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ZEF-Discussion Papers on
Development Policy No. 350

Tigabu D. Getahun, Gebeyehu M. Fetene, Heike Baumüller and Zaneta Kubik

Gender gaps in wages and non-monetary benefits: Evidence from Ethiopia's manufacturing sector

PARI

Bonn, July 2024

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Getahun, T.D., Fetene, M.T., Baumüller, H. and Kubik, Z., Gender gaps in wages and non-monetary benefits: Evidence from Ethiopia's manufacturing sector, ZEF – Discussion Papers on Development Policy No. 350, Center for Development Research, Bonn, July 2024, pp. 57.

ISSN: 1436-9931

Published by:
Zentrum für Entwicklungsforschung (ZEF)
Center for Development Research
Genscherallee 3
D – 53113 Bonn
Germany
Phone: +49-228-73-1861
Fax: +49-228-73-1869
E-Mail: zef@uni-bonn.de
www.zef.de

The authors:
Tigabu D. Getahun, Policy Studies Institute, Ethiopia, and Center for Development Research (ZEF), University of Bonn, Germany, tigyget14@gmail.com
Gebeyehu M. Fetene, Policy Studies Institute, Ethiopia
Heike Baumüller, Center for Development Research (ZEF), University of Bonn, Germany, hbaumueller@uni-bonn.de
Zaneta Kubik, University of Göttingen, Germany, zaneta.kubik@uni-goettingen.de

Acknowledgements

The study was funded by the “Program of Accompanying Research for Agricultural Innovation” (PARI), which is funded by the German Federal Ministry of Economic Cooperation and Development (BMZ).

The authors declare no conflict of interest.

Abstract

Using two rounds of panel firm- and worker-level data, this paper studies the gender gap in monetary and non-monetary compensation as well as work-related wellbeing among full-time workers in the agro-processing and leather sectors in Ethiopia. After controlling for year-fixed effects, the research reveals that women earn 35% less income from primary jobs and 40% less total income than men do. Some 40% of this primary job income gap and 43.3% of the income gap from all sources can be attributed to differences in human capital. Controlling for other worker, firm and manager characteristics as well as sector fixed effects do not meaningfully change the estimated coefficients. Child penalty explains part of the earning difference: the gender gap in total income between workers who do not have children is 11.7% while it is 37.6% among workers who have children. This difference is primarily because women who have children are 18.3% less likely to earn income from moonlighting and overtime work than men who have children do. Meanwhile, there is no statistically significant gender difference in moonlighting and overtime work among workers who do not have children. Gender earning differences are highest among medium skilled workers. Moreover, women are less likely to receive housing, discounted or complementary meals, or on-the-job training than men. Despite these discrepancies, women report to be happier and more satisfied, and are more likely to rate working conditions positively than men. This satisfaction and happiness may reduce their aspiration and quest for equal pay and non-monetary benefits. Narrowing human capital differences and providing aspiration building for women may help to reduce the gender earning gap.

Keywords: Job quality, wellbeing, gender pay gap, inclusiveness, working conditions

JEL Codes: J16, J21, J28, J31, J33, J71

1. Introduction

Remarkable progress has been achieved in narrowing the gender gap in the labour market (Blau & Kahn, 2017; Fabry, Van den Broeck, et al., 2022; Klasen, 2019; Weichselbaumer & Winter-Ebmer, 2005). However, despite occupying an important space in the policy, political, and research agenda, gender inclusiveness in the labour market is still far from being achieved (WEF, 2023). A smaller percentage of women still participate in the labour market, earn lower wages, and have relatively poor quality jobs across the world (e.g., & Marks, 2008; Asongu & Odhiambo, 2019; Bamieh & Ziegler, 2023; Blau & Kahn, 2017; Ficapal-Cusí et al., 2018; Jung et al., 2018; Klasen, 2019; Mühlau, 2011; Stier & Yaish, 2014). Moreover, the process of gender convergence in the labour market in developed countries has either stalled or slowed (Cha & Weeden, 2014; Cortés & Pan, 2023; Kleven, Landais, & Søgaard, 2019), and the gender gap has been country- and occupation-specific (Bamieh & Ziegler, 2023; Bertrand, 2018; Cortés et al., 2023; Fagan et al., 2007; Green et al., 2013; WEF, 2023).

For instance, while the labour force participation of women increased substantially in Latin America and modestly in the Middle East and Sub-Sahara Africa, it has decreased in South Asia and stagnated in many developed countries in the last decade (Klasen, 2019; WEF, 2023). The relative income of unskilled women has deteriorated (Blau & Kahn, 2017), and little change has been observed on gender-based job segregation among females who have not completed high school in the USA (Blau et al., 2013). Women still lag behind men in the labour market, holding a small share of managerial roles and relatively low quality jobs with limited opportunities for growth (Bertrand, 2018; Mühlau, 2011; Santero-Sanchez et al., 2015; Siphambe, 2001).

The main factors that have been driving gender inequality in the labour market include differences in human capital endowments (Blau, 1998; Blau & Kahn, 2017), productivity (Abegaz & Nene, 2018, 2023; Dosi et al., 2020; Van Biesebroeck, 2011), the penalty of motherhood (Agüero & Marks, 2008; Cukrowska-Torzewska & Matysiak, 2020; Keene & Reynolds, 2005), occupational segregation (Blau et al., 2013; Levanon et al., 2009; Solberg & Laughlin, 1995), and discrimination (Blau & Ferber, 1987; Hallward-Driemeier & Gajigo, 2015; Kunze, 2005; Sawhill, 1973; Sultana & Zulkefli, 2013). Studies have also documented that there is a difference in job preference, with women preferring less risky jobs with lower expected income over high risk jobs with higher expected incomes (Cortés et al., 2023; Jung et al., 2018). Women have also shown a higher distaste for longer commuting distances (Hu, 2021; Petrongolo & Ronchi, 2020; Roberts et al., 2011), which contributes to gender earning gaps. Moreover, laws may prohibit women from performing strenuous jobs or jobs that involve high risk, hence resulting in men earning higher incomes than women to compensate for such undesirable job attributes (Jung et al., 2018; Weichselbaumer & Winter-Ebmer, 2007). Meanwhile, some studies have found little or no difference in job characteristics between men

and women that could contribute to the gender earning gap (Jacobs & Steinberg, 1990; Kilbourne et al., 1994; Palme & Wright, 1992; Wuestenenk & Begall, 2022). Emerging studies from developed countries found that, following the narrowed gender gap in human capital (Bertrand, 2018) and overall improvements in gender issues (WEF, 2023), child penalty remains the most important factor for gender variations, explaining most of the remaining gender earning gap (Cortés & Pan, 2023; Kleven, Landais, Posch, et al., 2019; Kleven, Landais, & Søgaard, 2019).

However, a limited number of studies have investigated the gender gap in total monetary compensation, non-monetary work conditions, and work-related wellbeing (Green et al., 2013; Santero-Sanchez et al., 2015). Literature about gender differences in total earning, non-monetary work conditions, and work-related wellbeing in developing countries is particularly scarce (Fabry, Van den Broeck, et al., 2022). Because it is common for workers to hold multiple jobs and work overtime (Asravor, 2021; Dickey et al., 2011; Tazhitdinova, 2022) and because evidence shows that men are more likely to moonlight than women do (Asravor, 2021; Auray et al., 2021; Magadley, 2021; Sharma & Rautela, 2024) more research will help create a more fulsome picture of the gender gap. Indeed, considering income or wage only from the primary job using firm-level data or tax reports may underestimate the true gender earning gap in developing countries since income obtained from moonlighting has been underreported (Sharma & Rautela, 2024).

Similarly, there are gender differences in non-monetary job aspects and work-related wellbeing that have overlooked in the literature (Clark, 1997; García-Bernal et al., 2005; Hersch, 1998; Stier & Yaish, 2014; Warren & Lyonette, 2020; Westover, 2012), particularly in the case of developing countries, where such differences can be more widespread than in developed countries due institutional and other factors (Arora et al., 2023; Fabry, Van den Broeck, et al., 2022; Lo Bue et al., 2022). Investigating the gender earning gap in monetary and non-monetary job qualities is of paramount importance since wages are not the only outcome in which women receive less in the labour market (Ficapal-Cusí et al., 2018; Kristal et al., 2020). Moreover, non-monetary job qualities affect job satisfaction (Raziq & Maulabakhsh, 2015), mental health, and wellbeing (Faragher et al., 2013).

This study addresses whether there are gender differences in monetary and non-monetary incentives and work-related wellbeing among workers in the manufacturing sector in Ethiopia. Using two rounds of matched firm-worker data collected from agro-processing and leather firms in Ethiopia, the study investigates gender differences in these rarely addressed policy issues (Green et al., 2013; Santero-Sanchez et al., 2015).

The study contributes to the emerging literature in the following ways. First, gender earning gaps are investigated from both primary jobs (where workers work full-time) and from all sources, including moonlighting and overtime work. Failure to account for this additional non-primary income may lead to bias. Because of women's dual responsibilities, they may work

and earn less income from moonlighting, overtime work, and other sources. Thus, the actual gender earning difference could be broader than what is accounted for in the literature (Asravor, 2021; Auray et al., 2021; Magadley, 2021; Sharma & Rautela, 2024). Second, the study focuses on the gender gap among workers most of whom work full-time, which allows to control for a part-time wage penalty that women can experience due to motherhood (Bardasi & Gornick, 2008; Weeden et al., 2016). Third, the study uses both worker- and firm-level data collected in two rounds in 2017 and 2018, while most previous studies use only worker- or only firm- level data, which may lead to inconsistent and biased estimates. Fourth, in addition to the earning gap, gender gaps in other monetary rewards such as fringe benefits (i.e., accommodation, free/subsidized meals, and transport services) are investigated. Ignoring these fringe benefits may bias the gender gap estimation since there is usually substitution between cash-earning and non-cash benefits (Amuedo-Dorantes & Mach, 2003; Triplett, 1983; Woodbury, 1983). Fifth, the paper examines gender differences in non-monetary job aspects and work-related wellbeing, including differences in job-related stress, working conditions (such as the physical, environmental, and experiential working conditions), satisfaction, and happiness.

The remaining section of the paper is organized as follows: Section two presents a literature review on earning differentials in Africa. Section three presents the data and methodology used for the study, while section four presents the results from both descriptive statistics and an econometric analysis. Section five presents the discussion of the results and the conclusion.

2. Literature review: Gender gap in the labour market in Africa

According to the World Economic Forum (2023), Sub-Sahara Africa (SSA) stood 6th in overall in gender parity in 2023, which includes political empowerment, economic participation and opportunity, educational attainment, and health and survival. However, the region ranked the lowest in closing the gender gap in educational attainment, one of the key factors for gender equality in the labour market. Moreover, women disproportionately work in the informal sector, where there is no or little legal protection. For instance, while around 80% of the new jobs created in the informal sector have been for women, the figure for men has been 67% in 2022(WEF, 2023). This section provides a literature review of gender earning gaps in an African context.

Using a firm-level census data of large and medium firms in Ethiopia collected between 1996–2010 Abegaz & Nene (2023), investigated gender gaps in average wage and productivity. They investigated the changes on average wages and average productivity when the share of female workers changes. Their research found that average wages and average productivity decreases as the share of female workers increases. Further, the research indicated that unskilled male and skilled female workers were segregated in to low paying firms. However, the study does not control for workers' characteristics including human capital, and used ratios instead of female dummy, the former of which is problematic for interpretation (Lien et al., 2017; Tu et al., 2004; Wiseman, 2009). Similar results have been found in different countries in Africa, where gender-based wage and productivity differences have been found, primarily due to human capital differences and the sorting of women in to low wage and low productivity firms (Abegaz & Nene, 2018; Fafchamps et al., 2009; Temesgen, 2006). Appleton et al. (1999) provide the earliest study, to the authors' knowledge, that investigated gender earning gaps in Ethiopia (among youth aged 15-30 years old), Uganda, and Cote d'Ivoire, and gaps ranging from 4% in Cote d'Ivoire, 24% in Ethiopia to 33% in Uganda.

Results from 2003-2004 and 2018-2019 household surveys in Nigeria show that the gender earning gap declined over time, particularly among high-skilled workers (Orji & Nwosu, 2023). The key factors contributing to the gender earning gaps have been attributed to differences in urban residence, unionization, education level, and occupational choice. Consistently, Bhorat & Goga (2013) found in South Africa in 2007 that the gender gap is the highest at the bottom of the wage distribution, which contradicts results from the United Kingdom (Chzhen & Mumford, 2011). A study using the 2009 Living Standard Survey in Nigeria, on the other hand, found that skill-disaggregated gender earning gaps vary with the types of firms, where the gap is high for low-skilled workers in the private sector and high-skilled workers in the public sector (Aderemi & Alley, 2019). Using the 2005 Labour Force Survey in Ethiopia, Kolev & Robles (2010) also found that gender wage gaps at private firms is higher than in the public

sector, and that the gender wage gap is highest in the informal sector. The authors found that this was primarily driven by human capital differences and discrimination against women.

Consistently, the studies found that female workers in Africa have been earning less than their male counterparts, with different magnitudes across countries, industries, and skill levels of workers. Some of the main factors explaining the gender earing gaps in Africa include differences in productivity (Abegaz & Nene, 2023); segregation and sorting of women into low paying firms and occupations (Abegaz & Nene, 2018; Aderemi & Alley, 2019; Fafchamps et al., 2009; Kolev & Robles, 2010; Orji & Nwosu, 2023); and human capital differences (Appleton et al., 1999; Temesgen, 2006) stemming from unequal access to education to girls and boys (WEF, 2023). Studies also found that, overall, gender earning gaps are lower in the public sector than the private sectors (Aderemi & Alley, 2019; Kolev & Robles, 2010; Siphambe, 2001). While this public-private sector gap has declined over time, it remains large (Orji & Nwosu, 2023). However, the studies found substantial differences in gender earning gaps across countries (Fafchamps et al., 2009; Siphambe, 2001). Results on whether the gender earning gaps are statistically different from the gender productivity gaps are inconclusive and country-specific (Abegaz & Nene, 2023; Siphambe, 2001; Van Biesebroeck, 2011).

Only one study—Fabry, Van Den Broeck, et al. (2022)—was found to have investigated the monetary and non-monetary gender-based disparity in the African context. Combining employer-employee data collected from 525 workers selected from 10 agro-industrial companies and other small-scale farm in Senegal, they found substantial gender gaps across firms but not within a firm. These gaps were found to be attributable to differences in job characteristics, rather than gender, age, and migration background. They found that women were more satisfied than men, despite earning low wage rates and receiving fewer fringe benefits (Fabry, Van den Broeck, et al., 2022). This paper complements the studies conducted in Africa in general and the study that addressed both monetary and non-monetary jobs aspects, in particular. Our study used a panel data, addressing time-invariant heterogeneities, controlling for part-time gender earning penalty, considering income obtained from both primary employment and from all sources, and with a different context. Although some of the studies were published recently, most of the studies conducted in Africa and cited above used old data, after which countries have been rectifying laws, developing projects and taking various measures to increase gender parity (Hallward-Driemeier & Gajigo, 2015). Thus, because current gender earing gaps could be different from those a decade or more ago, an investigation of gender earning gaps using more recent data is warranted.

3. Data and method

3.1 Sampling and data

The data for this study is based on two rounds of matched employer-employee surveys from agro-processing and leather sectors in Ethiopia. The firm-level survey constitutes a census of all large enterprises, and a random sample of small enterprises found in the six most populous cities in the country: Addis Ababa and its surrounding areas, Gondor, Mekelle, Adama, Dire Dawa, and Hawassa.

The first-round survey was conducted between June and September 2017, and consisted of 610 workers and 476 firms located in different parts of the country. The second-round survey was conducted between September and December 2018 from 400 of the 476 firms surveyed in the first round and 552 workers (413 workers were panel members and 139 were data representing similar characteristics and positions, as the workers could not be reached). Meanwhile, 58 workers could not be replaced and, hence, were not included. The 76 firms that were not interviewed in 2018 include firms that were closed (42%), those that could not be reached because the firm had changed its location (32%), those that were dropped from the sample because they were found to employ fewer workers than the established size cut-off of number of workers (14%), those that were dropped because of identification number duplication (8%), and those that refused to offer responses (4%).

The selection of the sample workers involved two stages. First, 71 of the 400 firms were randomly selected. Then 1 to 20 workers were randomly selected for interviews from each firm, proportional to the firms' size (an average of 9.3% of the workers in each firm). Hence, the econometric analysis is based on the 71 firms for which both worker- and firm-level data exists.

The employer-employee data contain detailed information. Two structured survey instruments were designed and developed for the worker- and firm- level surveys. The enterprise instruments contained questions on entrepreneur profile, such as education, age, gender and experience, as well enterprise characteristics, such as size, years of operation, market orientation, and business performance and productivity indicators, wages, industrial relations and management practices. The employee data contain detailed information on the characteristics of employees and job quality indicators, including monetary benefits, non-monetary benefits, and work-related wellbeing. To correct for price differences due to inflation, the World Bank's 2014 consumer price index was used (WB, 2023).

3.2 Measurement of job quality

Job quality is multidimensional (Cazes et al., 2015) and, for this study, three major dimensions are considered: (i) monetary compensation, (ii) non-monetary compensation, and (iii) work-

related wellbeing, each having sub-components. Monetary compensation was measured using a number of variables, including (i) last month income from normal pay, (ii) last six months income from normal pay, (iii) wage rate calculated by dividing last month earned income by the number of worked hours, and (iv) last six months income from all sources including from moonlighting and overtime work. The first three indicators of monetary compensation allow for a consistency check of results when considering short-term versus longer-term incomes when measuring gender gaps. The last indicator allows for the examination of gender earning gaps from overtime work and moonlighting, since studies have documented that men are more likely to have multiples jobs than women do (Asravor, 2021; Magadley, 2021). This is necessary because taking income only from a primary source may underestimate the true gender earning gap.

Eight non-monetary job quality indicators are considered: whether a worker (i) receives house from their employer, (ii) receives a free or subsidized meal, (iii) is able to take all entitled leaves, (iv) received on-the-job training, (v) has a permanent employment contract, (vi) received a bonus in the last 12 months, (vii) has good career advancement opportunities, and (viii) received benefits (i.e., how many of the last seven benefits a worker received).

As indicators of work-related wellbeing, the following were considered: (i) the probability of feeling that work is often stressful, (ii) the satisfaction level on the overall working conditions having five Likert scales (ranging 1 as bad and 5 as very good), (iii) job happiness, measured in 10 Likert scales (ranging from 1 very unhappy and 10 as very happy), (iv) the rating of the physical working condition, such as the temperature, humidity, noise, dust and work space (measured in four Likert scales ranging from 1 very poor to 4 as very good), (v) the rating of experiential factors such as the fatigue, monotony, unfavorable posture during work, etc. (measured in similar scale to physical working condition), and (vi) rating of the organizational factors, such as shift duration, work scheduling, the behaviour and the supervisors, etc. (measured in a similar scale to physical working condition).

3.3 Analytical Technique

As noted earlier, the primary goal of this paper is to investigate the gender earning gap on job quality as measured by monetary and non-monetary job compensation and work-related wellbeing. Research leveraged the unique value of the panel data to estimate the Mincerian log earnings function in panel models. Analysis began with a simple model that includes only time fixed effects and female dummy as follows:

$$(1) \qquad y_{ijt} = \alpha + \beta F_{ij} + \delta T_{ij} + \varepsilon_{ijt} ,$$

where y_{ijt} denotes monetary benefit, nonmonetary benefits, and work-related wellbeing indicators for worker *i* working at factory *j* at time *t*. F_{ij} denotes a female dummy for individual

i working at factory *j*, taking the value one for female workers and zero for male workers. T_{ij} denotes survey year dummy, take the value one for the 2018 survey and zero for the 2017 survey. A statistically significant and negative value for the coefficient of interest, β, for an outcome variable, say income, implies that women earn less (unconditional) mean income than men earn, after controlling for the time fixed effects.

Following this, worker-level, time-invariant heterogeneities are controlled for using the Mundlak random effects approach (Chamberlain, 1982; Mundlak, 1978) and examined to reveal if the female dummy coefficient changes. The Mundlak approach is chosen, rather than the fixed effects approach, because some of the covariates that we have interest do not change over time and similar results can be found using the fixed effects mode – presented as robustness check. The modified model is given by:

(2) $y_{ijt} = \alpha + \beta F_{ij} + \delta T_{ij} + \psi_i + \varepsilon_{ijt}$,

where $\psi_i = \alpha_1 \bar{x}_{1i} + \alpha_2 \bar{x}_{2i}$ – time demeaned values of worker *i*'s household characteristics that change overtime. Controlling for worker-level time-invariant heterogeneities allows for the removal of heterogeneity and estimation of consistent coefficients, ceteris paribus.

As highlighted earlier, human capital differences are key factors that lead to differences in productivity and earning between men and women. This is examined by controlling for these variables, (H_{ijt}) including whether a worker has college education, computer literacy, years of schooling, whether they received training, work experience, age of the workers and hours of work as follows:

(3) $y_{ijt} = \alpha + \beta F_{ij} + \sum_k \mu_k H_{ijt} + \delta T_{ij} + \psi_i + \varepsilon_{ijt}$,

Controlling for human capital differences between female and male workers is expected to reduce the magnitude and/or change the sign of the female dummy. A negative and statistically significant β on positive attributes of job quality implies that female workers receive fewer good quality job attributes than male workers receive after controlling for human capital differences. This may occur when women choose family-friendly but low paying jobs, when they are sorted in to low paying and low productivity jobs, or when they are discriminated against. To control for productivity differences, lagged values of average sales per worker (P_{jt}) are included and gender gaps in quality of jobs are examined as follows:

(4) $y_{ijt} = \alpha + \beta F_{ij} + \sum_k \mu_k H_{ijt} + \lambda P_{jt} + \delta T_{ij} + \psi_i + \varepsilon_{ijt}$,

Finally, the gender gaps in job quality are investigated by controlling for firm, manager, and worker characteristics in addition to the covariates discussed before as follows:

(5) $y_{ijt} = \alpha + \beta F_{ij} + \sum_k \theta_k X_{ijt} + \sum_k \theta_k M_{ijt} + \sum_k \theta_k W_{ijt} + \delta T_{ij} + \gamma S_{jt} + \varphi_j + \psi_i + \varepsilon_{ijt}$,

where *X*, *M* and *W* are vectors of firm, manager and worker characteristics, including the covariates discussed earlier. S_{jt} denotes the sector dummy taking a value of one for leather firms and zero for agro-processing firms. φ_j denotes time-invariant firm-level heterogeneities. ε_{ijt} denotes the error term, and firm-level cluster standard errors are estimated. The coefficients α, β, θ_k and γ are population parameters to be estimated.

There could be a potential reverse causality between firm performance and labour compensation. For instance, Dunne et al. (2004) found strong correlation between productivity and wage, both at levels and growth rates. Productivity is one of the main factors affecting wage rates (Abegaz & Nene, 2023; Dosi et al., 2020; Van Biesebroeck, 2011). A better firm performance may lead to higher labour compensation. Similarly, higher labour compensation may either reduce profits of the firm due to high labour cost, or may increase workers' productivity and, thus, firm performance. To control for potential reverse causality problems, lagged value of sales per worker are considered because the firm's previous year's performance may affect wages a year after, but not vice versa (i.e., this year's labour compensation does not affect the previous year's performance).

Different panel model specifications such as linear, binary response, and ordered models were used depending on how the dependent variables are measured. By following the literature (Abegaz & Nene, 2023; Conyon et al., 2003; Fafchamps et al., 2009; Kolev & Robles, 2010; Orji & Nwosu, 2023; Perugini & Pompei, 2017; Temesgen, 2006), considering the Ethiopian context, and controlling for various heterogeneities that may affect the identification of the gender gap, several covariates are controlled for. A summary of the variables used in all the estimations are presented in the Appendix: Summary statistics.

Moreover, as a robustness check, fixed effects models are considered and the results are presented in the later section. The extended Oaxaca–Blinder decomposition (Jann, 2008; Nielsen, 2000; Sinning et al., 2008) is also used to disentangle the total gender gap in to a part that is because of endowment differences between women and men (the explained part) and a part that is not explained by the covariates used in the model (the unexplained part). The standard model of the Oaxaca–Blinder gender earning gap decomposition is given as follows.

Suppose that the wage functions of female and male workers are given as:

$$(6)\quad w_m = X_m\beta_m + \epsilon_m$$

$$(7)\quad w_f = X_f\beta_f + \epsilon_f$$

Where the subscripts *m* and *f*, respectively denote male and women, w is wage rate, X denotes the explanatory variable including human capital indicators for women and men, β denotes population parameters to be estimated, and ϵ denotes error terms.

Subtracting equation (6) from (7) gives as

$$(8)\ w_m - w_f = \left(X_m\beta_m - X_f\beta_f\right) + \epsilon_m - \epsilon_f$$

Adding and subtracting $X_m\beta_m$ to obtain worker attributes in terms of "male prices" gives the following:

$$(9)\quad \underbrace{w_m - w_f}_{\text{Total log wage difference}} = \underbrace{\left(X_m - X_f\right)\beta_m}_{\text{Explained}} + \underbrace{X_f\left(\beta_m - \beta_f\right) + \epsilon_m - \epsilon_f}_{\text{unexplained}}$$

The first source of the gender gap is associated with differences between men and women in human capital, including experience as well as other observable differences, which affect productivity, and, hence, wage rates. The unexplained part of the wage gap is associated with gender-based discrimination and because of factors not controlled for in the model (Blau & Kahn, 2017; Blinder, 1973; Oaxaca, 1973). Following the literature (Blau & Kahn, 2017; Menon & Rodgers, 2009; Stier & Yaish, 2014; Temesgen, 2006) and the Ethiopian context, several covariates are controlled for. The extended model of the Oaxaca–Blinder decomposition was used, which is invariant to the choice of the base variables for categorical covariates (Jann, 2008; Nielsen, 2000).

4. Results

This section presents results from both descriptive statistics analysis and econometric models discussed before.

4.1 Descriptive results

Table 1, below, presents the inclusiveness of the analyzed jobs in terms of sex, age, skill, and education level of the workers, based on the worker level data. The results show that the firms mainly employ a relatively young group of workers, with average age of 32.4 years old. Some 32% of female and 20% of male workers are aged between 16 and 25 years and 36.7% of female and around 41% of male workers are aged between 25 and 35 years. On average, male workers are older (34 years) than women (31 years). The minimum age of the workers is 16 years while the maximum is 77 years old.

Regarding the inclusiveness of the jobs in terms of the skill of workers, a larger percentage of female workers are low skilled (41.6% female, versus 13.8% male). Around 17% of female and 30% of male workers are high skilled. Only around 16% of female and 32% of male workers have vocational or college education. A majority of women have a primary education level, with 7.9 years of schooling on average. Meanwhile, a majority of male workers have secondary school education, with 10.2 average years of schooling. Less than a quarter of women (22%) are computer literate, whereas the figure is 40.5% for male workers. These results show that the two sectors employ less educated and less skilled women relative to men. The workers survey results are consistent with the results found from the firm survey, where around 25%, 33% and 43% of the workers are low-, medium- and high-skilled, respectively. The agro-processing sector employs relatively younger and better educated workers than the leather sector.

Figure 1 presents the share of women as employees, business owners, and managers in the agro-processing and leather sectors that were compiled from the firm-level data from the two survey rounds. The results show that only a small percent of women (12.2%) are registered as business owners; this share is relatively higher in the agro-processing sector than in the leather sector. This clearly shows that much work is needed to improve the business ownership of women, which has been also low (around 20%) in advanced countries as well (Cribb et al., 2019; Deller et al., 2017; USCB, 2021). The share of women as the main managers of the firms is even smaller than their share as owners of the business: only 8.9% of women are the main managers of the firms. Previous studies also found that women have had fewer managerial roles than men for various reasons; however, this gender difference has been declining over time in other countries (Blau & Kahn, 2017; Fernandez-Mateo & Fernandez, 2016; Siphambe, 2001; Tharenou, 1999). Analysis of the data further shows that women manage 68% of their own businesses and 3.8% of the businesses owned by men, indicating

that increasing business ownership of women will improve their managerial roles as well. At 15.3%, the overall share of women in any type of managerial and supervision role is also small. In terms of employee share, women constitute 36.9% of workers in the two sectors, with no major difference between the two sectors.

Table 1. Age, gender and skill inclusiveness of jobs (percent)

Inclusiveness indicators		Total	Female	Male	Agro-processing	Leather
Age group:						
	[16 – 25)	25.9	31.9	20.4	24.7	30.0
	[25 – 35)	39.1	36.7	41.2	41.2	32.4
	[35 – 45)	20.7	20.7	20.8	21.8	19.2
	[45 – 55)	9.8	7.4	12.1	9.1	10.5
	[55 – 65)	4.2	3.2	5.0	3.3	6.6
	≥ 65	0.4	0.2	0.5	0	1.4
	Mean age	32.4	31	34	32.2	33.2
Skill type:						
	Low	34.2	41.6	27.1	31.8	25.4
	Medium	43.3	41.6	42.9	45.7	31.9
	High	23.6	16.8	30.1	22.5	26.7
Education level:						
	Has vocational or college education	24.2	16.1	31.6	26.1	16.7
	Mean years of schooling	9.2	7.9	10.2	9.3	8.6
	Computer literate	31.6	22.2	40.5	33.1	27.1
No. of workers (firms)		1,424 (1,089)	678 (161)	746 (172)	288 (521)	1,136 (568)

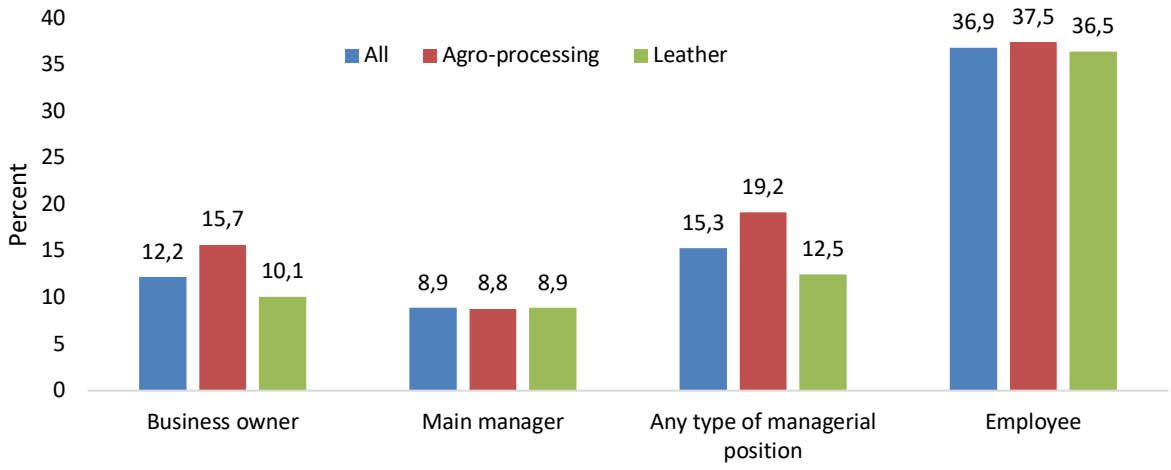

Figure 1. Percentage of female workers with different roles; we complied it from firm-level data

Table 2 presents unconditional mean differences in earning, non-monetary job quality indicators, and work-related wellbeing between female and male workers over the survey period, along with a t-test comparing unconditional mean values. In all the survey rounds, on average, women earned less than men did. For instance, considering the last 30 days of earning from the primary job, female workers earned ETB 777 (i.e., 39%) less income than male workers, and the difference is statistically significant. Similarly, the last six months net earnings from all sources of income of women (ETB, 8,535) is substantially (by 41%) and statistically significantly less than the earnings of men (ETB 14,445). By examining the cumulative distribution of income, women are observed to have earned less than their male counterparts. This gap is observed in almost all income distributions, with statistically significant differences, according to the Kaplan (2019) equality of cumulative distributions test (results in the appendix: Figure 4A). Moreover, a larger percentage of men (49%) than women (38%) work overtime, and a larger percentage of men (11%) than women (7%) moonlighted and earned additional income.

Table 2 also presents gender differences in non-monetary and work-related wellbeing. The results show that statistically significantly larger percentages of men than women received house and free or subsidized meal or trainings. Similarly, a statistically significantly larger percentage of men (35%) than women (30%) received on-the-job training. However, a relatively large percentage of women (61%) than men (53%) reported that they often took their entitled leaves.

The results on gender differences in work-related wellbeing are mixed, with most of differences being not statistically significant. One of the main theoretical and empirical explanations for gender earning gaps is that women prefer to work fewer hours than men do due to extra responsibilities at home (Blau & Kahn, 2017). However, samples in this study represent full-time workers who worked some two hours longer per week than the maximum working hours allowed in the national labour proclamation (48 hours per week[1]) and there are no statistically significant gender differences in normal working hours. Also, no statistically significant unconditional mean gender differences were found in terms of job-related stress and happiness. However, the average scores of men for physical and experiential working environments are higher than that of female workers and the differences are statistically significant.

[1] FEDERAL NEGARIT GAZETTE OF THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA: Labour Proclamation; ADDIS ABABA 5th September, 2019

Table 2. Gender difference in earnings and fringe benefits

Gender gap on job quality	2017		2018		Total		
	F	M	F	M	F	M	Diff. (F- M)
Monetary job quality indicators							
Last six months net income from normal pay (primary job)	7009	11591	7294	11307	7,146	11,458	-4312***
Last six months net income from all income sources	8298	14258	8548	13806	8,535	14,445	-5910***
Last month net income from normal pay	1196	2025	1270	1990	1232	2008	-777***
Wage rate (ETB/hour)	6	10	7	10	6	10	-4***
Non-monetary job quality indicators							
Received house (1/0)	0.02	0.04	0.01	0.05	0.02	0.04	-0.02**
Received free or subsidized meal (1/0)	0.33	0.41	0.23	0.29	0.28	0.35	-0.07***
Always able to take all the entitled leave (1/0)	0.62	0.50	0.60	0.57	0.61	0.53	0.08***
Received on-the-job training (1/0)	0.37	0.42	0.22	0.28	0.30	0.35	-0.05**
Has permanent employment contract (1/0)	0.87	0.88	0.90	0.92	0.89	0.90	-0.01
Employer provides good career opportunity (1/0)	0.79	0.72	0.41	0.43	0.61	0.59	0.02
Received overtime payment in the last 6 months (1/0)	0.45	0.61	0.30	0.35	0.38	0.49	-0.12***
Earned income in the last 6 months from other sources (1/0)	0.11	0.13	0.06	0.14	0.07	0.11	-0.04**
Received a bonus in the last 6 months (1/0)	0.19	0.18	0.25	0.29	0.22	0.23	-0.01
Employer provides good career opportunity (1/0)	0.79	0.72	0.41	0.43	0.61	0.59	0.2
Work-related wellbeing							
Weekly working hours	49.0	49.7	49.3	50.4	49.4	49.8	-0.4
Average happiness scale on current job (1 = very unhappy, …, 10 = very happy)	6.40	6.23	5.90	6.0	6.13	6.04	0.09
The work is stressful	0.31	0.41	0.45	0.43	0.38	0.42	-0.04
Physical working environment: temperature, humidity, noise, dust, work space, etc. (1 = very poor, …, 4 = very good)	2.19	2.32	2.56	2.61	2.37	2.45	-0.09*

Gender gap on job quality	2017		2018		Total		
	F	M	F	M	F	M	Diff. (F- M)
Experiential working environment: fatigue, monotony, unfavorable posture, etc. (1 = very poor, …, 4 = very good)	2.29	2.43	2.58	2.62	2.43	2.52	-0.09**
Organizational working environment: shift duration, work scheduling, behavior of supervisor, etc. (1 = very poor, …, 4 = very good)	2.09	2.20	2.20	2.21	2.14	2.21	-0.06
Satisfaction level with the overall working condition (1 = very dissatisfied, …, 5 = very satisfied)	3.45	3.36	3.27	3.28	3.36	3.32	0.01
Number of observations (workers)	294	316	273	279	678	746	

Note. ETB stands for Ethiopian Currency, Birr. * p<0.10, ** p<0.05, *** p<0.01.

Figure 2 presents the skill-disaggregated gender earning gap, which compares six months of net income from all sources and from normal pay (the primary job). The results clearly show that women earned less income than male workers of similar skill level. For instance, low-skilled women earned 28% (or ETB 2,282) less net income in the last six months from all sources of income than low-skilled men workers. The differences are statistically significant (p-value = 0.000). Overall, women of different skills earned 25-36% less income than their corresponding skilled workers. Various factors, including compensating variation, skill-differential, differences in preference, and discrimination may explain the observed gender gap (Blau & Kahn, 1996, 2017; Nielsen, 2000; Sawhill, 1973; Stier & Yaish, 2014; Stiglitz, 1973), which descriptive statistics results don't show. The next section presents gender gaps after controlling for several covariates.

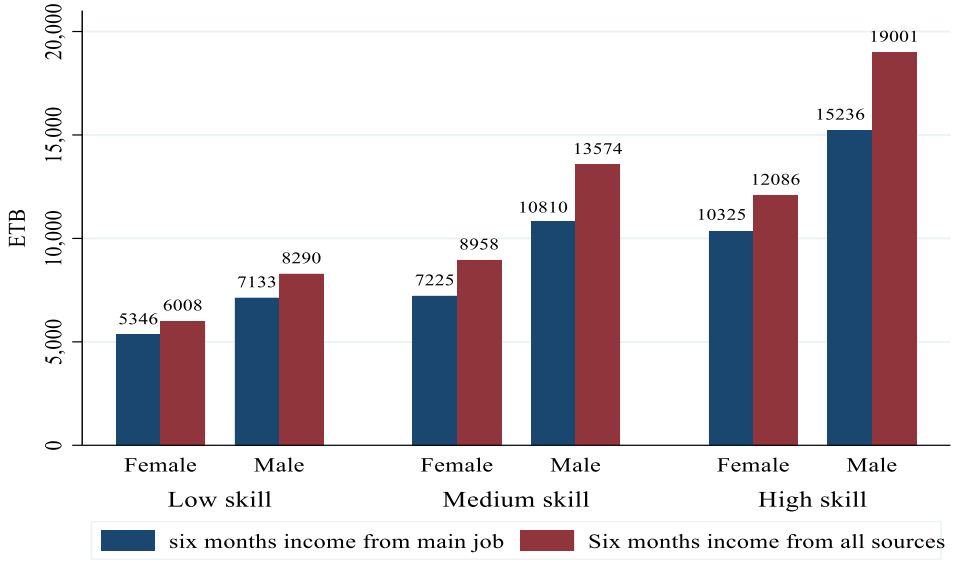

Figure 2. Gender earning gap by skill of the worker

4.2 Econometric results

This section presents regression results related to gender gaps in monetary and non-monetary aspects of jobs, as well as work-related wellbeing.

4.2.1 Gender differences in monetary benefits

Table 3 presents regression results from the panel wage equation. Column (1) presents the unconditional gender gap on the last six months income from the primary job, after controlling for year fixed effects related to the survey. The results shows that the female dummy is negative and statistically significant, indicating that women earn around 35% less salary than men do. Controlling for the worker fixed effects (i.e., time-invariant worker-level heterogeneities) explains 2.3% of the gender salary gap (Column 2). Further controlling for human capital indicators substantially reduces the gender gap from 32.7% to 18.8% (Column 3). This implies that human capital differences explains 40% of the total gender earning gap, indicating that human capital remains an important factor for gender earning gaps in developing countries. Meanwhile the role of human capital differences has declined, if not been eliminated, in developed countries due to the convergence of education gaps between men and women (Bertrand, 2018, 2020; Cortés & Pan, 2023; Kleven, Landais, & Søgaard, 2019).

Controlling for firm-level productivity, sales per worker does not reduce the gender earning gap (Column 4). This may not be surprising, however, because of the focus on firm-level average productivity, not worker-level productivity. This tight focus is due to a lack of data and because many of the tasks may require team work, in that identifying the productivity of each worker separately could be difficult. It seems that controlling for additional covariates including capital per worker, city fixed effects, firm, and manager characteristics does not substantially affect the gender gap in salaries, as it slightly increased the gap to 20.4% (Column 5).

Overall, the results show that there is a consistent and statistically significant gender gap in earning, where women earn around 35% less salary than men do. Close to 14 percentage points of this gender earning gap is due to differences in human capital while 2.3% of the gap is due to time-invariant worker-level heterogeneities. Most of the human capital indicators are statistically significant and the magnitude of the coefficients are large. For instance, workers who have college or vocational training earned 23.1-24.5% higher salary than workers who do not have college certificates. These results show that one mechanism to reduce the gender earning gap in developing countries is to avoid the gender gap in education access, which remains large (WEF, 2023).

Table 3. Gender earning gap in the last six months earning from the primary job. Panel regression

	Last six months net income from primary job (ETB, ln)				
	(1)	(2)	(3)	(4)	(5)
Female dummy (1/0)	-0.350***	-0.327***	-0.188***	-0.190***	-0.204***
	(0.046)	(0.046)	(0.044)	(0.045)	(0.046)
Survey year fixed effects	0.013	0.000	0.016	0.011	0.010
	(0.059)	(0.059)	(0.062)	(0.062)	(0.067)
Has vocational or college education			0.234***	0.231***	0.245***
			(0.071)	(0.072)	(0.074)
Years of schooling			0.035***	0.034***	0.030***
			(0.007)	(0.007)	(0.006)
Computer literacy			0.110**	0.114*	0.094
			(0.056)	(0.059)	(0.060)
Received on-the-job training			0.138***	0.156***	0.132***
			(0.037)	(0.036)	(0.036)
Total work experience (years)			0.004	0.004	0.004
			(0.003)	(0.003)	(0.003)
Age of the worker			-0.011	-0.008	-0.003
			(0.011)	(0.012)	(0.012)
Commuting distance (kg)			-0.001	-0.003	-0.004
			(0.005)	(0.005)	(0.005)
Normal working hours per day			0.005	0.011	0.006
			(0.019)	(0.020)	(0.020)
Sales per worker(ln)				0.006	-0.017
				(0.021)	(0.035)
Capital per worker (ln)				0.024	0.025
				(0.022)	(0.025)
No. of household members working for pay					-0.056**
					(0.023)
There is collective bargaining agreement					0.033
					(0.054)
Permanent employment contract					0.110*
					(0.063)
Received transport service					0.071
					(0.050)
Received housing of any type or allowance					0.048
					(0.120)
Received free or subsidized meal					0.056
					(0.056)
Was unemployed or in education before this job					0.073*
					(0.040)
I feel that my work is often stressful					0.082*
					(0.042)
Leather firm (1/0)					-0.437***
					(0.160)
Manager's years of experience					-0.011
					(0.011)

	Last six months net income from primary job (ETB, ln)				
	(1)	(2)	(3)	(4)	(5)
Manager's years of work experience, squared					-0.000
					(0.000)
Manager's age					0.040*
					(0.021)
Manager age squared					-0.000*
					(0.000)
Ethiopian manager					-0.513*
					(0.280)
Manager's years of schooling					0.022
					(0.014)
Share of female in management & supervision					-0.071
					(0.567)
Employment size (ln)					-0.030
					(0.299)
Public owned business					-0.189
					(0.166)
Foreign owned firm					-0.568***
					(0.212)
The firm has a website					-0.097
					(0.147)
The firm exports (1/0)					0.160
					(0.154)
The firm is located inside the industrial parks					-0.014
					(0.074)
Firm's age, years					-0.004*
					(0.002)
Worker fixed effects (Mundlak)	No	Yes	Yes	Yes	Yes
City fixed effects	No	No	No	No	Yes
Firm fixed effects (Mundlak)	No	No	No	No	Yes
Constant	-16.439	8.429	-23.681	-13.848	-13.957
	(119.972)	(119.541)	(124.704)	(125.111)	(135.888)
Observations	1023	1023	1018	972	941
R2-overall	0.074	0.122	0.318	0.329	0.512
R2-within	0.072	0.102	0.258	0.261	0.302
R2-between	0.153	0.262	0.458	0.471	0.777
chi2	58.174	76.826	397.991	406.163	155733.868
p-value for joint significance of covariates	0.000	0.000	0.000	0.000	0.000

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

Comparing the last six months of income from the primary job alone may not present the complete gender earning gap, as men may moonlight and obtain additional income than women do (Asravor, 2021; Magadley, 2021; Sharma & Rautela, 2024). This is because women

could be busy attending to home activities and because moonlighting may take place at hours not suitable for women (e.g., during night). Hence, it is important to compare gender earing gaps by aggregating income from different sources.

Table 4 presents gender earning gaps on income obtained from all sources of income, with similar specifications and covariates as used in Table 3. The gender dummy shows that women earn 40% less income from all sources than men do, after controlling for time fixed effects (Column 1). Controlling for worker-level time-invariant heterogeneities reduces the gender earning gap to 38.2% (Column 2), whereas human capital and commuting distance differences reduce gender earing gaps to 20.9% (Column 3), indicating that human capital differences explain around 17.3 percentage points of the gender earning gap. Firm-level productivity, firm, and worker characteristics, and other covariates explain little of the gender earning gaps (Columns 4 and 5).

Comparing the results presented in Tables 3 and 4, the results show that considering only salary from a primary job (Table 3) underestimates the unconditional gender earning gap by about five percentage points, and the conditional earning gap by 2.1 percentage points. Due to the insufficient income from one job, a significant percentage of workers in Sub-Sahara Africa moonlight. Thus, considering the gender earning gap from only a primary job underestimates the true gender earning gap.

Table 4. Gender gap on total earning from all sources of income

Covariates	Last six months total net income from all sources (ETB, ln)				
	(1)	(2)	(3)	(4)	(5)
Female dummy (1/0)	-0.400***	-0.382***	-0.209***	-0.204***	-0.213***
	(0.046)	(0.046)	(0.042)	(0.044)	(0.046)
Has vocational or			0.258***	0.253***	0.264***
college education			(0.055)	(0.054)	(0.052)
Years of schooling			0.038***	0.036***	0.033***
			(0.006)	(0.006)	(0.006)
Computer literacy			0.064	0.084	0.069
			(0.058)	(0.056)	(0.056)
Received on-the-job			0.169***	0.190***	0.155***
training			(0.036)	(0.034)	(0.033)
Total work experience			0.003	0.004	0.003
(years)			(0.003)	(0.003)	(0.003)
Age of the worker			-0.010	-0.007	-0.005
			(0.009)	(0.009)	(0.011)
Commuting distance			-0.001	-0.003	-0.004
(kg)			(0.005)	(0.005)	(0.004)
Normal working hours			0.007	0.014	0.011
per day			(0.021)	(0.024)	(0.028)
Sales per worker(ln)				0.017	-0.012
				(0.020)	(0.032)

Covariates	Last six months total net income from all sources (ETB, ln)				
	(1)	(2)	(3)	(4)	(5)
Capital per worker (ln)				0.024	0.022
				(0.025)	(0.031)
Other covariates	No	No	No	No	Yes
Survey year fixed effects	Yes	Yes	Yes	Yes	Yes
Worker fixed effects (Mundlak)	No	Yes	Yes	Yes	Yes
City fixed effects	No	No	No	No	Yes
Firm fixed effects (Mundlak)	No	No	No	No	Yes
Constant	38.258	43.156	-44.168	-18.907	-44.857
	(32.930)	(32.315)	(123.326)	(121.901)	(133.342)
No. of observations	1285	1285	1018	972	941
R2-overall	0.095	0.138	0.358	0.371	0.565
R2-within	0.090	0.111	0.275	0.286	0.319
R2-between	0.187	0.279	0.534	0.530	0.826
chi2	74.526	77.246	370.810	453.093	91804.879
p-value for joint significance of covariates	0.000	0.000	0.000	0.000	0.000

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

One of the most common variables used to examine gender differences in earning is wage rate (i.e., whether men and women are equally paid for the same hours worked). It is an ideal variable even though it could be misleading in the presence of a significant share of part-time jobs, as women are more likely to work part-time than men (due to motherhood responsibilities) and because there is a part-time wage penalty (Bardasi & Gornick, 2008; Mumford & Smith, 2009; Weeden et al., 2016). In the sample analyzed, no statistically significant gender differences were found in monthly working hours, where both men and women worked full-time hours, thus implying that the wage rate is not biased due to part-time wage penalty. Hence, wage was considered as an additional variable to examine gender differences. Total earnings in normal working month were divided by total normal hours worked in the last 30 days preceding the surveys to obtain the wage rate.

The results presented in Table 5 show that the gender differences in wage rates are consistent with the results seen earlier in Tables 3 and 4. After controlling for time fixed effects, women earn 40.3% less in unconditional wage rates than men. Consistent with the previous results, worker-level time-invariant heterogeneities explain around 1.7 percentage points of the wage rate gap. Moreover, controlling for human capital reduces the gender gap to 22.1%, while average firm-level productivity, firm characteristics, and worker characteristics marginally affect the gender wage rate gap.

Table 5. Gender gap on wage rate

Covariates	Wage rate per hour (ETB, ln)				
	(1)	(2)	(3)	(4)	(5)
Female dummy (1/0)	-0.403***	-0.386***	-0.221***	-0.218***	-0.237***
	(0.042)	(0.043)	(0.036)	(0.038)	(0.038)
Survey year	0.010	0.007	0.047	0.051	0.035
	(0.015)	(0.014)	(0.036)	(0.037)	(0.037)
Has vocational or college education			0.228***	0.228***	0.249***
			(0.052)	(0.053)	(0.055)
Years of schooling			0.033***	0.033***	0.030***
			(0.005)	(0.006)	(0.005)
Computer literacy			0.110**	0.107**	0.089*
			(0.044)	(0.046)	(0.047)
Received on-the-job training			0.110***	0.110***	0.109***
			(0.029)	(0.028)	(0.029)
Total work experience (years)			0.007***	0.007***	0.006***
			(0.002)	(0.002)	(0.002)
Age of the worker			-0.009	-0.008	-0.005
			(0.010)	(0.010)	(0.010)
Commuting distance (kg)			0.007***	0.007***	0.006**
			(0.002)	(0.002)	(0.003)
Sales per worker(ln)				0.012	-0.004
				(0.016)	(0.018)
Capital per worker (ln)				0.001	-0.008
				(0.011)	(0.008)
Other covariates	No	No	No	No	Yes
Worker fixed effects (Mundlak)	No	Yes	Yes	Yes	Yes
City fixed effects	No	No	No	No	Yes
Firm fixed effects (Mundlak)	No	No	No	No	Yes
Constant	-18.814	-13.272	-92.860	-101.130	-69.929
	(29.601)	(29.197)	(73.515)	(74.446)	(74.443)
Observations	1285	1285	1018	972	941
R2-overall	0.130	0.185	0.442	0.435	0.598
R2-within	0.132	0.161	0.413	0.410	0.427
R2-between	0.196	0.300	0.544	0.521	0.828
chi2	92.772	112.262	472.856	524.302	53321.850
p-value for joint significance of covariates	0.000	0.000	0.000	0.000	0.000

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001. The same covariates are used as in Table 3.

Table 6 represents the gender earning difference, disaggregated by the skill level of the workers. While the same covariates are used that were used in the last columns of Tables 3, only the coefficient for gender dummies reported here for brevity. The results show that the gender earning difference varies with the skill level of the workers. The coefficients of the female dummies are negative for all three skill levels on all of the three income indicators: income from the primary job, income from all sources, and wage rate. The coefficients are all statistically significant, except on income from the normal pay variable for low- and high-skill workers. Female workers of all skill-levels obtained statistically significant low levels of income from all sources, compared to male workers; this is where the largest gender gap is observed among medium-skilled workers. Specifically, low-skilled, medium-skilled, and high skilled female workers earned 12.2%, 24.7% and 20.8% less income, respectively, from all sources in the last six months than their male counters, ceteris paribus. Consistently, female workers with different skills also earned lower wages than male workers of similar skill levels, where, again, the gender wage rate difference is the highest among medium skilled-workers.

Table 6. Skill-disaggregated gender earning gaps

Covariates	Last six months net income from normal pay (ETB, ln)	Last six months total net income (ETB, ln)	Wage rate (ETB, ln)
Female dummy (1/0)	**Low skill**		
	-0.121	-0.122*	-0.180***
	(0.075)	(0.070)	(0.052)
Female dummy (1/0)	**Medium skill**		
	-0.257***	-0.247***	-0.260***
	(0.060)	(0.068)	(0.046)
Female dummy (1/0)	**High skill**		
	-0.160	-0.208*	-0.201**
	(0.118)	(0.109)	(0.084)
Endowment differences	Yes	Yes	Yes
Non-wage job quality indicators	Yes	Yes	Yes
Worker characteristics	Yes	Yes	Yes
Manager/owner characteristics	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes
Sector fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Worker fixed effects (Mundlak)	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Sales per worker(ln)	Yes	Yes	Yes
Capital per worker (ln)	Yes	Yes	Yes
Constant	Yes	Yes	Yes
Observations: low skill	340	340	340

Observations: medium skill	384	384	384
Observations: High skill	217	217	217
R2-overall: low skill	0.514	0.538	0.521
R2-overall: medium skill	0.534	0.600	0.598
R2-overall: high skill	0.525	0.588	0.607
P-value for joint significance of covariates (similar for low, medium & high skills)	0.000	0.000	0.000

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

4.2.2 Gender difference in non-monetary job aspects

This section examines gender differences in non-monetary job beefits. The share of fringe benefits to total labour compensation has been increasing over time due to tax advantages to both workers and employers. However, analysis of the gender gap in fringe benefits has been largely overlooked, with a handful of exceptions (Amuedo-Dorantes & Mach, 2003; Fabry, Van Den Broeck, et al., 2022; Kristal et al., 2020; Lowen & Sicilian, 2009; Solberg & Laughlin, 1995). Because the existing, albeit limited, studies show that the gender gap in fringe benefits has been rising over time, there is a need for an investigation of this gap in a developing country context.

The results presented in Table 7 show that female workers are 3.9% less likely to receive housing from their employer, 3.4% less likely to receive subsidized or free meals at their workplace, and 1.1% less likely to receive on-the-job training than their male counterparts. However, they are 8.3% more likely to always be able to take all entitled leave than men are. No statistically significant differences were found in terms of having a permanent employment contract, receiving a bonus, or feeling that the employer provides good career opportunities.

Table 7. Gender gap in non-wage labour compensation. (Marginal effects)

	Received housing	Received free or subsidized meal	Always able to take all the entitled leave	Received on-the-job training	Permanent employment contract	Received bonus in the last 6 months	Employer provides good career opportunity	No. of fringe benefits received
Female dummy (1/0)	-0.039** (0.016)	-0.034* (0.019)	0.083** (0.036)	-0.011*** (0.035)	0.019 (0.020)	0.003 (0.007)	0.047 (0.033)	0.006 (0.183)
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manager/owner	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

characteristics								
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Worker fixed effects (Mundlak)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects (Mundlak)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	941	941	941	941	941	941	941	941
chi2	905.799	902.187	304.096	298.044	764.213	1057.151	312.814	398.506
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

4.2.3 Gender differences in work-related wellbeing

Analysis of the subjective assessment of work-related wellbeing, included (i) the probability of feeling that work is often stressful, (ii) the satisfaction level on the overall working conditions, (iii) happiness on job, (iv) a rating of physical working conditions, such as temperature, humidity, noise, dust, work space, etc., (v) a rating of experiential factors such as fatigue, monotony, unfavorable posture during work, etc., and (vi) a rating of the organizational factors, such as shift duration, work scheduling, behaviour of supervisors, etc., measured using different Likert scales. A Mundlak fixed effects ordered logit model was used to estimate the last five dependent variables and a Mundlak fixed effects logit model was also used to estimate the probability of experiencing stress at work. While the same covariates are used that were used in the last columns of Tables 3, only the coefficient for gender dummies reported here for brevity..

Results of the analysis reveal a number of notable outcomes. Although the coefficient is not statistically significant, the female dummy coefficient is negative on the probability of often feeling stress at work, signaling that males feel more stressed than females do in the workplace. Consistently, female workers are more satisfied, happier and rated the physical, experiential, and organizational factors more positively than male workers do. It seems that, while men earned higher incomes than women, women are more satisfied with the working conditions than men are. This could be because men have higher expectations than women do, or men's working conditions are poorer than the working conditions of women, which the study lacks data to confirm. This difference could also be attributable to men and women having different subjective assessments of the same working conditions. These results are consistent with the literature (Fabry, Van den Broeck, et al., 2022; Gazioglu & Tansel, 2006).

Table 8. Gender gap in subjective evaluation of working conditions

	I feel that my work is often stressful (1/0)	Satisfaction level with the current working condition (1= bad, …, 5 = very good)	Happiness on job (1=very unhappy, …, 10 = very happy	Rating of the physical env't: temperature, humidity, noise, dust, work space, etc. (1 = very poor, …, 4 = very good)	Rating of the experiential factors: fatigue, monotony, unfavorable posture during work (1 = very poor, …, 4 = very good)	Rating of the organizational factors: shift duration, work scheduling, behavior of supervisor (1 = very poor, …, 4 = very good)
Female dummy (1/0)	-0.247	0.273*	0.238*	0.483***	0.451***	0.352**
	(0.179)	(0.157)	(0.140)	(0.132)	(0.160)	(0.161)
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Manager/owner characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Worker fixed effects (Mundlak)	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects (Mundlak)	Yes	Yes	Yes	Yes	Yes	Yes
Observations	941	941	941	941	941	941
chi2	381.859	220.095	897.656	257.465	226.946	499.325
p	0.000	0.000	0.000	0.000	0.000	0.000

Note: Estimated coefficients, not marginal effects. Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

4.2.4 Children, marriage and gender earning gaps

The following examination of gender earning gaps – after disaggregating the sample by some demographic characteristics and managerial position of women – is divided into two sections: the effects of children on earning gaps and the effects of marriage on earning gaps.

A) Children and gender earning gaps

Recent studies in developed countries – such as Denmark (Kleven, Landais, & Søgaard, 2019) and United States of America (Cortés & Pan, 2023) – found that the "child penalty" can explain most of the gender earning gap. This study examined the correlation between children and gender earning gaps by separately analyzing the gaps among workers with, and without, children. The sample contained a fairly similar percentage of men (47%) and women (50%).

Table 9 presents gender differences in total earnings from all sources of income, normal working hours, and the probability of earning additional income from working over the standard working hours (moonlighting or overtime work), which are disaggregated by children status. The results show the gender earning gap is higher (36.5%) and statistically more significant for workers who have children than for workers without children (11.8%). This clearly indicates that, among female workers working in the two sectors, women who have children earn 24.7 percentage points less income than women who do not have children. This is despite the fact that there is no statistically significant gender difference in normal weekly working hours regardless of children status.

The results from the last columns show further interesting results. While there is no statistically significant gender difference in the probability of earning additional income from working over standard working hours among workers who do not have children, there is a statistically significant difference among workers who have children. Hence, it seems that the gender earning gap among workers who have children mainly comes from overtime or moonlighting work for workers working in the two sectors. It is important to note that this large gender difference in earning among those who have children is for women and men who work full-time, which may underestimate the gender difference at a national level, since there could be women who could not earn income because of child rearing responsibilities. While the child penalty on the participation of women in the labour force and earning is well-documented in developed countries (Cortés & Pan, 2023; Cukrowska-Torzewska & Matysiak, 2020; Kleven, Landais, Posch, et al., 2019; Wuestenenk & Begall, 2022), the phenomenon has been rarely addressed in developing countries.

Table 9. Children and gender differences in earning, working hours and the probability of working additional hours

Covariates	Last six months total net income (ETB, ln)		Normal weekly working hours		Probability of earning additional income from working over standard working hours	
	No child	Have children	No child	Have children	No child	Have children
Female dummy (1/0)	-0.117*	-0.376*** (0.069)	-0.728 (0.596)	-0.418 (0.453)	-0.041 (0.049)	-0.183*** (0.037)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	462	479	462	479	462	479

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

B) Marriage and gender earning gaps

According to the data, 52% of male and 40% of female workers in the sample were married. The results in Table 10 show that there are no significant gender earning gaps between unmarried female and male workers. However, the results show that married women earned 33.9% less income than married men. This difference appears to be driven by the statistically significant difference in earning obtained from working over standard working hours, where married women are 16.5% less likely to work additional hours than married men. Notably, there is no statistically significant gender difference among unmarried workers. Indeed, marital status and having children could be highly correlated, even though the study controlled for children dummy. The sample size did not allow for analysis by further disaggregating the data by both marital and children status.

Table 10. Marital status and gender differences in earning, working hours and the probability of working additional hours

Covariates	Last six months total net income (ETB, ln)		Standard/normal weekly working hours (hours)		Probability of earning additional income from working over standard working hours	
	Unmarried	Married	Unmarried	Married	Unmarried	Married
Female dummy (1/0)	-0.087	-0.339***	-0.874	-0.615	-0.381	-0.165***
	(0.062)	(0.081)	(0.564)	(0.561)	(0.304)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	462	479	462	479	462	479

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

4.2.5 Robustness checks

As a final measure, robustness checks were conducted using three different approaches: balanced versus unbalanced panel, fixed effects versus Mundlak Fixed effects model results, and Oaxaca-Blinder decomposition.

A) Balanced versus unbalanced panel

Out of the total 610 sampled workers in 2017, 413 were re-interviewed, 139 were not available at the time of the second-round survey and were replaced by other workers at similar position, and 58 of them attrited. Robustness checks were conducted by investigating the gender earning gap on balanced data (413 panel workers) and unbalanced data (413 panel plus 139 replaced samples). The results are presented in Table 11. The female dummy is consistently negative in both the two specifications, and the magnitudes are comparable with

only a 2.9 percentage point difference between the unbalanced panel (main results used in the paper) and balanced panel.

Table 11. Balanced panel versus unbalanced panel

Covariates	Last six months income from all sources (ETB, ln)	
	Unbalanced panel	Balanced panel
Female dummy (1/0)	-0.216***	-0.245***
	(0.046)	(0.049)
Controls	Yes	Yes
Sector/year/Mundlak fixed effects	Yes	Yes
Observations	941	786

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

B) Fixed effects versus Mundlak Fixed effects model results

Next, instead of Mundlak random effects, fixed effects (as shown in Table 12) were considered. The results presented in Columns 1 to 5 correspond to the Columns presented in Tables 3 to 5, i.e., Column (1) presents the gender gap after controlling for only year-fixed effects, Column to presents results where human capital variables are controlled for, etc. The results from the two models are similar for all the three outcome variables across different specifications, with only small differences in magnitude, where the coefficients from the fixed effects model are marginally smaller than the results from the Mundlak random effects model.

Table 12. Fixed effects versus Mundlak Fixed effects model results

Female dummy	Last six months total net income from primary job (ETB, ln)				
	(1)	(2)	(3)	(4)	(5)
Fixed effects	-0.338***	-0.318***	-0.184***	-0.186***	-0.200***
	(0.047)	(0.047)	(0.044)	(0.046)	(0.046)
Mundlak random effects	-0.350***	-0.328***	-0.191***	-0.192***	-0.206***
	(0.046)	(0.046)	(0.044)	(0.045)	(0.045)
	Last six months total net income from all sources (ETB, ln)				
Fixed effects	-0.354***	-0.337***	-0.201***	-0.198***	-0.206***
	(0.048)	(0.048)	(0.043)	(0.044)	(0.045)
Mundlak random effects	-0.370***	-0.350***	-0.211***	-0.206***	-0.216***
	(0.047)	(0.047)	(0.042)	(0.043)	(0.046)
	Wage rate per hour (ETB, ln)				
Fixed effects	-0.374***	-0.355***	-0.218***	-0.216***	-0.227***
	(0.041)	(0.042)	(0.036)	(0.038)	(0.037)
Mundlak random effects	-0.383***	-0.362***	-0.223***	-0.220***	-0.238***
	(0.041)	(0.041)	(0.036)	(0.038)	(0.037)

Cluster (firm level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

C) Oaxaca-Blinder decomposition

Finally, a Oaxaca-Blinder gender earning gap decomposition was used to disentangle gender earning gaps into differences due to human capital endowment differences and due to unobserved differences in preference and discrimination. The results show that women earn 25-26% less income (in log) than men earn. Consistent with the results reported earlier, controlling for firm and manager/owner characteristics contributed little to the gender earning gap. Around 50% of the gender earning gaps could not be explained by endowment differences (e.g., education level, work experience, age, etc.) between men and women.

Table 13. Oaxaca-Blinder gender earning gap decomposition

Estimates	Last 6 months income from primary job		
	(1)	(2)	(3)
Predicted mean earning for men [M] (ln)	9.59	9.34	9.18
Predicted mean earning for men [F] (ln)	9.33	9.09	8.93
Total wage gap (M - F) – log difference	0.26	0.25	0.25
Explained earning difference	0.13	0.11	0.13
Unexplained difference	0.13	0.13	0.13
% gap unexplained	50	54	50
Firm characteristics	No	Yes	Yes
Manager characteristics	No	No	Yes
Number of workers	950	941	924

5. Discussion and conclusion

Good quality jobs are essential for workers' health (Henseke, 2018; Van Aerden et al., 2016), and productivity (Dosi et al., 2020; Stansbury & Summers, 2017). A number of studies conducted in developed countries have found that some aspects of job quality have been improving over time. For instance, working hours have declined, occupational safety has improved, wages have increased, and gender equality has improved (Borjas, 2016; Dunne et al., 2004; McConnell et al., 2010). However, little evidence exists to establish whether job qualities equally benefit women and if wellbeing is improved (Green et al., 2013), particularly in the case of developing countries. Using three rounds of both firm- and worker-level data from the agro-processing and leather sectors in Ethiopia collected in 2017, 2018, and 2020, the effects of gender equality and wellbeing on jobs were evaluated. Specifically, the share of women employment in the two sectors, the share of women in ownership and management, gender earning gaps, as well as gender differences in fringe benefits and other job quality were investigated.

According to the findings, workers in the two sectors are mainly young (with average age of 32.4 years), less educated (with nine mean years of schooling), and posess limited computer literacy. Overall, women working in these sectors are younger, less educated, and less skilled than men are. Women are disadvantaged in the two sectors in terms of their share of employment (35.5%), their amount of business ownership (12.1%), their role as a main manager (CEO) of the firm (10.8%), and other managerial and supervision positions (10.1%). There is no substantial difference in female employment share between agro-processing (35.7%) and leather (35.4%) firms; however, the former was found to have a higher level of female business ownership (16.1% versus 9.9%).

The jobs created in the agro-processing and leather sectors were not found to be decent for most of the workers. Some 71% of workers noted that their salaries are insufficient to cover expenses for basic needs, with a larger percentage of female workers (73%) reporting this than male workers (70%). This lack of job quality is a common problem in Ethiopia that previous studies have also found (Blattman & Dercon, 2018; ILO & MoLSA, 2013; Kiruga, 2019) and has been attributed to being one of the main causes of the high industrial labour turnover in the country (Kiruga, 2019).

Women were found to have earned less income than men of a similar skill level. For instance, comparing the unconditional mean income that workers obtained in the last six months from their primary job, the data showed that low skilled women workers earned 33% less income than low skilled men workers. The gender earning difference rises to 38% when the total net income obtained from all sources of income are considred. The gender earning gap is higher among medium-skilled workers (50%) and high-skilled workers (48%), than low-skilled workers. Various factors including compensating variation, heterogeneity of responsibilities,

preference differences, and discrimination may explain the observed gender income gaps (Blau & Kahn, 1996, 2017; Nielsen, 2000; Sawhill, 1973; Stier & Yaish, 2014; Stiglitz, 1973). Controlling for worker, firm, and manager characteristics as well as sector, time, and time-invariant heterogeneities, the research found that women earn 20.6% less income from primary jobs, 21.6% less income from all sources of income, and earn a 23.8% lower wage rate than men. The child penalty explains part of the earning difference: the gender gap in total income between workers who do not have children is 11.7% while it is 37.6% among workers who do have children. This difference is primarily because women who have children are 18.3% less likely to earn income from additional work hours than men who have children; whereas, there is no statistically significant gender differences among workers who do not have children in earning income from additional hours beyond normal working hours. The findings also show that gender earning differences are the highest among medium skilled workers, followed by among high skilled workers. Moreover, women are less likely to receive housing, discounted or free of charge meals, and/or on-the-job training than men.

Despite earning lower incomes, women are happier, more satisfied, and are more likely to positively rate working conditions than men are. This could be attributable to the women having lower expectations than men, women receiving better treatment than men, or because women and men tend to evaluate similar working conditions differently; none of these factors could be explained by the data used for this study.

While these results are robust against different specifications, the paper is not without limitations. First, only two sectors – agro-processing and leather – are considered. Although these sectors represent more than a quarter of the total labour force in the manufacturing sector, results based on only these sectors may not represent the gender gaps at all the manufacturing sectors. Second, while the sample size is sufficient for the two sectors, it could be small to confidently conclude the results. For a more robust analysis in this area, researchers could consider a future investigation of the gender gap over an extended period of time.

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7. Appendix

A. Summary statistics

Table A1. Gender disaggregated summary statistics

Variables	Female		Male		Mean difference (Female - Male)
	N	Mean	N	Mean	
Dependent variables:					
Last six months total net income (ETB, ln)	678	8.81	746	9.29	-0.48***
Last six months net income from normal pay (ETB, ln)	567	8.67	595	9.07	-0.41***
Received housing of any type or allowance (1/0)	678	0.02	746	0.04	-0.02**
Received transport service (1/0)	678	0.37	746	0.45	-0.08***
Received free or subsidized meal (1/0)	678	0.29	746	0.35	-0.06**
Received on-the-job training	567	0.30	595	0.35	-0.06**
Received formal training	567	0.09	595	0.13	-0.04**
Normal working hours per day	678	8.17	746	8.22	-0.05
Rate physical environmental factors: temperature, humidity, noise, dust, work space, etc. (1 = very poor, …, 4 = very good)	567	2.63	595	2.55	0.09*
Rate experiential factors: fatigue, monotony, unfavorable posture during work, etc. (1 = very poor, …, 4 = very good)	567	2.57	595	2.48	0.09**
Rate organizational factors: shift duration, work scheduling, behavior of supervisor, etc. (1 = very poor, …, 4 = very good)	567	2.86	595	2.79	0.06
Satisfaction level with the current working condition (1 = very dissatisfied, …, 5 = very satisfied)	678	3.36	746	3.32	0.04
I feel that my work is often stressful (1/0)	567	0.38	595	0.42	-0.04
Feels being fairly compensated for work (1/0)	567	0.27	595	0.29	-0.03
Feels that the wage is sufficient to cover basic needs (1/0)	567	0.27	595	0.30	-0.04
Employer provides good career opportunity (1/0)	567	0.61	595	0.59	0.02
Would you like to get a different job (1/0)	678	0.39	746	0.45	-0.06**
Proud to work for the factory (1/0)	567	0.63	595	0.62	0.01
Happiness scale on current work (1 = very unhappy, …, 10 = very happy)	678	6.13	746	6.04	0.09
Worker characteristics:					
Age of the worker	678	30.95	746	33.72	-2.77***
Worker age squared	678	1053.82	746	1252.16	-198.35***
Married	678	0.41	746	0.53	-0.12***
Household size	678	3.41	746	3.49	-0.09
Born in rural area (1/0)	678	0.64	746	0.61	0.03
Has children (1/0)	678	0.51	746	0.51	0.01
Years of schooling	678	7.94	746	10.25	-2.31***

Computer literacy (1/0)	567	0.22	595	0.41	-0.18***
Work experience in previous jobs (years)	567	3.66	595	5.54	-1.88***
Permanent employment contract (1/0)	678	0.89	746	0.90	-0.01
Commuting distance (kg)	674	4.33	744	5.17	-0.84***
Was unemployed or in education before this job	678	0.36	746	0.35	0.02
Manager & firm characteristics:					
Sector: leather firm (1/0)	567	0.27	625	0.22	0.050**
There is collective bargaining in the firm	678	0.30	746	0.35	-0.05**
Manager's age	487	44.70	519	44.79	-0.09
Manager age squared	487	2120.79	519	2136.63	-15.85
Ethiopian manager (1/0)	487	0.93	519	0.93	0.00
Manager's years of schooling	487	16.61	519	16.74	-0.13
Male manager (1/0)	487	0.91	519	0.97	-0.05***
Share of female in management & supervision	551	0.15	593	0.12	0.03***
Labour size	553	5.34	610	5.24	0.11*
Value added per worker (lag, ln)	547	5.11	595	5.34	-0.23***
Sales per production worker (lag, ln)	559	6.23	615	6.57	-0.35***
Profit per worker (lag, ln)	479	3.30	535	3.33	-0.03
Capital (lag, ln)	562	9.53	624	9.65	-0.12
The firm has website (1/0)	487	0.64	519	0.56	0.08***
The firm exports (1/0)	553	0.40	608	0.26	0.14***
The firm located inside the Industrial Parks (1/0)	487	0.15	519	0.17	-0.02
Firm's age, years	487	31.70	519	33.78	-2.08

Note. N denotes the number of observations. * p<0.10, ** p<0.05, *** p<0.001

B. Gender gap: Income distribution

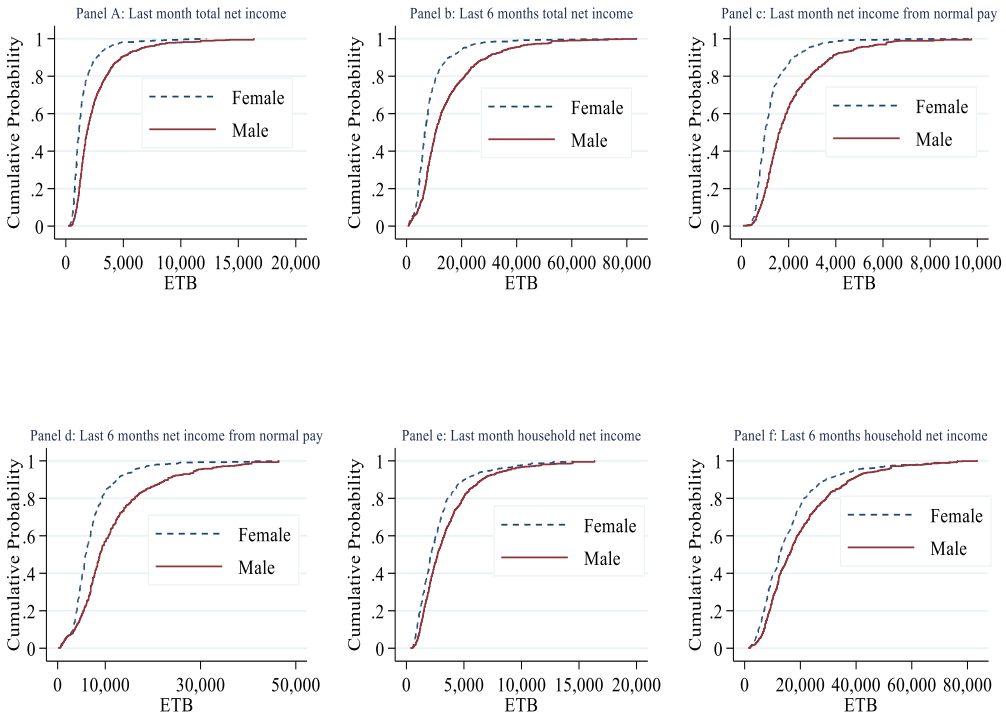

Figure 3A. Gender earning gap cumulative distribution

C. Gender gap by sector

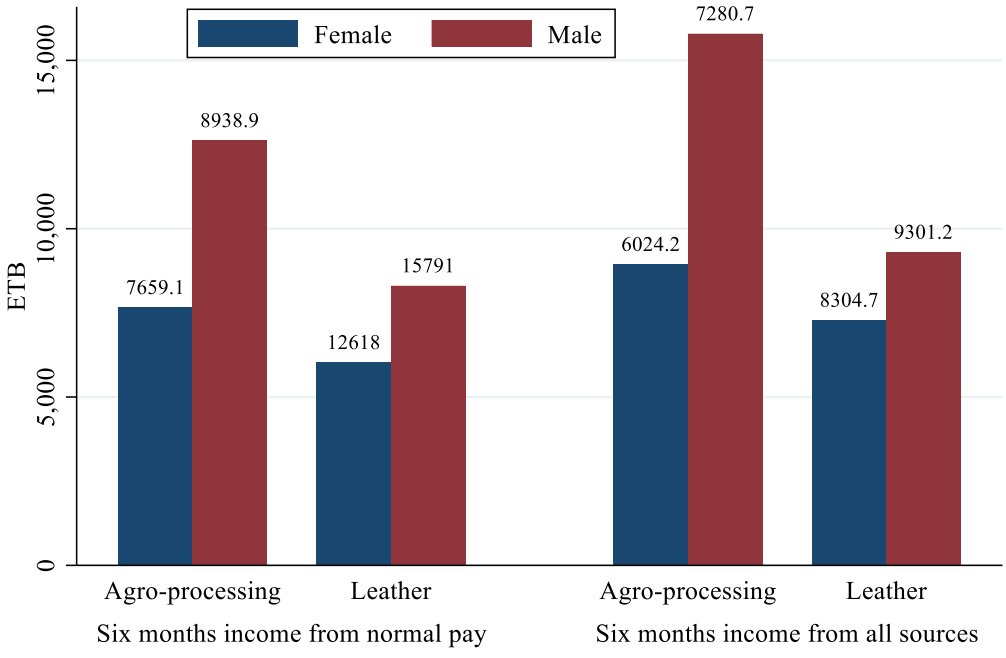

Figure 4A. Sector-disaggregated gender earning gap

D. Gender gap when women are the decision makers

Table 14A. Do women reduce gender gap when they are decision makers?

Gender earning gap (Male - female)	Female versus male managers		Female versus male owners		Female employees share		Foreign versus domestic firms	
	Female managers	Male managers	Female owned	Male owned	Female dominant	Male dominant	Foreign owned	Domestic
6 months net income	7097***	5190***	7422***	3956***	5622***	7187***	2107**	5692***
Low skilled workers 6 months net income	2119	2287***	1055	1777***	2359***	1551	242	2671***
Medium skilled workers 6 months net income	10323***	4297***	9898***	2238**	4676***	3736**	2855*	4765***
High skilled workers 6 months net income	11443	6576***	704	4906***	5997***	11442**	921	6414***

E. Gender earning gap by skill type

Table 15A. Gender earning gap by skill type

Covariates	Low skill		Medium skill		High skill	
	Last six months net income from normal pay (ETB, ln)	Last six months total net income (ETB, ln)	Last six months net income from normal pay (ETB, ln)	Last six months total net income (ETB, ln)	Last six months net income from normal pay (ETB, ln)	Last six months total net income (ETB, ln)
Female worker (1/0)	-0.191**	-0.215**	-0.198**	-0.174**	-0.200*	-0.259**
	(0.074)	(0.070)	(0.076)	(0.087)	(0.121)	(0.109)
Age of the worker	0.025	0.030*	0.026	0.032	0.075**	0.072**
	(0.018)	(0.018)	(0.022)	(0.022)	(0.026)	(0.023)
Worker age squared	-0.000	-0.000	-0.000	-0.000	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.160**	0.132*	0.054	0.123**	0.150	0.025
	(0.071)	(0.069)	(0.068)	(0.048)	(0.125)	(0.106)
Household size	-0.007	-0.010	0.008	0.013	-0.026	-0.017
	(0.014)	(0.014)	(0.018)	(0.018)	(0.029)	(0.025)
Born in rural area	0.001	-0.025	-0.146**	-0.143*	-0.117	-0.191**
	(0.063)	(0.064)	(0.067)	(0.078)	(0.094)	(0.087)
Has children	0.048	0.038	0.076	0.000	0.177	0.186

	(0.101)	(0.095)	(0.099)	(0.101)	(0.186)	(0.154)
Years of	0.028**	0.021**	0.030**	0.024**	0.054**	0.067***
schooling	(0.010)	(0.010)	(0.011)	(0.010)	(0.021)	(0.020)
Computer	0.230**	0.246**	0.162**	0.153*	0.092	-0.005
literacy	(0.078)	(0.084)	(0.068)	(0.079)	(0.170)	(0.167)
Total work	0.007	0.009*	0.001	0.001	-0.003	-0.003
experience	(0.005)	(0.005)	(0.004)	(0.004)	(0.007)	(0.007)
(years)						
Permanent	-0.023	-0.008	0.266*	0.155	-0.157	-0.049
employment	(0.067)	(0.073)	(0.147)	(0.176)	(0.317)	(0.325)
contract						
Commuting	-0.008	-0.004	-0.015	-0.015	0.011*	0.004
distance (kg)	(0.010)	(0.009)	(0.010)	(0.009)	(0.006)	(0.004)
Received	0.039	0.036	-0.010	-0.050	0.114	0.105
transport service	(0.059)	(0.064)	(0.074)	(0.073)	(0.116)	(0.112)
Received	-0.060	-0.014	-0.049	-0.120	0.207	0.294**
housing of any	(0.173)	(0.157)	(0.124)	(0.137)	(0.164)	(0.130)
type or						
allowance						
Received free or	-0.018	-0.037	0.149	0.254**	0.135	0.199
subsidized meal	(0.071)	(0.072)	(0.095)	(0.105)	(0.158)	(0.154)
Was	0.064	0.084	-0.049	-0.018	0.120	0.038
unemployed or	(0.063)	(0.067)	(0.081)	(0.088)	(0.082)	(0.077)
in education						
before this job						
Normal working	0.026	0.025	-0.027	-0.023	0.058	0.081**
hours per day	(0.028)	(0.036)	(0.028)	(0.032)	(0.048)	(0.040)
I feel that my	0.111**	0.121**	0.139**	0.085	0.241**	0.207**
work is often	(0.051)	(0.054)	(0.062)	(0.069)	(0.103)	(0.105)
stressful						
Survey year	-0.061	-0.036	0.007	0.019	-0.083	-0.205*
	(0.064)	(0.063)	(0.074)	(0.066)	(0.131)	(0.123)
Leather firm	-0.501***	-0.440***	-0.600***	-0.627***	-0.785**	-0.695***
(1/0)	(0.129)	(0.125)	(0.118)	(0.131)	(0.245)	(0.208)
Received on-the-	0.071	0.095	0.075	0.113*	0.158	0.136
job training	(0.061)	(0.060)	(0.059)	(0.063)	(0.098)	(0.091)
Received formal	0.128	0.090	0.106	0.057	0.253*	0.188*
training	(0.089)	(0.098)	(0.109)	(0.103)	(0.137)	(0.112)
There is	-0.029	-0.026	0.182**	0.151**	-0.111	-0.106
collective	(0.071)	(0.076)	(0.061)	(0.065)	(0.093)	(0.088)
bargaining						
agreement						
Manager's age	0.029	0.014	0.034	0.019	0.067	0.080**
	(0.021)	(0.019)	(0.026)	(0.027)	(0.041)	(0.036)
Manager age	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001**
squared	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ethiopian	0.254*	0.122	0.006	-0.002	0.720**	0.809***

manager	(0.154)	(0.112)	(0.175)	(0.147)	(0.298)	(0.238)
Manager's years	0.009	0.009	0.056**	0.070**	0.082**	0.052**
of schooling	(0.015)	(0.014)	(0.022)	(0.024)	(0.028)	(0.021)
Male manager	0.217*	0.236	0.050	0.067	0.209	0.171
	(0.126)	(0.147)	(0.218)	(0.184)	(0.271)	(0.261)
Share of female	0.034	0.107	0.091	-0.443	0.180	0.450
in management	(0.309)	(0.305)	(0.496)	(0.544)	(0.648)	(0.555)
& supervision						
Employment size	0.084	0.111**	0.026	0.090	-0.071	0.099
	(0.056)	(0.054)	(0.083)	(0.082)	(0.100)	(0.082)
Value add per	0.010	0.030	0.059	0.027	0.071	0.052
worker (lag, ln)	(0.030)	(0.032)	(0.040)	(0.033)	(0.057)	(0.057)
The firm has	0.104	0.135	0.132	0.100	0.097	0.093
website	(0.091)	(0.096)	(0.147)	(0.155)	(0.139)	(0.142)
The firm exports	0.279**	0.207**	0.107	0.063	0.329	0.144
(1/0)	(0.096)	(0.097)	(0.111)	(0.098)	(0.249)	(0.206)
The firm located	-0.063	-0.042	0.112	0.121	0.219	0.205
inside the	(0.061)	(0.063)	(0.115)	(0.126)	(0.198)	(0.172)
Industrial Parks						
Firm's age, years	-0.001	-0.002	-0.003	-0.004	-0.005**	-0.004**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
Mundlak fixed	-0.073	-0.036	-0.067	-0.018	-0.053	-0.017
effects	(0.049)	(0.049)	(0.043)	(0.041)	(0.069)	(0.060)
Constant	128.545	79.180	-8.209	-32.807	170.464	415.822*
	(129.061)	(127.657)	(149.975)	(132.268)	(264.858)	(247.359)
Observations	340	340	384	384	217	217
chi2	334.653	303.381	335.365	513.943	1608.179	5012.544
p	0.000	0.000	0.000	0.000	0.000	0.000

Cluster (at firm-level) standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001. The same covariates are used as the previous table. As Mundlak fixed effect controls, the natural logarithm of the time-average of value added per worker was used.

F. Gender differences in fringe benefits and work hours

Table 16A. Gender difference in fringe benefits, training access and working hours

	No. of fringe benefits received	Received housing of any type or allowance	Received transport service	Received free or subsidized meal	Received on-the-job training	Received formal training	Weekly hours worked
Female worker (1/0)	-0.317	-2.310	-0.368	-0.229	-0.277	-0.165	-0.614
	(0.201)	(2.172)	(0.353)	(0.215)	(0.292)	(0.447)	(0.407)
Last six months total	0.244	-0.623	-0.108	0.213	0.984***	1.666***	0.419
net income (ETB, ln)	(0.205)	(0.759)	(0.282)	(0.192)	(0.228)	(0.361)	(0.310)
Received on-the-job	3.553***	-1.255	0.259	-0.487			-0.065
training	(0.389)	(1.373)	(0.403)	(0.298)			(0.453)

Received formal training	3.851*** (0.433)	0.769 (1.343)	-0.313 (0.466)	0.604 (0.398)			-0.968 (0.658)
There is collective bargaining agreement	0.052 (0.306)	-0.113 (1.193)	0.412 (0.388)	-0.258 (0.354)			-0.797* (0.457)
Manager's age	0.134	-0.213	0.128	0.240	-0.067	0.016	-0.062
	(0.172)	(0.804)	(0.212)	(0.223)	(0.158)	(0.166)	(0.156)
Manager age squared	-0.001	0.001	-0.001	-0.002	0.000	-0.000	0.000
	(0.002)	(0.009)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Ethiopian manager	-1.302*	0.000	0.653	-3.086***	-1.728**	1.673**	0.113
	(0.756)	(.)	(1.620)	(0.613)	(0.540)	(0.674)	(0.857)
Manager's years of schooling	0.008	0.042	0.088	-0.042	0.223**	0.040	-0.088
	(0.087)	(0.323)	(0.120)	(0.111)	(0.101)	(0.106)	(0.098)
Male manager	-0.035	-1.701	2.473	-1.366	-1.307	-1.615**	1.194
	(1.000)	(4.330)	(1.644)	(1.082)	(0.941)	(0.658)	(0.923)
Share of female in management & supervision	-2.896	-3.623	-3.189	-2.801	0.582	0.235	0.990
	(1.900)	(5.115)	(2.740)	(2.231)	(1.628)	(1.538)	(1.726)
Labour size	1.279***	1.160	1.472**	0.974**	0.739**	0.092	-0.316
	(0.308)	(1.006)	(0.496)	(0.325)	(0.305)	(0.300)	(0.288)
Value added per worker (lag, ln)	0.359**	-0.300	0.380	0.489**	-0.123	0.072	0.102
	(0.177)	(0.491)	(0.279)	(0.187)	(0.186)	(0.272)	(0.181)
The firm has website	-0.508	-3.304	0.322	-0.502	-0.379	0.820	0.171
	(0.433)	(2.523)	(0.543)	(0.515)	(0.496)	(0.611)	(0.491)
The firm exports (1/0)	0.678	-0.065	-0.101	0.930	0.601	-0.106	-0.654
	(0.531)	(1.974)	(0.794)	(0.579)	(0.566)	(0.543)	(0.498)
The firm located inside the Industrial Parks	0.676	0.643	0.917	0.628	-0.513	0.038	0.014
	(0.433)	(1.260)	(0.574)	(0.565)	(0.439)	(0.445)	(0.537)
Firm's age, years	-0.013*	0.013	-0.033**	0.001	-0.010	0.009	-0.000
	(0.007)	(0.064)	(0.014)	(0.008)	(0.010)	(0.010)	(0.009)
Mundlak fixed effects	0.069	1.127	-0.061	0.106	0.159	-0.270	0.649**
	(0.196)	(1.297)	(0.321)	(0.228)	(0.218)	(0.319)	(0.223)
Constant		-4.058	-	-11.911*	-	-	46.367***
		(18.937)	16.570**	(6.189)	12.578**	19.525***	(4.650)
			(6.386)		(4.185)	(5.200)	
/ lnsig2u		3.376***	1.628***	-14.117	0.824**	0.863*	
		(0.868)	(0.416)	(.)	(0.409)	(0.458)	
Observations	944	886	944	944	944	944	944
chi2	165.072	11.098	45.897	110.852	82.997	78.390	36.385
p-value	0.000	0.851	0.000	0.000	0.000	0.000	0.006

Cluster standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

G. Gender differences in work-related welfare

Table 17A. Gender difference in work-related welfare

Covariates	Rating of physical working condition (1 = very poor, 2 = poor, 3 = good, 4 = very good)	Rating of experiential factors (1 = very poor, 2 = poor, 3 = good, 4 = very good)	Rating of organizational factors (1 = very poor, 2 = poor, 3 = good, 4 = very good)	Satisfaction level with the overall working condition 1 = very dissatisfied, …, 5 = very satisfied	The probability of being stressed at work
Female dummy (1/0)	0.262*	0.293*	0.388**	0.278*	-0.131
	(0.159)	(0.151)	(0.183)	(0.157)	(0.181)
Last six months total net income (ETB, ln)	-0.036	0.009	0.081	0.514**	0.458**
	(0.164)	(0.168)	(0.135)	(0.227)	(0.193)
Age of the worker	-0.053	0.007	0.085**	0.046	-0.034
	(0.050)	(0.042)	(0.041)	(0.052)	(0.057)
Worker age squared	0.001	-0.000	-0.001	-0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	-0.212	-0.194	-0.122	-0.174	0.030
	(0.205)	(0.194)	(0.218)	(0.171)	(0.252)
Household size	-0.034	0.031	0.006	0.027	-0.117**
	(0.044)	(0.041)	(0.050)	(0.047)	(0.054)
Born in rural area	-0.546**	-0.449**	-0.177	-0.225	-0.046
	(0.183)	(0.152)	(0.166)	(0.152)	(0.187)
Has children	0.496**	0.174	-0.047	-0.122	0.025
	(0.229)	(0.229)	(0.240)	(0.238)	(0.256)
Years of schooling	-0.000	-0.010	-0.002	-0.056**	-0.071**
	(0.026)	(0.020)	(0.027)	(0.024)	(0.028)
Computer literacy	0.175	0.134	0.037	0.155	0.109
	(0.197)	(0.185)	(0.163)	(0.208)	(0.217)
Total work experience (years)	-0.003	0.011	-0.016	0.020*	0.015
	(0.013)	(0.011)	(0.011)	(0.011)	(0.013)
Permanent employment contract	0.523*	0.389*	0.402	0.047	-0.503*
	(0.278)	(0.219)	(0.250)	(0.254)	(0.267)
Commuting distance (kg)	-0.009	-0.010	0.005	0.006	-0.038**
	(0.015)	(0.014)	(0.013)	(0.018)	(0.017)
Received transport service	-0.267	-0.196	0.162	-0.314	-0.167
	(0.234)	(0.238)	(0.221)	(0.207)	(0.212)
Received housing of any type or allowance	-0.622*	-0.303	0.030	-0.032	0.985**
	(0.365)	(0.351)	(0.450)	(0.301)	(0.440)
Received free or subsidized meal	0.114	0.122	0.050	0.209	0.067
	(0.279)	(0.258)	(0.251)	(0.298)	(0.275)
Was unemployed or in education before this job	-0.193	-0.277*	-0.384**	-0.249	-0.462**
	(0.147)	(0.153)	(0.166)	(0.161)	(0.177)
Normal working hours per day	-0.141	-0.073	-0.218	0.071	-0.075
	(0.159)	(0.107)	(0.151)	(0.101)	(0.108)

I feel that my work is	-0.827***	-0.745***	-1.147***	-0.770***	
often stressful	(0.184)	(0.164)	(0.166)	(0.187)	
Survey year	-0.839**	-0.593**	0.001	-0.427*	0.423
	(0.266)	(0.250)	(0.265)	(0.229)	(0.273)
Leather firm (1/0)	0.237	0.235	0.104	-0.568	-0.343
	(0.442)	(0.355)	(0.352)	(0.388)	(0.382)
Received on-the-job	0.009	0.143	0.267	-0.011	0.148
training	(0.170)	(0.199)	(0.202)	(0.191)	(0.223)
Received formal	0.266	0.018	0.315	0.172	0.063
training	(0.279)	(0.295)	(0.213)	(0.235)	(0.276)
There is collective	-0.302	-0.093	0.333*	-0.182	0.079
bargaining agreement	(0.216)	(0.183)	(0.177)	(0.235)	(0.213)
Manager's age	-0.130	-0.153*	-0.200**	0.036	-0.100
	(0.113)	(0.082)	(0.074)	(0.089)	(0.092)
Manager age squared	0.002	0.002**	0.002**	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethiopian manager	-0.221	-0.265	0.317	-0.102	-1.805***
	(0.691)	(0.426)	(0.483)	(0.536)	(0.545)
Manager's years of	-0.041	-0.076*	-0.025	-0.040	0.027
schooling	(0.060)	(0.042)	(0.044)	(0.045)	(0.051)
Male manager	-0.642	-0.618	-0.387	-0.944	0.429
	(0.417)	(0.406)	(0.447)	(0.593)	(0.565)
Share of female in	0.365	1.442	0.047	1.073	-0.141
management &	(1.162)	(0.887)	(1.083)	(0.962)	(0.893)
supervision					
Employment size	-0.108	-0.044	-0.168	0.358**	0.079
	(0.177)	(0.149)	(0.178)	(0.159)	(0.179)
Value added per	0.060	0.023	0.169	0.103	-0.028
worker (lag, ln)	(0.127)	(0.119)	(0.119)	(0.120)	(0.078)
The firm has website	-0.003	0.222	-0.028	0.585**	0.434*
	(0.336)	(0.265)	(0.243)	(0.297)	(0.258)
The firm exports (1/0)	-0.321	-0.495	-0.276	-0.544	0.106
	(0.501)	(0.342)	(0.393)	(0.331)	(0.341)
The firm located inside	0.522	0.075	0.351	0.622*	-0.241
the Industrial Parks	(0.320)	(0.338)	(0.285)	(0.319)	(0.299)
Firm's age, years	-0.005	-0.002	0.006	0.004	0.006
	(0.007)	(0.005)	(0.005)	(0.005)	(0.006)
Mundlak fixed effects	-0.033	0.117	-0.021	0.138	-0.162
	(0.145)	(0.137)	(0.127)	(0.131)	(0.117)
Constant	-1702.346**	-1203.377**	-5.826	-857.791*	-851.846
	(536.605)	(504.034)	(535.252)	(461.639)	(551.111)
Observations	941	941	941	941	941
chi2	360.579	222.773	484.674	325.812	119.193
p-value	0.000	0.000	0.000	0.000	0.000

Cluster standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001

H. Gender differences in quality of jobs

Table 18A. Gender difference in quality of jobs

Covariates	Feels being fairly compensated for work	Feels that the wage is sufficient to cover basic needs	Employer provides good career opportunity	Would you like to get a different job	Proud to work for the factory	Happiness scale on current work
Female dummy (1/0)	-0.143	0.179	0.377*	-0.712***	0.284*	0.285*
	(0.244)	(0.194)	(0.194)	(0.200)	(0.169)	(0.153)
Last six months total net income (ETB, ln)	0.121	0.696**	0.890***	-0.811***	0.671***	0.803***
	(0.251)	(0.233)	(0.206)	(0.192)	(0.181)	(0.167)
Age of the worker	0.076	-0.020	-0.015	0.141**	0.001	-0.076
	(0.070)	(0.065)	(0.065)	(0.062)	(0.054)	(0.052)
Worker age squared	-0.001	0.000	0.000	-0.002**	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	0.039	0.057	0.056	0.126	-0.351*	-0.165
	(0.233)	(0.196)	(0.219)	(0.227)	(0.206)	(0.192)
Household size	0.061	0.068	0.083	-0.110**	0.063	0.077*
	(0.053)	(0.059)	(0.064)	(0.044)	(0.045)	(0.043)
Born in rural area	-0.147	-0.178	0.008	0.132	-0.194	-0.273*
	(0.185)	(0.197)	(0.189)	(0.192)	(0.177)	(0.140)
Has children	-0.171	-0.334	-0.102	-0.467*	0.281	0.359
	(0.282)	(0.300)	(0.288)	(0.259)	(0.228)	(0.237)
Years of schooling	-0.050	-0.049	-0.077**	0.041	-0.034	-0.093***
	(0.035)	(0.032)	(0.030)	(0.032)	(0.026)	(0.022)
Computer literacy	0.002	0.049	0.038	0.625**	-0.245	0.177
	(0.291)	(0.246)	(0.248)	(0.191)	(0.228)	(0.171)
Total work experience (years)	0.017*	0.003	-0.011	-0.027**	0.004	-0.018**
	(0.010)	(0.012)	(0.011)	(0.012)	(0.012)	(0.009)
Permanent employment contract	0.096	0.654*	0.537	-0.190	0.078	0.392
	(0.385)	(0.338)	(0.355)	(0.276)	(0.315)	(0.266)
Commuting distance (kg)	0.015	0.010	-0.007	0.015	0.001	-0.005
	(0.015)	(0.013)	(0.015)	(0.015)	(0.015)	(0.014)
Received transport service	0.003	-0.120	0.600**	-0.171	0.234	0.488**
	(0.237)	(0.247)	(0.268)	(0.247)	(0.239)	(0.183)
Received housing of any type or allowance	-0.569	-0.061	-0.162	-0.121	0.064	-0.267
	(0.452)	(0.544)	(0.458)	(0.577)	(0.419)	(0.451)
Received free or subsidized meal	0.062	-0.056	-0.385	-0.272	-0.070	0.101
	(0.314)	(0.281)	(0.272)	(0.251)	(0.330)	(0.216)

Was unemployed or in education before this job	-0.222	0.021	-0.042	0.096	-0.251*	-0.291**
	(0.218)	(0.172)	(0.163)	(0.155)	(0.146)	(0.142)
Normal working hours per day	0.104	-0.086	0.054	-0.208	0.118	0.029
	(0.133)	(0.127)	(0.107)	(0.130)	(0.097)	(0.109)
I feel that my work is often stressful	-0.350	-0.192	-0.163	0.345*	-0.125	-0.893***
	(0.213)	(0.225)	(0.200)	(0.206)	(0.172)	(0.134)
Survey year	0.526*	0.272	-1.830***	0.304	-0.329	-0.184
	(0.293)	(0.280)	(0.281)	(0.260)	(0.274)	(0.233)
Leather firm (1/0)	-1.193**	0.024	-1.142***	-0.725*	-0.315	-0.617**
	(0.440)	(0.466)	(0.339)	(0.400)	(0.435)	(0.296)
Received on-the-job training	0.019	0.024	0.314	0.251	-0.014	0.060
	(0.254)	(0.226)	(0.218)	(0.218)	(0.240)	(0.154)
Received formal training	0.875**	0.642*	-0.019	0.182	0.388	0.454**
	(0.344)	(0.333)	(0.266)	(0.272)	(0.308)	(0.216)
There is collective bargaining agreement	-0.396	-0.339	0.304	0.104	0.011	0.306*
	(0.299)	(0.281)	(0.232)	(0.256)	(0.230)	(0.177)
Manager's age	-0.105	-0.012	-0.096	-0.037	-0.102	-0.059
	(0.094)	(0.084)	(0.099)	(0.099)	(0.106)	(0.067)
Manager age squared	0.001	0.000	0.001	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethiopian manager	0.071	0.014	0.349	0.166	-0.380	-0.751
	(0.599)	(0.414)	(0.678)	(0.359)	(0.418)	(0.610)
Manager's years of schooling	-0.119**	-0.113	0.031	0.028	-0.000	-0.013
	(0.060)	(0.069)	(0.056)	(0.050)	(0.050)	(0.052)
Male manager	0.263	1.129**	-0.517	-0.100	-1.556**	-0.801**
	(0.604)	(0.575)	(0.487)	(0.336)	(0.768)	(0.346)
Share of female in management & supervision	1.676	1.417	1.597**	-1.225	2.139**	1.638**
	(1.097)	(1.176)	(0.757)	(0.948)	(0.976)	(0.785)
Employment size	0.621**	0.162	0.098	-0.101	0.178	0.134
	(0.237)	(0.208)	(0.148)	(0.169)	(0.183)	(0.140)
Value added per worker (lag, ln)	0.187	0.195	0.110	-0.017	-0.119	0.068
	(0.139)	(0.130)	(0.101)	(0.109)	(0.110)	(0.090)
The firm has website	0.212	0.004	0.474*	-0.630**	0.325	0.107
	(0.344)	(0.296)	(0.248)	(0.295)	(0.272)	(0.196)
The firm exports (1/0)	-0.166	-0.561	0.334	0.818**	-0.333	-0.006
	(0.366)	(0.399)	(0.333)	(0.345)	(0.357)	(0.245)
The firm located inside the Industrial Parks	-0.208	-0.241	0.595**	-0.100	0.174	0.214
	(0.369)	(0.348)	(0.299)	(0.293)	(0.284)	(0.261)
Firm's age, years	0.001	-0.004	0.007	0.008*	-0.003	0.003
	(0.006)	(0.006)	(0.006)	(0.004)	(0.005)	(0.004)

Mundlak fixed	0.079	0.221	0.112	-0.271**	0.365***	0.242**
effects	(0.164)	(0.168)	(0.100)	(0.104)	(0.103)	(0.112)
Constant	-1064.186*	-555.952	3682.910***	-603.920	659.444	
	(590.005)	(564.278)	(564.940)	(522.875)	(552.789)	
Observations	941	941	941	941	941	941
chi2	124.350	107.774	223.748	271.005	151.658	412.618
p-values	0.000	0.000	0.000	0.000	0.000	0.000

Cluster standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.001