeff.)	(3) Participation (margins)
Dependency ratio		0.000897 (0.0386)	0.000258 (0.0111)
Wealth Index		0.0124*** (0.00425)	0.00358*** (0.00122)
Non-labor income		-0.0136*** (0.00525)	-0.00390*** (0.00151)
Formal loan		0.0323 (0.205)	0.00930 (0.0590)
Illness/injury		0.137 (0.121)	0.0394 (0.0349)
Rural		-0.659*** (0.0688)	-0.190*** (0.0203)
Observations	8,859	8,859	930
