THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

SELECTED ISSUES

December 2018

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THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

SELECTED ISSUES

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CONTENTS

WOMEN AND THE ECONOMY IN ETHIOPIA[1]

This paper investigates the macroeconomic impact of existing gender gaps in Ethiopia and discusses the authorities' policies in the areas of gender equality and women's rights, with a focus on women's economic engagement. Ethiopia has shown a firm political commitment to the advancement of gender equality and women's rights, however significant challenges around women's economic participation remain. Whilst the vast majority of people work in Ethiopia, women face many barriers to formal labor force participation, have lower levels of education than men—particularly at secondary and tertiary levels—and have significant wage gaps compared to men. We quantify the macroeconomic returns to closing gaps in labor force participation and education levels between men and women using different statistical and theoretical approaches. The findings suggest that, eliminating gender gaps in both educational attainment and the rate of formal employment could increase output in Ethiopia over time by over 24 percent.

Table 1. Ethiopia: Gender Equality Indicators

	Ethiopia	SSA
Human Development Index (HDI)	0.448	0.523
Gender Inequality Index (GII)	0.499	0.572
Labor Force Participation (LFP) ratio (Female-Male)	88%	86%
Wage ratio (Female-Male)	63%	-
Enrollment ratio (Female-Male)		
primary	93%	90%
secondary	90%	90%
tertiary	46%	70%
Literacy ratio (Female - Male)	58%	80%

* Data from various sources; most recent data observation used.

A. Introduction

1.   Constraints on the ability and opportunities for women to access the labor market can have large negative effects on the level of economic output. Worldwide, only 50 percent of women participate in the labor force, compared to 75 percent of men.[2] Raising female employment to the same level as men could substantially raise GDP in many countries (Aguirre et al., 2012). By one estimate, GDP in the US was 14 percent higher due to the increase in women's labor force participation (LFP) and hours worked since 1970 (US Government Publishing Office (GPO), 2015). When women are able to engage freely in the labor market, there are also likely to be improvements in allocative efficiency and job matching, which together would further increase the level of economic output of an economy. The losses in per capita GDP attributed to gender gaps in the labor market have been estimated at around 12 percent in sub-Saharan Africa (SSA) (Cuberes and Teigner, 2012). This estimate is calculated against the backdrop of relatively small labor force

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[2] World Bank WDI data 2017.

participation gaps in SSA and does not take into account inequities in opportunities (such as education and skills), which would increase the losses attributable to gender gaps.

2.   Apart from level effects, there is also a growing body of evidence suggesting that enabling women to engage freely in the labor market boosts growth. Work by the IMF (2014)[3] estimates that a 1 percentage point increase in gender equality is associated with a 0.2 percentage point increase in growth over a five-year period. Higher female labor force participation (LFP) rates and greater earnings by women could result in higher health and education expenditures, particularly for children (Aguirre et al., 2012; Miller 2008). If there are positive externalities to increases in human capital, then this could also boost long-run growth.[4] There is also evidence in developing countries that closing existing gender gaps could increase productivity for both farms and businesses, resulting in positive knowledge spillovers and learning-by-doing effects. Productivity could be increased by improving the access to inputs of female-owned companies (Levchenko and Raddatz, 2011), reducing the misallocation of factors of production between male and female-owned farms (Udry, 1996), and supporting more women to become entrepreneurs (Cuberes and Teigner, 2016).

3.   This paper attempts to quantify the impact of reducing gender inequalities in the labor market on economic output in Ethiopia. Ethiopia is a low-income country with an impressive growth performance—averaging over 9 percent per year since 2000. Whilst the country has made strong progress in reducing the barriers to women's economic participation, persistent gaps in formal sector employment, education levels and economic opportunities for women may be holding back growth. Gender equality is also an important development objective in its own right, as evidenced by its inclusion in the 2030 Sustainable Development Goals (SDGs).[5] This paper begins by investigating existing gender gaps in Ethiopia and discusses the authorities' policies in this area, with a focus on women's economic engagement. It then attempts to quantify the macroeconomic returns to closing gaps in labor force participation between men and women using different statistical and theoretical approaches.

4.   Gender inequalities may lead to a misallocation of labor and underinvestment in human capital, leading to larger-than-estimated output losses. Increasing the participation rate of women in the formal economy could increase output, either simply by bringing existing activities into formal measurements of output or by increasing the labor supply. In addition, there are efficiency losses associated with lower, or less equal, labor market opportunities for women. These could include a misallocation of skills, inefficient matching, and gender gaps in human capital investment, all of which could reduce both the level of output and the rate of growth. Evidence for Ethiopia points to significant gender productivity gaps in agriculture and gender gaps in education.

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[3] IMF Regional Economic Outlook, Oct 2015, "Dealing with the Gathering Clouds"

[4] There is strong evidence that the cognitive skills of the population——rather than mere school attainment are powerfully related to long-run economic growth (Hanushek & Wößmann (2010, 2012)). The idea that human capital accumulation boosts growth is well documented in literature (Kuznets (1960), Lewis (1956), Schultz (1963), Dennison (1967)). However more recent work suggests that the impact of education on growth has not been the same in all countries (Temple (1999)).

[5] Goal 5 of the SDGs explicitly targets gender equality and the empowerment of all women and girls.

The result is that aggregate labor force participation statistics likely underestimate the full economic losses due to gender gaps.

B. Situation of Women in Ethiopia

5.   Controlling for the income and the level of development, Ethiopia does better than some of its peers on gender equality. In 2016, Ethiopia ranked 116th out of 188 countries on the UNDP's Gender Inequality Index (GII)[6] (Table 1), a measure of gender inequality across three dimensions (reproductive health, empowerment, and economic status). This is a better relative ranking than on the overall Human Development Index (HDI)[7] where it ranks 174th out of 188, and its income level, at $1,608[8] in 2016 ranking 111th out of 124. However, amongst Ethiopia's peers, some countries are performing much better on gender equality. Rwanda for example, has a similar level of income level of $1,774, but ranks significantly higher on gender equality, with a GII rank of 84th, as well as on overall development, with an HDI rank of 159th.

Table 2. Gender Equality, Development, and Income						
	Gender Inequality Index*		Human Development Index		GDP per capita (2011 PPP USD)	
Country	Value	Relative pos	Value	Relative pos	Value	Relative pos
Ethiopia	0.499	0.38	0.448	0.08	1,608	0.10
Rwanda	0.383	0.56	0.498	0.15	1,774	0.14
SSA	0.572	—	0.523	—	3,453	—
OECD	0.194	—	0.887	—	38,842	—
Data source: 2016 data from UNDP, World Bank WDI and IMF WEO * Ranges from 0 (perfect equality) to 1 (perfectly unequal).						

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[6] Like all composite measures, the GII has some limitations. First, it does not capture the length and breadth of gender inequality. For example, the use of national parliamentary representation excludes participation at the local government level and elsewhere in community and public life. The labor market dimension lacks information on employment, having an adequate job and unpaid work that is mostly done by women. The index misses other important dimensions, such as time use—the fact that many women have the additional burden of caregiving and housekeeping cuts into their leisure time and increases stress and physical exhaustion. Asset ownership, child care support, gender-based violence and participation in community decision-making are also not captured in the GII, mainly due to limited data availability.

[7] The concept of human development is much broader than what can be captured by the HDI, or by any other composite index in the Human Development Report (Inequality-Adjusted HDI, Gender development index, Gender Inequality Index or Multidimensional Poverty Index). The composite indices are a focused measure of human development, zooming in on a few selected areas. A comprehensive assessment of human development requires analysis of other human development indicators and information presented in the statistical annex of the report (see the Readers guide to the Report).

[8] Using GDP per capita in constant 2011 PPP prices as calculated by the World Bank.

Women in the Economy

6.   Whilst the vast majority of people work in Ethiopia, the Labor Force Participation (LFP) rates are lower amongst women than men. According to data from the International Labour Organization (ILO), the share of women engaged in the labor force was 77 percent in 2017, compared to 88 percent for men—both above the SSA average.[9] The ratio of women to men engaged in the labor force increased dramatically in the early 2000s but has stalled somewhat in recent years (Figure 1). A major reason for the lower LFP rates of women is their greater involvement in unpaid care activities than men. In urban areas, women are engaged primarily in the wholesale and retail sector, followed by manufacturing and then employment in the household.[10] In rural areas, women are less likely to be engaged in agricultural work (55 percent) than men (58 percent),[11] and when they are, women are often less productive than men and face significant barriers to accessing agricultural services and inputs.[12]

7.   The higher burden of unpaid household activities faced by women results in fewer hours per week spent working or farming than men. Women in Ethiopia typically face a higher burden of family care responsibilities and other unpaid household activities. For example, according to the 2013 Time Use Survey conducted by the Central Statistics Agency (CSA), of those engaged in domestic or personal production, 93 percent were women compared to 57 percent for men.[13] Household survey data suggest that women are over three times more likely to spend time collecting firewood or water (38 percent compared to 18 percent) and when they do, they spend, on average, around 50 mins per day on these chores compared to 12 mins for men. In rural areas, women are often engaged in a high number of unpaid activities resulting in less time available for farming activities—female farmers spent around 14.4 hours per week on their farm, compared to 23 hours for men.
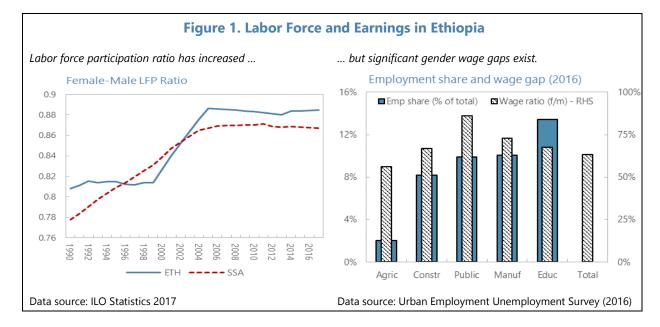
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[9] The labor force is defined as the supply of labor available for producing goods and services in an economy. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time job-seekers. Not everyone who works is included, however. Unpaid workers, family workers, and students are often omitted, and some countries do not count members of the armed forces. Labor force size tends to vary during the year as seasonal workers enter and leave.

[10] This is typically informal and unpaid household work.

[11] According to Ethiopia Demographic and Health survey of 2016.

[12] A 2014 World Bank study finds that women farmers produce between 13 and 25 percent less than their male counterparts. The factors that hinder women's ability to engage equally in agricultural activities range from issues related to limited access to factors of production, inputs, productive resources, and human capital, and social barriers. Women farmers have less access to land, extension services and entities that provide improved seed, fertilizers, new tools, technology, and training are mainly accessed by men. Married women (74 percent of women farmers) are disadvantaged, training and access to other resources is assumed to be available to them via their husbands. Recent work by UN Women (2018) finds that the gender gap in agricultural productivity—measured by the value of agricultural produce per unit of cultivated land—was 24 percent. The study estimates that the gender reduced total agricultural output by amount of $203.5 million in Ethiopia in 2010 U.S. dollars.

[13] This is classified as non-SNA production and includes domestic and personal services produced and consumed within the same household, such as cleaning, servicing and repairs; preparation and serving of meals; care, training and instruction of children; care of the sick and elderly; transportation of members of the household or their goods; and unpaid volunteer services to other households, communities, and neighborhood and other associations.

Figure 1. Labor Force and Earnings in Ethiopia

Labor force participation ratio has increased …

… but significant gender wage gaps exist.

Data source: ILO Statistics 2017

Data source: Urban Employment Unemployment Survey (2016)

8.   **Whilst rates of informal sector[14] employment are declining, women are still overrepresented and so have fewer social and economic protections.** The informal economy is a key component of most economies in SSA.[15] According to the 2018 Ethiopia Gender Statistics Report, the rate of informal employment amongst women fell from 58 percent in 2000 to 36 percent in 2016, compared to 38 percent and 20 percent respectively amongst men. This leaves many women without social protection, health benefits, and legal status. The report found that women routinely work for lower wages and in unsafe conditions, including the risk of sexual harassment. Even in the formal sector, women dominate in labor-intensive and low skill sub-sectors, such as agro-processing and textiles.

9.   **Significant gender gaps in wages and productivity exist, particularly in the agricultural sector.** According to data from the 2016 Urban Employment Unemployment Survey, women earned, on average, about 63 percent of what men did, with the wage gap largest in agriculture and smallest in the public sector (Figure 1). Studies have found that female-managed farms in Ethiopia are 24 percent less productive than male-managed farms, controlling for plot size and geographic features (Aguilar et al. 2013; MoANR, UN Women and PEI Africa, 2018).[16] The main drivers of the productivity gap in agriculture are: unavailability of household labor, responsibility for household

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[14] The ILO define informal employment as: the total number of informal jobs, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period. However, the definition of the informal sector can vary widely by country, and over time, making comparison difficult.

[15] The informal sector is estimated to contribute to 25–65 percent of GDP and account for 30-90 percent of total nonagricultural employment in sub-Sharan Africa. Sub-Saharan Africa Regional Economic Outlook, IMF, May 2017.

[16] Aguilar et al. 2013 analyze the agricultural productivity gap in different countries. The productivity gap is smallest in southern Nigeria (17 percent) and largest in Niger (66 percent). Agricultural productivity is defined as the average value of agricultural output produced per hectare or acre of land. Productivity differences were measured either at the plot level or added up to the individual farmer level within each country. The analysis for Ethiopia comprises a sample of 1,518 farm managers, of whom approximately 16 percent are women.

duties (including caring for children), plot size, land quality, return to farm inputs, and knowledge of improved farm practices.
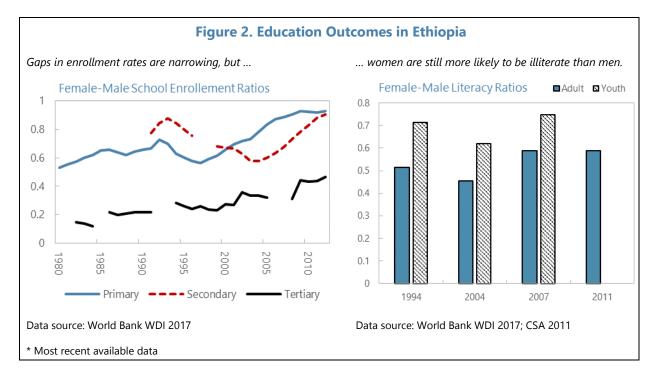
10.   Women are significantly less likely to own a business, and when they do, face significant operating constraints. Only 16.6 percent of all businesses registered with the Ministry of Trade in 2014 where owned by women. The median start-up capital of male-owned enterprises is five times higher than that of female-owned enterprises (World Bank, 2009). Female-owned firms appear to have less access to finance, fewer land use rights in some areas, smaller networks, and are more vulnerable to be victims of crime/corruption.

Women's Health and Education

11.   Women's health outcomes have improved since the 1990s, but headline indicators mask regional variation and the incidence of violence against women remains high. Maternal mortality per 100,000 live births declined dramatically from 1,400 in 1990 to 350 in 2015—compared to 550 across SSA as a whole in 2015—and access to family planning services and safe delivery facilities—two key pillars of women's health—have improved, although wide gaps between urban and rural women still exist. Rates of Female Genital Mutilation or Cutting (FGM/C) remain high, at 65 percent, with large regional disparities, as does the incidence of gender-based violence, with 23 percent of women aged 15-49 having experience physical violence.[17] The major constraint in tackling FGM/C and violence against women is the slow pace of change in social attitudes.

12.   Educational enrollment rates amongst women have improved, but men are still more likely to be educated and gaps in literacy rates remain stark. The successful expansion of primary education in Ethiopia has led to significant improvements in the literacy rates among women, which more than doubled to 38 percent nationally between 1990 and 2014. Enrollment rates for women have risen relative to those for men and Ethiopia is nearing parity at both the primary and secondary levels (Figure 2). Despite this, men remain much more likely to be enrolled in tertiary level education than women.[18] The Preliminary Gender Profile (2004) noted that women are underrepresented in fields such as science and technology, citing as causes the low number of female teachers and mentors for young girls, compounded by social-cultural and economic factors. In addition, significant gaps in literacy rates between men and women exist, particularly amongst the older population (Figure 2). A joint 2014 MDG report by the National Planning Commission (NPC) and the United Nations (UN) highlights some of the key remaining socioeconomic challenges impeding women's educational attainment, including: early marriage, violence against girls, abduction, household chores, parents' lack of awareness about the benefits of education, and the absence of gender-sensitive facilities in schools.

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[17] According to data from the 2016 Ethiopian Demographic and Health Survey (DHS).

[18] The authorities are aware of these gaps. The Annual Abstract of the Ministry of Finance and Economic Cooperation (MoFEC) notes that female enrolment rates have shown rapid improvement over time, but with twice as many men enrolling in undergraduate programs than women in 2015/16, more needs to be done.
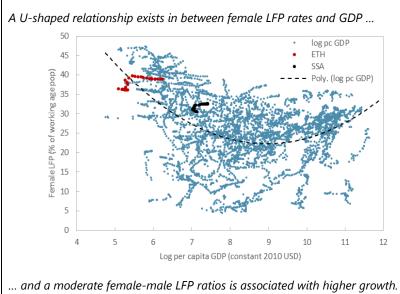
Figure 2. Education Outcomes in Ethiopia

Gaps in enrollment rates are narrowing, but ...   *... women are still more likely to be illiterate than men.*

Data source: World Bank WDI 2017   Data source: World Bank WDI 2017; CSA 2011

* Most recent available data

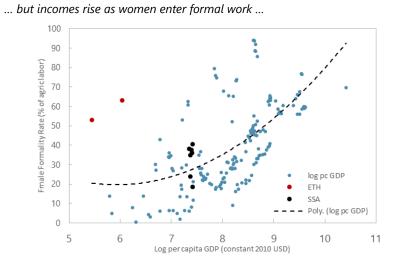## C.   Macroeconomic Return to Increased Women's LFP

13.   **This paper uses three approaches to assess the impact of gender gaps on economic output in Ethiopia.** The first is a cross-country analysis of labor force participation (LFP) rates, income levels and growth between 1990 and 2016. The second is a decomposition of output lost due to gender gaps in human capital and formal sector employment. Finally, the third approach uses a household panel dataset to investigate the reasons for the existence of these gender gaps at the individual level.

Labor Force Participation and Growth: Cross Country Evidence

14.   **There exists a U-shaped relationship between overall female labor force participation (LFP) rates and per capita incomes at the cross-country level (Figure 3).** At low levels of income, the necessity to work in the absence of social protection programs results in high labor force participation by women. As countries get richer, women withdraw from the labor force. Only in rich countries do we see female LFP rates rising again, possibly as a result of better education, lower fertility rates and higher wages. This relationship is clear at the cross-country level.

Figure 3. Labor Force Participation Rates, Income, and Growth

A U-shaped relationship exists in between female LFP rates and GDP ...

... but incomes rise as women enter formal work ...

... and a moderate female-male LFP ratios is associated with higher growth.

These relationships can be seen from the following regression results

Regression output	(1)	(2)	(3)
	log GDPpc	Δ log GDPpc	Δ log GDPpc
Female LFP rate	-0.669**	0.397**	-0.147**
- squared			0.022**
Female-Male LFP ratio		-0.411**	0.203**
- squared			-0.029**
Initial log GDP per capita		0.999**	0.000**
Initial Female LFP rate			0.035**
Observations	4713	4218	4218
Year controls	Yes	Yes	Yes
t-statistics in parentheses			
* p<0.051, ** p<0.01, *** p<0.001			

Source: Staff calculations; World Bank WDI 2017

15.   At the same time, smaller gender gaps in LFP rates and higher rates of formal employment amongst women are both associated with faster growth. While female LFP rates may initially fall as countries become richer, the ratio of women employed in formal jobs is clearly positively associated with income per capita, increasing pace as countries develop (figure 3). Formal employment for women offers higher wages as well as better social protection, health benefits, and legal status. These types of jobs become more abundant as labor markets and economies develop; but could also be a source of growth as the higher returns to human capital in the formal labor force lead to higher investment rates in education by women. There is also positive relationship between the ratio of LFP rates between men and women and the rate of growth of an economy.[19] We estimate that a 1 percentage point increase in the female-male LFP ratio is associated with a 0.2 percentage point increase in the rate of growth, at lower levels of female participation (figure 3). Previous work finds similar estimates (IMF, 2015; Amin et. al., 2015).

Decomposing Lost Output due to Gender Gaps in Ethiopia

16.   Using a production function approach, we decompose the level of income that is due to productivity, the stock of physical capital, human capital, and formal sector employment.[20] Due to the highly informal nature of much of the production side of the Ethiopian economy, as well as the importance of agriculture—some 70 percent of people's livelihoods are reliant on agriculture—we begin by splitting the economy into a traditional (subsistence) agricultural sector (Y^a) and a modern (agriculture, services, industry) sector (Y^m). We assume that traditional agricultural production uses only labor, whilst the modern sector uses physical capital and labor inputs. In each sector, labor is disaggregated by gender, and augmented by educational attainment. The model consists of: a simple traditional agricultural production function (1), a Cobb-Douglass production function for the modern sector (2), a constant elasticity of substitution (CES) labor composite (3), a returns-to-education function (4), a labor force education identity (5), and an aggregate GDP definition (6) as follows:

$$Q^a = A^a h^a \tag{1}$$

$$Q^m = A^m K^{1-\alpha}(h^m)^\alpha \tag{2}$$

$$h^i = \left(h_f^{i\,\rho_i} + h_m^{i\,\rho_i}\right)^{1/\rho_i} \tag{3}$$

$$h_j^i = e^{\varphi_s(s_{j,k}y_k)} l_j^i \tag{4}$$

$$l_j^i = \mu^i\left(p_{j,k}k_{j,k}^w\right) \tag{5}$$

$$Q = Q^a + Q^m \tag{6}$$

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[19] We control for country and year fixed effects, as well as initial GDP and initial LPF ratio.

[20] This decomposition approach has been used to decompose growth rates in income (Hall and Jones, 1999; Rodriguez-Clare, 1997); Caselli (2005)).

where superscript $j \in M, F$ denotes gender of labor inputs and $i \in a, m$ denotes sector; A^i is sector specific total factor productivity (TFP); K is the aggregate capital stock; h_j^i is the "quality adjusted" workforce in each sector, i, constructed using a CES composite of male and female human capital with sector specific substitutability, $\sigma_i = 1/(1 - \rho_i)$; human capital is a piecewise linear function of the return to schooling, $s_{j,k}$, which is either none, basic, intermediate or advanced; y is the years of schooling typically completed at each level (k); l_j^i is the labor force of gender j in the sector i with a given level of education; $p_{j,k}$ is the population with a given level of education; and k_j^w is the share of the working age population with that level of education.

17.   We assume that male and female labor are imperfect substitutes in production. A key assumption here is the degree of *complementarity* between male and female labor in the production functions of the two sectors. Intuitively, female workers are likely to bring new skills to the workplace—reflecting societal norms, as well as differences in risk preferences and responses to incentives—that complement male labor and bring economic benefits over and above simply having more workers. The lower the elasticity of substitution (ES) between men and women, the more complementary they are, and thus the higher the effect on income of increasing women's LFP. In addition, the marginal impact on output of increasing female LFP rates is decreasing in the initial female LFP rate.[21] We assume that the ES between men and women is $\sigma_m = 0.4$ in the modern sector, and $\sigma_a = 2$ in the agricultural sector.[22]

18.   We use a combination of data and parameter assumptions to calibrate the model to the Ethiopian economy. Data on sectoral value-added comes from the World Bank's WDI database. In recent years, agriculture accounted for around 40 percent of total value added. The remaining 60 percent are assumed to be produced by modern sectors. Using IMF World Economic Outlook (WEO) data on investment levels over the period 1980–16 and an assumed depreciation rate of 7 percent per year, we construct a physical capital stock series. Data on aggregate labor force participation rates come from the ILO whilst data on educations levels of the population and work force come from the WDI database from the ILO. According to data from the World Bank, around 70 percent of women are engaged in agriculture in Ethiopia (compared to 80 percent of men), and 8 percent of women in the labor force are engaged in formal wage employment (compared to 11 percent of men). We use these to set l_j^i in equation (4),[23] and assume that within each sector, the distribution of education (none, basic, intermediate, and advanced) is identical. Finally, we set $\alpha = 0.3$, and following Psacharopulos (1994) assume returns to basic schooling of 13.4 percent, intermediate schooling of 10.8 percent and advanced schooling of 21.9 percent in equation (3), and these enter additively for each group of educated workers. Given data on labor shares, education levels, and fixed capital, it is possible to back out a measure of TFP (A^i) for each of the two sectors in

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[21] That is, the lower the initial female LFP rate, the larger is the marginal increase in output from an increase in women in the labor force, regardless of the degree of substitutability/complementarity between men and women.

[22] These are within the range of estimates of Ostry et al. (2018), who find ES between men and women clustered below 1 in the macro data, between 1–2 in the sectoral data, and between 2–3 in the firm-level data.

[23] There is a small share of men and women in the labor force who we assume do engage in economic activity but in activities that do not contribute to measured GDP.

equations (1) and (2). These are kept constant throughout the analysis. Total output then follows from equation (5).

19.   Increasing women's levels of education to those of men could increase output by around 11.3 percent. The model allows us to calculate the change in output that can reasonably be attributed to improvements in the education levels of women relative to men. We assume that the improvement in women's education adds to the human capital stock in the same way in both sectors. However, given the different production functions, the impact on productivity is different—with an additional unit of labor in the industrial sector being substantially more productive than in agriculture.[24]

20.   Moving women into wage employment in the modern sector could increase output by a further 12.4 percent. The model allows us to calculate the change in output from eliminating the gap in agricultural labor activity and formal employment between men and women. Closing these gaps means increasing the share of women in agriculture from 70 percent to 80 percent and increasing women's formal wage employment in the modern sector from 8 percent to 11 percent (both the rates for men), where they would be significantly more productive.

21.   Together, eliminating gender gaps in educational attainment and formal sector employment could increase output in Ethiopia by 24.1 percent. This aggregate effect is greater than the sum of the two individual effects. This is because a more educated worker in either sector increases the marginal product of other factors in the sector.

Gender Gaps in Education and Earnings in Ethiopia

22.   Given the large gender gaps in education and formal employment at the macro level, we now ask: what are the drivers of these gaps at the micro level? Using micro data, we can assess the individual economic return to wage employment, controlling for education, sector and region. This will allow us to better understand the reasons for lower formal sector employment and underinvestment in education amongst women. The data also point to gaps in education levels and the allocation of time to household related work between men and women.

23.   Women are less likely to have a wage-paying job than men, have lower levels of formal education, and earn less than men, on average. We use data from the three waves of the World Bank's Living Standards Measurement Survey (LSMS).[25] On average, 7.2 percent of men report having a wage-paying job in Ethiopia, compared to 3.4 percent of women (table 3). Women have less formal education than men. Indeed, the data show that 31.1 percent of men had a primary

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[24] Closing the gender gap in participation rates alone however would actually reduce output by 0.5 percent. This is driven by the relatively high participation rates amongst women with a basic education relative to men, and so closing the gender gap means lowering the number of women in the labor force with basic levels of education.

[25] The data is a household panel covering 3 waves: 2011/12, 2013/14, and 2015/16. It attempts to track and re-interview respondents in later waves. There is roughly a 16 percent attrition rate between each wave.

education, falling to 3.8 percent with tertiary education, compared to 20.5 percent and 1.8 percent respectively for women. A significant gender wage gap exists, with women typically earning less than their male counterparts. The average hourly wage reported by women who have a wage-paying job was 13 Birr (0.60 USD), around 80 percent that of men (16 Birr or 0.72 USD), and this gap has been increasing over time (see table 4).[26] The data also point to large variations in the hourly wage rate across sectors and regions, for both men and women (table 5). Finally, women in Ethiopia are over three times more likely to spend time collecting firewood or water (38 percent compared to 18 percent) and when they do, they spend, on average, around 50 minutes per day on these chores compared to 12 mins for men.[27] These gaps are largest in the regions of Harari and Dire Dawe and lowest in Addis Ababa.

24.   We estimate a simple wage regression using all three waves of the LSMS panel, controlling for education, sector and region, as well as individual ability:

$$y_{i,t} = \alpha + \boldsymbol{\beta X_{i,t}} + f_i + w_t + \varepsilon_{i,t} \tag{5}$$

where $y_{i,t}$ is the depend variable of interest, in this case the log hourly wage of individual i at time t, $\boldsymbol{X_{i,t}}$ is a vector of regressors and interactions which include: gender, age, age squared, education, and sector, $\boldsymbol{\beta}$ is a vector of parameter estimates, f_i are region fixed effects, w_t time fixed effects to control for aggregate wave level effects, and $\varepsilon_{i,t}$ is an i.i.d. error term.

25.   Women are less likely to have a job and earn significantly less than men, even after controlling for education, sector, and selection into employment. The results from estimating equation (5) are presented in table 6 below. Column 1 presents selected parameter estimates for the basic wage regression with only time and woreda (village) controls,[28] suggesting that women earn around 27 percent less than men, controlling for their age. This result holds even after education and sector controls are added (column 2). Given that only a small minority of individuals report having a wage-paying job, we may be concerned about selection bias in these estimates—that is, the individuals who do not have a wage paying job may have very different unobservable characteristics than those that do. Columns 3 and 4 attempts to account for selection by estimating a Heckman model of equation (5). Column (3) presents the probit model on the likelihood of having a wage paying job. We use other household income as an exogenous shifter of the likelihood of an individual of being employed. We see that there is a concave relationship with age—the probability of having a job increases with age at a decreasing rate—and a positive relationship with education— more education increases the likelihood of having a job. In addition, women are less likely to have a

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[26] We inflate the wage rates to 2016/17 Birr using the average 12-month CPI to allow comparisons across waves. It is worth noting that out of a full sample of over 46,760 individuals aged >7 years, only around 2,500 (5.5 percent) report having engaged in wage employment in the past 12 months (1,400 in 2015/16, 530 in 2013/14 and 640 in 2013/14). This makes the sample unrepresentative of the population as a whole.

[27] These gaps are largest in the regions of Harari and Dire Dawe and lowest in Addis Ababa. Understanding the causes of these regional disparities is vital for designing an adequate policy response.

[28] In all cases the standard errors are corrected for heterosketasticity using White's robust standard errors.

wage paying job, controlling for all these other factors. Finally, column (4) presents the results of the wage regression with the Inverse Mills Ratio (IMR) included as a regressor.[29] Controlling for selection into wage employment—as well as age, education and sector—increases the gender wage gap to over 30 percent. The return to education, in terms of higher wages, is also clearly visible. The positive coefficient on the IMR indicates that those individuals that have a wage paying job are, on average, of higher unobserved ability than those that do not, and once in the labor force, earn higher wages for that reason. However, after controlling for this selection effect, the gender wage gap increases, suggesting that even high ability women face significant barriers to entry into the labor force compared to high ability men in Ethiopia.

Table 3. Ethiopia: Wage Employment and Education Levels for Men and Women by Region

| | Wage Employment | | | Education Levels | | | | | | | |
| | Male | Female | All | Male | | | | Female | | | |
Region				Primary	Secondary	Tertiary	Other	Primary	Secondary	Tertiary	Other
Tigray	7.3%	3.7%	5.5%	3.6%	11.1%	63.5%	33.3%	0.8%	6.3%	53.7%	42.1%
Afar	11.7%	4.9%	8.4%	6.2%	36.4%	100.0%	59.3%	3.9%	21.6%	0.0%	33.3%
Amhara	5.7%	3.2%	4.4%	3.5%	8.8%	68.9%	50.8%	1.0%	6.8%	66.7%	52.3%
Oromia	6.8%	3.2%	4.9%	3.3%	8.4%	71.1%	59.7%	1.2%	5.2%	68.9%	45.8%
Somali	7.3%	1.5%	4.3%	3.6%	20.5%	70.6%	60.0%	1.1%	10.6%	33.3%	40.0%
Benshangul-Gumuz	7.6%	3.0%	5.3%	4.6%	13.3%	72.7%	75.0%	1.8%	5.2%	100.0%	77.8%
SNNP	5.2%	1.8%	3.5%	2.5%	6.8%	65.8%	53.1%	0.7%	3.1%	53.8%	51.6%
Gambela	10.4%	5.8%	8.1%	5.9%	5.5%	47.1%	42.9%	4.0%	1.9%	62.5%	46.7%
Harari	5.7%	2.7%	4.1%	2.9%	12.9%	47.8%	41.7%	0.0%	12.8%	71.4%	35.7%
Addis Ababa	38.0%	22.2%	29.2%	20.5%	37.3%	62.0%	45.5%	8.7%	24.6%	47.6%	52.9%
Diredwa	11.1%	6.5%	8.8%	9.6%	21.4%	85.0%	76.2%	4.1%	18.3%	83.3%	88.9%
All	7.2%	3.4%	5.3%	3.7%	11.4%	66.9%	53.3%	1.4%	7.2%	58.5%	49.2%

Data source: LSMS 2011–16; Staff calculations

Table 4. Ethiopia: Aggregate Gender Wage Gaps

| | Mean Hourly Wage (2016/17 Birr) | | | |
	2011/12	2013/14	2015/16	All
Male	13.6	15.3	17.5	15.9
Female	12.8	14.1	13.2	13.2
Gap	0.8	1.2	4.3	2.7
Total	13.3	15.0	15.8	15.0

Data source: LSMS 2011–16; Staff calculations
* Mean wage (Birr / hour) – Gender and wave; data source: LSMS 2011–16

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[29] The IMR is calculated using the estimated correlation between the residuals of the probit (or selection) model and those of the wage regression. It tells as about the likelihood of an individual having a wage paying job, given their observable characteristics. For example, the IMR will be larger if we observe a young person with a wage paying job.

Table 5. Ethiopia: Regional and Sectoral Wage Gaps

	Male				Female				
	Primary	Secondary	Tertiary	All	Primary	Secondary	Tertiary	All	Gap
Region**									
Tigray	22.5	18.3	23.3	20.6	4.1	13.0	24.0	16.9	82.4%
Afar	14.4	13.3	22.8	14.4	6.6	9.6	.	9.7	66.9%
Amhara	9.2	12.5	23.6	14.8	5.5	9.8	19.0	13.3	89.8%
Oromia	12.2	15.3	26.9	18.9	8.3	12.5	23.3	18.1	95.6%
Somali	13.8	14.3	23.2	16.4	20.0	13.9	18.4	21.3	130.2%
Benshangul	3.9	11.3	21.1	11.4	8.9	14.6	19.9	16.5	145.1%
SNNP	8.9	13.1	25.2	16.9	8.1	10.8	16.0	13.1	77.7%
Gambela	9.6	21.0	16.4	17.4	6.3	5.3	23.6	11.4	65.9%
Harari	5.1	12.9	24.5	15.8	.	12.5	16.5	13.5	85.8%
Addis Ababa	11.7	12.4	31.1	17.7	7.1	7.9	18.5	10.6	59.8%
Diredwa	8.2	15.9	19.6	13.8	9.8	6.9	13.6	9.5	69.1%
All	11.4	14.2	25.2	17.0	7.7	10.3	20.2	14.1	83.3%
Sector									
Agriculture & fishing	32.2	37.7	34.8	32.2	6.2	71.2	29.4	24.6	76.2%
Mining & electricity	11.0	9.8	28.4	15.0	10.1	6.6	21.0	14.4	95.8%
Manufacturing	11.9	19.7	52.6	19.3	32.6	7.7	20.3	17.0	88.2%
Construction	97.0	38.9	33.3	60.9	11.4	10.3	14.6	11.0	18.0%
Services	24.8	24.5	32.6	25.3	6.7	19.5	19.1	14.2	56.0%
Wholesale & transport	19.0	23.3	15.1	21.0	3.5	9.3	9.2	9.7	46.1%
Hospitality	32.1	9.9	55.8	19.4	7.3	9.8	.	8.6	44.1%
Real-estate & finance	6.7	34.5	39.5	31.0	3.6	8.4	21.0	15.5	50.0%
Public	12.0	34.6	43.6	35.1	14.5	12.7	31.4	23.2	66.2%
Other	13.1	14.1	58.0	31.0	1.4	15.5	38.6	23.8	76.9%
All	35.4	28.8	41.0	33.0	12.0	15.1	28.3	19.3	58.5%

Data source: LSMS 2011–16; Staff calculations
* Mean wage (Birr / hour) - Region, Education, and Gender; data source: LSMS 2011–16
** Sample sizes are largest in Oromia, Amhara, and Addis Ababa, and smallest in Somalie, Benshangul-Gumuz, and Harari

Table 6. Ethiopia: Wage Regressions

	(1) Log Wage	(2) Log Wage	(3) Work Dummy	(4) Log Wage
Female	-0.271***	-0.269***	-0.238***	-0.313***
Age	0.109***	0.0624***	0.134***	0.104***
Age-squared	-0.00131***	-0.000665***	-0.00153***	-0.00114***
Education				
Primary		1.025	0.193	1.083*
Secondary		1.359*	0.575***	1.632**
Tertiary		1.941***	1.915***	2.762***
Other		1.614**	1.782***	2.393***
Other HH income			-0.128***	
IMR				0.512*
Observations	2538	2092	27714	2092
Wave controls	Yes	Yes	Yes	Yes
Woreda controls	Yes	Yes	Yes	Yes
Education controls		Yes	Yes	Yes
Sector controls		Yes		Yes
Robust std err	Yes	Yes	Yes	Yes
t statistics in parentheses				
* p<0.05	** p<0.01	*** p<0.001		

Data source: LSMS 2011–16; Staff calculations

D. Policy Implications

26.   The Ethiopian authorities have shown a firm political commitment to the advancement of gender equality, women's rights and women's economic empowerment. The National Policy on Women was issued in 1993 guaranteeing equal rights of women, a commitment that was renewed in the constitution in 1995. The Ethiopian Women, Development and Change Strategy, developed in 2017/18, aims to increase women's economic empowerment by addressing high rates of unemployment and informality and ensuring urban job creation and food security for women. Ethiopia has also revised gender discriminatory legal provisions in the Family Law (revised in 2000) and Penal Codes (revised in 2005), aimed at tackling gender-based violence, including child marriage and harmful traditional practices. In 2016, the Financial Administration proclamation was revised to mainstream gender issues in the budget preparation process. This political commitment is reflected in the recent appointment of a gender-balanced cabinet and the first women president in Ethiopian history.[30]

27.   Ethiopia has ratified a host of international and regional commitments on gender equality and women's empowerment. Ethiopia ratified the Convention on Elimination of All Forms of Discrimination against Women (CEDAW) in 1981, submitting the 8th CEDAW[31] report to the UN General Assembly in 2016, and adopted the Beijing Platform for Action, which was declared in Fourth World Conference on Women gathered in Beijing in September 1995. The government has signed up to the Sustainable Development Goals (SDGs), which includes ending violence against women and girls by 2030 (SDG goal 5), and the Africa Renaissance Agenda 2063, committing to a specific goal on full gender equality in all spheres of life.

28.   Successive national development plans have aimed to improve economic participation of women, however significant challenges remain. Ethiopia's first Growth and Transformation Plan (GTP I, 2010/11-2014/15) committed to achieving equity in the distribution of economic and social gains to women and youth across all sectors and succeeded in extending financial services to millions of women. The second national development plan (GTP II) reaffirmed this commitment. It noted that whilst progress has been made, significant challenges remain, calling for a redoubling of efforts. These include improvements in access to agricultural extension services and farming technologies for women, tackling land right issues and increasing the availability of credit. According to the 2017 Gender Statistics Report,[32] Ethiopian women have not been equal beneficiaries of economic, social and political opportunities, due to the historical legacy of gender inequality and discrimination, strengthened by persistent social norms and traditions.

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[30] On October 25, 2018, Ethiopia's parliament appointed Sahle-Work Zewde as the first women president in Ethiopia's history.

[31] The Convention on the Elimination of All Forms of Discrimination Against Women, adopted in 1979 by the UN General Assembly, contains 30 articles aimed at eliminating discrimination against women and girls, while recognizing that it is up to each country to determine its own policies and laws.

[32] 2017 Gender Statistics Report; National Planning Commission (NPC), Central Statistics Agency (CSA), UN Women, Statistics Sweden.

29.   Policies aimed at increasing the productivity of female farmers in Ethiopia holds enormous potential for the overall economy. Policy interventions aimed at narrowing the productivity gap between male and female farmers could focus on: promoting the use of pesticides and other inputs on female managed farms (including male labor and machinery), better tailoring advice to female farmers on input use, and providing services that reduce the time women spend on household duties.

30.   Increasing female education opportunities, particularly in rural areas, would help mobilizing a larger and more productive workforce. While literacy rates among women have more than doubled since the mid-1990s, due largely to a successful expansion of primary and adult education, women are still much more likely to be illiterate than men, particularly in rural areas. According to a joint 2014 report by the National Planning Commission (NPC) and the United Nations (UN), an urban woman is still more than twice as likely to be literate than a rural woman in Ethiopia.[33] In addition, the majority of women are unable to transition to secondary and tertiary education due to school distance, personal security risks, and economic challenges. As girls grow older, academic participation becomes increasingly difficult. Policies should focus on reducing the barriers to continuing education beyond the primary level face by girls and women, particularly in rural areas. These could be supplemented by more general policies aimed at increasing the rate of female LFP, particularly in formal sectors. Experience in other countries suggests that changing cultural attitudes, improving childcare policies, and adopting technologies that favor sectors with gender balanced employment, have all contributed to increasing female LFP (Ostry et al., 2018).

31.   The authorities are aware that improving the status and treatment of women requires changing beliefs and attitudes. Social attitudes and traditional beliefs in Ethiopia continue to constrain women's ability to participate equally in society and the economy. Many household and community decisions regarding women, such as women's access to farming resources or the use of birth control, and made by men, either the father or husband. Rural women in particular, still face individual, community and institutional barriers to fully exercise their rights, which are further compounded by women's limited decision-making power within households, and low levels of formal education. According to a JP RWEE report, customary laws and cultural practices result in a division of labor in farming activities that typically makes women the secondary earners of the household.[34] Their decision-making power related to household income is limited, aggravating their dependence on their husbands. A Joint Program in the Amhara and Tigray regions of Ethiopia that takes a holistic approach to women's empowerment recognizes that interventions that change attitudes and behavior of community members, including men, boys and traditional and religious leaders, are also needed. [35]

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[33] In 2011, 30 percent of women in rural areas were literate, compared to 70 percent in urban areas (compared to 50 percent in rural areas and 87 percent in urban areas for men). MDG Report 2014, Ethiopia Commission NPC.

[34] Joint Program between the Ministry of Agriculture and Natural Resources, UN Women and UNDP on Rural Women's Economic Empowerment (JP RWEE) in Oromia and Afar Regions.

[35] "Leave No Woman Behind", UN Women, UNFPA, WFP, Ministry of Women's Affair, and Bureaus of Women Affairs of the Regional State Government of Amhara and Tigray.

32.   Improved institutional capacity would lead to better integration of gender issues into the planning and implementation of government policies. Ethiopia has already embedded gender units within the structure of many of its ministries. According to the JP RWEE report however, limited institutional structures and supporting organizations, including cooperatives, micro-finance institutions, and government bureaus, has resulted in a limited response to the needs of rural women, and slowed progress on women's empowerment. In addition, limited capacity means that these institutions are not able to fully implement gender-budgeting practices. Women have also tended to be underrepresented in leadership positions in these institutions. However, the recent ministerial changes approved by parliament in late-2018 increased the cabinet representation of women to 50 percent, a first in Ethiopian history.

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