



THE COST OF THE **GENDER GAP** IN AGRICULTURAL PRODUCTIVITY in Ethiopia



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United Nations Entity for Gender Equality
and the Empowerment of Women

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PRODUCTIVITY

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1 Introduction: the gender gap in agricultural productivity

Ethiopia's second Growth and Transformation Plan 2015/16 – 2019/20 places women farmers at the centre of the country's development process and its efforts to meet the Sustainable Development Goals. About 47 per cent of the rural labour force are women, and the figure is rising over time.¹ Yet women farmers have been found to be less productive than male farmers. In 2014, the World Bank and ONE published *Levelling the field: improving opportunities for women farmers in Africa*² which contained the first estimate of the gender gap in agricultural productivity in Ethiopia. There, the gender gap in agricultural productivity—measured by the value of agricultural produce per unit of cultivated land—was found to be 24 percent, after accounting for plot size and regional variation across the country.

This gap existed because women frequently had unequal access to key agricultural inputs such as land, labour, knowledge, fertilizer, improved seeds and water.³ The fact that a gender gap was identified suggested that agricultural policy strategies and programmes under the first Growth and Transformation Plan 2010/11 – 2014/15 had been unable to comprehensively address the underlying constraints facing women farmers. Moreover, low agricultural productivity, by reducing per hectare yields, leads to more intense farming—resulting in over-cultivation, soil erosion, and land degradation. These in turn further undermine agricultural productivity and environmental sustainability. The evidence presented in this Report addresses this situation and offers guidance to Ethiopian policy makers on how to increase agricultural productivity and economic growth, strengthen food security, support poverty reduction and environmental sustainability, empower women farmers, and facilitate the structural change that is the objective of the Growth and Transformation Plan 2015/16 – 2019/20.

In this Report, the current **monetary value of the gender gap in agricultural productivity** in Ethiopia has been estimated using the Socioeconomic Survey 2015/16, the most recent data that is available. Box 1.1 presents a profile of women farmers in Ethiopia. The study then examines what the

size of this gap means relative to the domestic product (GDP) and poverty reduction. The study estimates that the gender gap amounts to a total amount of \$203.5 million in Ethiopia.⁴ These estimates can help Ethiopian policy makers understand the scale of the gains that could be made from designing better policies to improve women's ability to use agriculture in an environmentally sustainable manner to lift themselves and their families out of poverty and to contribute to economic growth (box 1.2). It is important to stress that these potential gains do not come without a cost. Closing the gender gap will require changing existing or designing new policies, which may require additional resources, although the study is of the view that the resource requirements needed to close the gender gap are relatively modest.

The study then goes beyond these figures to estimate the **costs associated with gender gaps in access to individual agricultural inputs**. This evidence can help policy makers decide where efforts are most needed. For example, understanding that 43.7 percent of the gender gap in agricultural productivity in Ethiopia is due to women's lower access to male labour to help work their plots of land, or that 45 per cent of the gap is due to women's different use of pesticides, herbicides or fungicides on the plots they operate, can help decision makers better focus their efforts and in so doing boost the economy in the long term. Finally, the study considers the broad outlines that might shape the thinking among policy makers, particularly in the Ministry of Agriculture and Natural Resources, about how they can learn from the lessons of this analysis. Unfortunately, existing knowledge of effective—let alone cost-efficient—policy instruments to resolve hurdles faced by women farmers is still in its infancy. For policies to work, it is crucial to recognize that both men and women may face different constraints that hinder them from improving their agricultural practices in a climate-responsive manner, and that it may be necessary to rethink, innovate, and pilot in order to adequately address women-specific constraints and to document what works and what does not.

1. Available: http://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afLoop=774610671033787&_afWindowMode=0&_afWindowId=null#%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D774610671033787%26_afrWindowMode%3D0%26_adf.ctrl-state%3D15wkh7gvy_4 (accessed on 26 January 2017).

2. Available: <http://documents.worldbank.org/curated/en/579161468007198488/Levelling-the-field-improving-opportunities-for-women-farmers-in-Africa> (accessed 26 January 2017).

3. Sheahan and Barrett (2014) report for their sample of six Sub-Saharan countries that female-headed households statistically significantly apply, use, and own less modern agricultural inputs compared to male-headed ones; and that plots owned or managed by women are less likely to receive modern agricultural inputs and receive lesser amounts when applied.

4. All dollars referred to in this publication are U.S. dollars. Throughout this study, monetary values are expressed in terms of 2010 prices.

Possible policy approaches that can close the gender gap in Ethiopia's agricultural productivity can be split into two main groups:

- Making current agricultural policies more **gender-responsive**. Such policies may include reviewing existing policies, such as agricultural credit services, so that they better focus on the specific needs of women and men.
- Designing new agricultural policies that are **gender-targeted**. Policy makers can design agricultural policies that focus specifically on the needs of women farmers, for example, by promoting gender-responsive and environmentally-sustainable agricultural technologies and tools. It is important to note that gender-targeted policies will not bring exclusive benefits to women only. Policies that focus on women will impact men and

young people as well because of women's roles as the providers of services within the household.

In this light, it is important to recognize that in Ethiopia women are disproportionately responsible for the provision of unpaid care and domestic work that provide essential services within the household for its members. These include cooking, childcare, cleaning and household sanitation, household health care and informal education, among other activities. As a result, women perform more total work in a day than men.⁵ This means that policy approaches designed to address women's specific constraints in farming should be based upon reducing the unpaid care and domestic work that they are expected to perform, and in so doing freeing up the time to spend more of their working day on the activities that they undertake outside the home.

Box 1.1

Who is a woman farmer?

In Ethiopia, it is statistically significant that female farm plot managers are found to be older, are more likely to be divorced or widowed, have lower levels of education and have a bigger average family size. They also have more family dependents who are 10 years or younger or older than 65, and are significantly less wealthy compared to all other plot managers. Female farm plot managers cultivate land that is, on average, about 0.48 hectares smaller than that land managed by males, and their access to non-land farm inputs lags that of male farm plot operators.

Box 1.2

Linking the gender gap in agricultural productivity to poverty, food security, climate action and environmental sustainability

In addition to impacts on overall national income, closing the gender agricultural productivity gap could reduce poverty, which is Sustainable Development Goal (SDG) 1, and improve nutrition in Ethiopia: directly, because many poor people work in agriculture; and indirectly, because higher agricultural output may increase income for people employed in sectors linked to agriculture. At the same time, a higher agricultural output can also lead to lower food prices. The combined impact of increasing the incomes and agricultural productivity of the poor and lowering food prices could help

improve nutrition by enabling poor people to purchase more and better food, and by increasing their access to food from their own production.

At the same time, the agricultural sector is challenged by recurring stresses and shocks caused by environmental degradation and climate change, which impact on productivity for both men and women farmers. However, due to the gender gaps in the sector climatic variations disproportionately increase the challenges faced by women and other marginalized farmers. In this regard, access to time-saving and climate-responsive agricultural technologies and tools is essential to close gender gaps and at the same time ensure the sustainable use of soil and land, which are the natural resources that underpin agricultural productivity. This is, moreover, consistent with the SDGs.

5. Available: <http://progress.unwomen.org/en/2015/> (accessed 26 January 2017).

2 Four take aways on the gender gap in agricultural productivity in Ethiopia

Four key policy lessons emerge from the evidence presented in this Report, as are discussed in detail in subsequent chapters.

The gender gap in agricultural productivity has an impact

Even with the conservative assumptions used in this Report, the study finds that there are gains to be achieved if Ethiopian policy makers, particularly in the Ministry of Agriculture and Natural Resources, address the gender gap effectively. Annual crop output could increase by 1.1 percent, and if the contribution of crops to total agricultural output, the size of the agricultural sector in the overall economy, and spill-over effects of higher agricultural output are taken into account, as well as the size of agricultural sector, the study estimates the potential gross gains to GDP to be \$203.5 million.⁶

The potential economic gains from reducing the gender gap translate into poverty reduction

Increasing GDP by closing the gender gap in agricultural productivity has the potential to lift as many as 1,050,000 people out of poverty in Ethiopia.⁷ However, closing the gender gap could result in additional improvements as these estimates do not capture the likely agriculture-nutrition linkages and other spill-over effects. For example, increased income in women's hands has implications for the inter-generational transmission of hunger and malnutrition, as women tend to spend more of their income on children's health and education (Ruel, Alderman, and the Maternal and Child Nutrition Study Group 2013; Smith et al. 2003).



Kedija Wako, one of the beneficiaries of JP RWEE takes care of her livestock in Adami Tulu district of the Oromia region. (Photo: UN Women/Fikerte Abebe).

The benefits of closing the gender gap should exceed the Government resources needed to close the gender gap

While the overall figures might appear small compared to both the size of the Ethiopian economy and the number of Ethiopians living in poverty, there can be little doubt that lifting more than a million Ethiopians out of poverty by increasing GDP by less than one-quarter of one percent would seem to represent a sensible objective of Government policy. Therefore, while closing the gender gap would in itself require some additional investments from the Government, the magnitude of these additional resource requirements does not constitute a significant claim on Government resources.

To ensure the biggest “bang for the buck,” Government should identify and focus on the most costly constraints to women’s productivity

This Report helps to lay the ground-work for deeper investigation as to where to invest for the most cost-effective policies. Our analysis finds that women's lesser capacity to purchase pesticides, herbicides and fungicides is an important constraint contributing to the gender gap in farm crop productivity in Ethiopia. This clearly has implications on environmental sustainability. Closing this gap could yield gross gains of more than \$45 million. Women's lower access to male farm labour to work on their plots has an impact of a similar magnitude on the gender gap in agricultural productivity in Ethiopia. Closing the gap in the quantity of male labour used could yield gross gains of almost \$44 million in Ethiopia. However, our knowledge of what works is far from complete. Further research should therefore be undertaken to look at the relative impacts of specific policies and interventions as well as their cost-efficiency in order to quantify their net benefits.

6. The key empirical step taken to translate the estimated gross gains from closing the gap in agricultural yields between male and female farmers into gains of aggregate value addition to GDP is to assume that the fraction of agricultural GDP associated with crop production would rise proportionally with the gains in total gross crop production. For more detail, see box 4.1.

7. This figure is an estimate for a 10 year period, and can be treated as a one-off gain.

3 The context: gender in Ethiopia's farm economy

Ethiopia is undergoing rapid structural changes, as the share of non-agricultural production in real GDP increases steadily over time, most notably in the trade, and construction sub-sectors.^{8, 9} Nonetheless, agriculture continues to be a key contributor to real GDP growth, food prices dominate inflation, food subsidies are an important share of government spending, agricultural commodities are an important export, and wheat is a critical import.¹⁰ Agriculture alone is responsible for 37 per cent of GDP. In this sense, then, and notwithstanding the role of services and manufacturing and the country's aspirations to industrialize, as reiterated in the recent second Growth and Transformation Plan,¹¹ Ethiopia remains an agricultural country.

This is especially so in terms of work and livelihoods for Ethiopia's people. In Ethiopia over 80 percent of the total labour force is in the countryside¹² and is largely dependent on farming that is primarily rain-fed and is dominated by small holders and subsistence farming. Crop production is responsible for three-quarters of agricultural value-added. There are clear gender dimensions to farming and agriculture in Ethiopia. About 47 percent of the rural labour force are women, and the figure is rising over time as the rural economy becomes 'feminized'.¹³ In part, this is because high rates of agricultural growth have helped households finance the out-migration of men, and to a lesser degree, women, to urban areas,¹⁴ even though such migration produces an over-supply of labour in comparison to the number of jobs being created in Ethiopia's cities and towns.¹⁵

In this light, it is not surprising that poverty in Ethiopia remains a predominantly rural phenomenon.¹⁶ Rural poverty, which is declining,¹⁷ is experienced through nutritional and food insecurities that are largely witnessed in chronic malnutrition as well as micro-nutrient deficiencies. Poverty is also profoundly gendered; more women are poor relative to men, and 'female-only' households with no male adults are far more likely to be poor in Ethiopia.¹⁸ Gendered rural poverty in Ethiopia affects and is affected by other dimensions of gender inequality. Women's access to resources and their ability to participate in their communities are often mediated by men, although the dimensions can vary importantly across the regions of the country. Moreover, when women have access to a cash income they are more likely to spend it on their family's needs, whether it can be in terms of food provisioning, meeting health expenses, or paying out-of-pocket household expenses, according to surveys.

At the same time, if attention is paid to the total of both remunerative work and unpaid care and domestic work, in Ethiopia women perform 10 percent more total work per day than men, the vast bulk of which is in unpaid care and domestic work that tends to be underreported for both women and men because of the way in which "work" is defined and captured in survey instruments.¹⁹ It is possible that the gender-biased pattern of total work performed is particularly pronounced in rural Ethiopia; it is estimated that 70 percent of household food production in Ethiopia is produced by women.²⁰ Thus, the rural economy of Ethiopia should be approached as a gendered structure.

8. A review of the quality of the data found in the secondary sources used in what follows is beyond the scope of this Report. However, all data that is presented has been rigorously peer reviewed by the institution that has published it and so can be considered to be the best data that is currently available.

9. Available: <https://www.ifad.org/pub/rdr> (accessed 26 January 2017).

10. Available: <http://documents.worldbank.org/curated/en/463121480932724605/5th-Ethiopia-economic-update-why-so-idle-wages-and-employment-in-a-crowded-labor-market-draft-for-public-launch> (accessed on 13 February 2017).

11. https://europa.eu/capacity4dev/resilience_ethiopia/document/growth-and-transformation-plan-ii-gtp-ii-201516-201920 (accessed on 5 July 2017).

12. Available: http://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afLoop=774610671033787&_afWindowMode=0&_afWindowId=null#%40%40%3F_afWindowId%3D-null%26_afLoop%3D774610671033787%26_afWindowMode%3D0%26_adf.ctrl-state%3D15wkhp7gvy_4 (accessed 26 January 2017).

13. Available: http://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afLoop=774610671033787&_afWindowMode=0&_afWindowId=null#%40%40%3F_afWindowId%3D-null%26_afLoop%3D774610671033787%26_afWindowMode%3D0%26_adf.ctrl-state%3D15wkhp7gvy_4 (accessed 26 January 2017).

14. A lack of land access may foster out-migration of young people.

15. Available: <http://documents.worldbank.org/curated/en/463121480932724605/5th-Ethiopia-economic-update-why-so-idle-wages-and-employment-in-a-crowded-labor-market-draft-for-public-launch> (accessed on 13 February 2017).

16. Available: <https://www.ifad.org/pub/rdr> (accessed 26 January 2017).

17. Available: <https://www.ifad.org/pub/rdr> (accessed 26 January 2017).

18. Available: <http://progress.unwomen.org/en/2015/> (accessed 26 January 2017).

19. Available: <http://progress.unwomen.org/en/2015/> (accessed on 26 January 2017).

20. Available: <https://www.usaid.gov/results-data/success-stories/empowering-women-through-agricultural-development-ethiopia> (accessed on 26 January 2017).

The gendered character of the rural economy of Ethiopia has important implications for economic growth and poverty reduction. Of course, the rural economy is broader than the agricultural economy. Nonetheless, in Ethiopia it is established that agricultural output growth has had a strong causal impact on poverty reduction: for every 1 percent of growth in agricultural output, poverty has been reduced by 0.9 percent, which implies that agricultural growth caused reductions in poverty of 4 percent per year on average after 2005. In this light, it is very encouraging that while the share of value added derived from agriculture is declining in Ethiopia²¹ value added per worker in agriculture is increasing, indicating that the sector is steadily becoming more productive, which is a key precondition of agricultural growth and hence poverty reduction.²²

However, if the rural economy of Ethiopia is a gendered structure it should not be assumed that the benefits of increasing agricultural productivity, agricultural growth and poverty reduction are equitably shared between women and men. Indeed, it should not be assumed that improvements in agricultural productivity are the same for women farmers and men farmers because the production conditions and production choices of the two groups need not be the same, which in turn can generate differential results from production. It has already been noted that the agricultural contributions of women and men commonly go unrecognized because of a failure to incorporate the extensive contribution of unpaid care and domestic work into an understanding of rural economic processes and dynamics. In terms of asset ownership, in Ethiopia the average size of holding for female-headed households was 0.86 hectares, while male-headed households operated an average holding of 1.31 hectares in 2013/14.²³ Women's ownership of assets was particularly low in pastoralist areas. With women and men having differential access to land, other inequalities can follow, in access to water, improved seeds, fertilizers, pesticides, tools and equipment, labour, credit, and other factors of production, although again there

would be significant variations across the regions of the country. Moreover, there can be differential expectations over the amount and type of unpaid care and domestic work that women and men are expected to perform. In this light, it is not surprising that the *Levelling the field* study²⁴ demonstrated that the 24 percent lesser productivity of female-managed farm plots in rural Ethiopia could be decomposed in two ways. Gender-based differences in levels of factors of production accounted for 42.4 percent of gender-based differences in farm crop productivity. On the other hand, gender-based differences in the returns that accrue to those factors of production accounted for 57.6 percent of gender-based differences in farm crop productivity.

This has a very important implication: if the sources of farm crop productivity improvements are gender-differentiated, this will have a direct impact on agricultural growth and poverty reduction in Ethiopia. This means, in turn, that closing gender-based gaps in farm crop productivity could result in increased economic growth, poverty reduction and food security in Ethiopia. Moreover, the impact of environmental degradation, natural resource depletion and climatic variation on farming in Ethiopia should not be assumed to uniformly impact upon the productivity of women and men farmers given gender-based differential access to factors of production. If so, closing these gender gaps by addressing the inter-linkages between agricultural productivity, gender and climate would be extremely important for policy and programming in Ethiopia. Indeed, it was the recognition of these processes within the Ministry of Agriculture and Natural Resources, and the importance of the issues within the context of the Growth and Transformation Plan 2015/16 – 2019/20, that led the Ministry into approaching UN Women and the UN Environment Programme Poverty-Environment Initiative Africa for support in undertaking the monetary estimates of the cost of the gender gap in agricultural productivity in Ethiopia contained within this Report.

21. This must be the case if the share of non-agricultural gross domestic product is increasing, as the evidence indicates. See: <https://www.ifad.org/pub/rdr> (accessed 26 January 2017).

22. Available: <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators> (accessed 25 January 2017).

23. Available: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,contentMDK:23656749-pagePK:64168445-piPK:64168309-theSitePK:3358997,00.html> (accessed 8 February 2017).

24. Available: <http://documents.worldbank.org/curated/en/579161468007198488/Levelling-the-field-improving-opportunities-for-women-farmers-in-Africa> (accessed 27 January 2017).

4 Measuring the cost of the gender gap in agricultural productivity

This section presents estimates of the foregone income (total GDP and agricultural GDP) and poverty reduction potential that results from the gender gap in agricultural productivity in Ethiopia. Box 4.1 outlines the methodology, which is presented in more detail in appendix A.

In order to make these estimates, the study computes the unconditional and conditional values of the gender gap in agricultural productivity. In this Report, agricultural productivity is defined as the value of output per hectare. The difference in this measure between male and female farm plot managers constitutes the **unconditional gender gap**, as described in box 4.1. But this unconditional gender gap does not take into account the fact that, on average, women work on smaller plots than men. Generally, farmers are more productive on smaller plots; one reason postulated for this is that they are able to use physical and labour resources to cultivate their plots more intensely (see, for example, Carletto, Gourlay, and Winters 2013 for robust evidence on this inverse relationship for several African countries). But despite cultivating smaller plots relative to men, women are still less productive; this implies that the gender gap would be even larger if the smaller sizes of their plots are taken into account. The study does this by calculating the **conditional gender gap**, which is estimated conditional on plot area and agro-ecological conditions. Figure 4.1 shows that the unconditional gender gap is 10.6 percent. The conditional gender gap is slightly less, at 9.8 percent. These findings indicate a reduction in the gender gap in agricultural productivity from the earlier analysis undertaken by the World Bank and ONE in 2014, which in turn generates an interesting question to explore in further research: has, and if so, why has, the gender gap in agricultural productivity in Ethiopia come down?

Since 80 percent of Ethiopia's labour force is in the rural areas of the country, and because the epicentre of poverty in the country is in rural areas, increasing agricultural production can make an important contribution to reducing poverty. Moreover, improvements in the agricultural sector may have considerable spill-over effects for other sectors of the economy. Therefore, the analysis presented here extends to outcomes related to poverty and defines the

poor as those living on less than \$1.90 purchasing power parity a day. Note that low agricultural productivity can also lead to more intense farming, resulting in over-cultivation, soil erosion, and land degradation—which in turn further undermine agricultural productivity and environmental sustainability.

The study treats the plot of land, with the identification of the gender of the plot manager or decision maker, as the unit of analysis.²⁵ This identification was made possible by the data structure of the Socio-economic Survey; see box 4.2 for more detail. Using this gender-disaggregated, plot-level data allows us to capture differences in agricultural productivity even among women and men who belong to the same household but cultivate different plots. The main advantage of this level of analysis is that it explicitly measures the productivity of women farmers, who are frequently neglected in analytical work that only looks at the gender of the household head.

The motivation for plot-level analysis rests on the assumption that female farmers face a different (and possibly larger) set of constraints relative to male farmers, which may hinder them from accessing inputs and output markets to similar degrees or at the same prices. If households were to act as a single unit that allocates resources so that overall welfare is maximized, these market imperfections might not matter as much. If, however, the study considers a collective household model in which individual preferences matter, it becomes imperative to conduct an analysis at the plot level, with the identification of the plot manager. The economic literature (such as Duflo and Udry 2004) provides various examples suggesting that the collective household model may indeed be a more appropriate approximation of reality; these include evidence on the importance of the gender of the recipient of cash transfers to household-level outcomes.

To express the gender gap in agricultural productivity in monetary terms and to put these numbers into perspective relative to Ethiopia's GDP, this study makes an additional set of assumptions. One key assumption is the absence of general equilibrium effects. For example, in the calculations presented, the increased productivity of women farmers affects neither male farmers' productivity nor agricultural prices. While there are good reasons to believe that general equilibrium effects such as these exist, the direction of

25. Managers of land are not the same as owners, as wives can manage land that is formally jointly owned with their husbands.

these effects can go either way. For instance, while standard economic theory would predict lower prices when increased supply of agricultural produce meets unchanged demand in a closed economy, household nutrition may benefit from both the price and the income effect of increased agricultural productivity.

In Ethiopia, the unconditional gender gap is estimated to be 10.6 percent. The costs of this unconditional gender gap equate to:

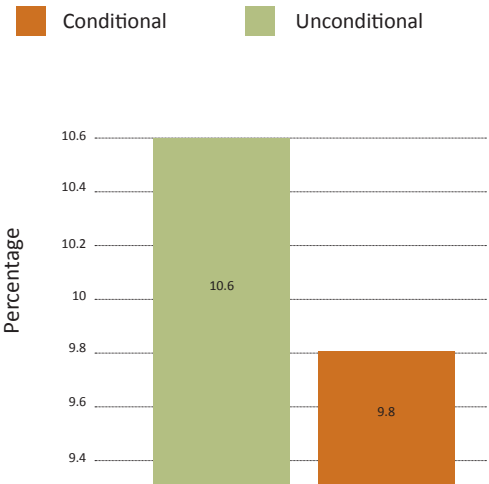
- ◆ 1.4 percent of current crop production; or
- ◆ \$221 million of agricultural GDP;²⁶ or
- ◆ \$257 million of total GDP, including the multiplier effects of benefits to other sectors in the economy; or
- ◆ more than 1,323,000 people being lifted out of poverty.²⁷

If the study bases the estimates on the conditional gender gap of 9.8 percent instead, then the costs of the gap equate to:

- ◆ 1.1 percent of current crop output; or
- ◆ \$182 million of agricultural GDP;
- ◆ or \$203.5 million of total GDP; or
- ◆ almost 1,050,000 people being lifted out of poverty.

Given the differences between the unconditional and conditional gender gaps in Ethiopia, it seems reasonable to conclude that closing the gender gap in agricultural productivity would increase total GDP by at least \$200 million and lift more than 1,000,000 out of poverty.

FIGURE 4.1
Unconditional and Conditional Gender Gap in Agricultural Productivity in Ethiopia in Percentages



Safaya Kabato, one of the beneficiaries of JP RWEE from Dodola district of the Oromia region and her husband work at their farm land.

26. Crop output accounts for 71 percent of agricultural GDP in Ethiopia.

27. The poverty-agricultural growth elasticity used is 1.9; that used in the agriculture-led growth scenario is 1.12 (Diao and Nin-Pratt 2007).

Box 4.1

Methodology: Measuring the economic costs of the gender gap in agricultural productivity

- 1** Traditionally, agricultural productivity is measured based on household-level analysis. In contrast, the study here looks at the plot level and identifies the plot manager, measuring the difference in productivity between plots cultivated by women and men. It converts the agricultural output produced by women and men farmers on their plots into monetary values by multiplying the output obtained per unit of land with the median unit and crop-specific price in the respective enumeration area (or at a higher level of aggregation if needed). Output was measured in kilogrammes. The study then aggregates the total value of all crops per unit of land associated with each gender. The difference in this value between women's and men's plots constitutes the unconditional gender gap in agricultural productivity. This is the first step in estimating the national income that is foregone because of the gender agricultural productivity gap.
- 2** As a next step, the study calculates the fraction of land cultivated by women and men, after accounting for the fact that women cultivate smaller plots than men. In the Socio-economic Survey, the average amount of land managed by male plot managers is 1.52 hectares, while the average amount of land managed by female plot managers is 1.04 hectares. Women constitute 19 percent of all plot managers.

Thus, women manage only a fraction of the land that men manage. Combining this fraction with the estimated gender gap in agricultural productivity, the study computes the percentage difference between the harvested value of output in two scenarios. In the first scenario, the study assumes that there is no difference between male and female agricultural output—that is, there is no gender gap and agricultural productivity of women's plots is equal to plots cultivated by men. In the second scenario, the study uses the actual productivity estimates obtained in the first step to calculate the value of output obtained from female plots in the presence of the gender gap. The difference between the no gender gap scenario and the gender gap scenario gives the additional output value from closing the gender gap in productivity.

- 3** The final step includes computing the size of the gap relative to agricultural GDP. To do this, the study first needs to know what fraction of agricultural GDP comes from crop production. Second, the study needs to know the share of agricultural GDP in overall GDP. Because growth in the agricultural sector influences other sectors of the economy, the cost of the gender gap is likely higher than just the foregone agricultural GDP. To take this into account, the study uses an estimate of the multiplier between agricultural sector growth and the rest of the economy obtained from studies of the Ethiopian economy (Diao and Nin-Pratt 2007).

A more technical description of the methodology is given in appendix A.

Box 4.2

Data used for costing the gender gap in agricultural productivity

For the analysis, the study uses data from Ethiopia's Central Statistical Agency. Specifically, the analysis presented here uses data from the third wave of Ethiopia's Socioeconomic Survey collected in 2015/16. This survey is part of the larger World Bank Living Standards Measurement Study—Integrated Surveys on Agriculture project.²⁸

The Socioeconomic Survey is nationally representative and links welfare, agriculture, and income. The data is disaggregated at the plot level and contains information on which member of the household makes agricultural decisions about each of the

farm plots cultivated by the household. Plots can be managed by women only, by men only, or by women and men jointly. This study only considers the difference in crop output obtained between women-only managed plots and all other plots. This is because while there is no one-to-one correspondence between plot management and household headship, it is to be expected that on plots that are jointly managed by women and men it is more likely that the household head has a disproportionate influence on plot-level decision-making, and in the vast majority of instances of joint plot management the household head will be a man.

All other macro-level statistics, such as agricultural GDP and national GDP, are obtained from the 2017 World Development Indicators.

28. <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,contentMDK:23512006-pagePK:64168445-piPK:64168309-theSitePK:3358997,00.html> (accessed 13 July 2017).

5 Costing the factors that contribute to the gender gap in agricultural productivity

In this section, the study provides the results from a decomposition analysis to identify which constraints to women's agricultural productivity contribute most to the gender gap in agricultural productivity in Ethiopia. This information can help Government in general, and the Ministry of Agriculture and Natural Resources more specifically, to prioritize those policies that are likely to have the biggest impact on closing the gap in agricultural yields.

The decomposition analysis (see box 5.1) extracts the importance of specific determinants of agricultural productivity in terms of potential gross gains in GDP.²⁹ The study covers a broad set of potential determinants, including manager characteristics, household demographics,

household wealth, plot characteristics, crop choice, farming techniques and technologies, labour inputs, and integration into markets. The policy recommendations are framed by these determinants, which are in turn based on data availability in the Socioeconomic Survey. Table 5.1 provides an overview of those determinants that stand out, in terms of their potential impact on the gender gap. It is recognized that a number of these determinants are proximate causes that can be linked to ultimate causes of the gender gap. A key challenge for future research will be to understand which of these may be at play by focusing on these ultimate determinants. Note that, except where stated, the interventions discussed in this section have not yet been rigorously evaluated.

Box 5.1

Quantifying the benefits from narrowing the gender gap in agricultural productivity by specific determinants

Plots managed by women may be less productive than those managed by men due to observable factors, such as differences in experience and education, land quality, quantity of agricultural inputs used, and the choice of crops grown. However, an agricultural productivity difference could persist even when women and men have similar observable characteristics and use the

same quantity of inputs, as women may derive lower returns from using these inputs. The Oaxaca-Blinder decomposition approach (Blinder 1973; Oaxaca 1973) has been widely used in other areas of the economics literature, such as in studies analyzing the wage gap between male and female workers (see, for example, World Bank 2011). This decomposition method can also be employed to determine how much of the gender gap arises from the different levels of agricultural inputs used by women and men and how much arises from the lower returns that women obtain from using these inputs. For more detail on the Oaxaca-Blinder decomposition method, see appendix B.

TABLE 5.1.

Key drivers of the gender gap in agricultural productivity in Ethiopia

Determinant	Percentage of gap	US\$, millions
Lower use of any pesticides, herbicides or fungicides	45.3	92.2
Lower quantity of household male labour working on female plots (in thousands of hours per hectare)	43.7	89
Greater use of organic fertilizer	25.1	51

Note: all results are statistically significant. GDP values are 2010 dollars. Percentages do not sum to 100 because determinants can have a positive or a negative effect on productivity.

29. This analysis builds on earlier work by Aguilar et al. (2015).

Women and men farm plot managers have very different levels of access to male family labour

A large part of the gender gap can be attributed to differential access to male family labour, which may well be a function of intra-household social relations in Ethiopia. Equalizing access to male family labour would reduce the estimated gender gap by almost 44 percent. This “driver” of the gender gap could potentially be linked to a number of other factors. These include the gender-segregation of tasks, women’s lack of access to finance to hire male labour and invest in machinery, their limited access to time-saving infrastructure, the expectation that they perform unpaid care and domestic work (which might result in a need to hire labour), and rural women’s limited voice and agency. However, one key reason why women farm plot managers have less access to male family labour is that the majority of them are widowed or divorced, and rural social norms can make it very difficult for them to hire male labour from outside the family even when such labour is available. In fact, it is quite possible that these women became plot managers entirely because of the head-of-household status that they have acquired. These high rates of widowhood and divorce mean that women have fewer people in the household to draw on for the farm labour that their plots need. Moreover, with a higher number of people over 65 and less than 10 years of age in these households, women must perform additional unpaid care and domestic work, increasing the need they have to hire labour from outside the household. Closing the gap in the lower use of male family labour by female plot managers alone would lead to gains of almost 44 percent of “lost” national income in Ethiopia, or \$89 million in 2010 prices.

Women use less pesticides, herbicides and fungicides

Women farmers have less access to modern plant protection technologies that might improve their productivity in the short-term. Driving this inability to access modern plant protection technologies are lower stocks of wealth among women plot managers along with lower levels of income, both of which combine to constrain the availability of the discretionary income necessary to make purchases of modern plant protection technologies in cash. Admittedly, these modern plant protection technologies, when applied incorrectly, can have negative environmental consequences.

Nonetheless, as a result of their lesser use of modern plant protection technologies women plot managers use lesser amounts of pesticides, herbicides and fungicides. Overall, more than 45 percent of the gender gap between women and men in farm crop productivity can be attributed to women’s lesser use of pesticides, herbicides and fungicides. Closing this gap has the potential to raise GDP by over \$92 million in Ethiopia.

Women are more reliant on organic fertilizers, reinforcing their disadvantage in accessing farm production technologies

The flip-side of women’s lack of access to pesticides, herbicides and fungicides, because of their lack of discretionary income streams, is a greater reliance on self-provided non-land and non-labour farm inputs. As a result, women plot managers are more reliant on self-provided organic fertilizers to maintain levels of soil nutrients on their plots. While such reliance is beneficial for soils, it has the consequence of reducing the productivity of women-managed farm plots relative to those of male-managed farm plots that use chemical fertilizers. Notwithstanding its environmental benefits, more than 25 percent of the gender gap between women and men in farm crop productivity can be attributed to women’s greater use of organic fertilizers. Closing this gap has the potential to raise GDP by over \$50 million in Ethiopia.

Four Policy Implications

I. Designing policies that directly reduce inequality in access to male farm labour can take two avenues. One option is to tackle constraints that limit women’s access to male labour from outside the household. This requires policies to reshape social norms around the sensitivities associated with the hiring of men’s labour by women plot operators, through education and awareness campaigns. Another option is to think about policies to increase the ability of women plot operators to access and use rural labour markets. In the context of pervasive rural underemployment, increasing women’s ability to hire men (and women) farm workers that could substitute for absent household labour could greatly enhance their farm crop productivity.

II. Policies on expansion of government-funded cost-effective rural social protection measures targeted at women plot operators. The most important policy

implication from women's lack of access to pesticides, herbicides and fungicides and their reliance on organic fertilizer is that it is women's lack of income and wealth that precludes them from allocating discretionary income to the purchase of soil and plant protection technologies. At the same time, larger and more dependent households mean that discretionary spending per household member is lower for women plot managers, reducing their capacity to use soil and plant protection technologies. In other words, women's lower productivity is constrained by a lesser use of soil and plant protection technologies because of their poverty. In this regard, an expansion of government-funded cost-effective rural social protection measures targeted at women plot operators has the potential to offset gender-based differences in household income and wealth and create the preconditions of increasing access to soil and plant protection technologies.

III. Adopting labour-saving technologies for women. It is possible to increase women's labour productivity by enabling them to adopt labour-saving technologies on farm or by freeing up their time within the household by the adoption of labour-saving technologies such as the use of energy-efficient and environmentally friendly improved cooking stoves. These stoves are widely regarded as a means to reduce the amount of time required for fetching firewood, reducing unpaid care and domestic work, thus increasing the time available for work on farm plots—with the additional potential benefits of reducing deforestation rates and respiratory diseases.

IV. Policies on unpaid care and domestic work for rural women. A key contributing factor to women's lesser productivity on their farm plots is their larger households, with a greater number of dependents that require their attention. The result is a larger amount of unpaid care and domestic work within the household, and a corresponding need to access labour from outside of the household to substitute for limited supplies of women's farm labour. However, the study notes that even when labour is available for hire social norms make it difficult for women to hire men. Policies to reduce the unpaid care and domestic work required by households with more dependents, by providing substitutes for some activities through public infrastructure provision, particularly in the form of water and energy, will allow women to allocate more time to their plots and make up for some of the shortfalls in the labour requirements that they face.

Beyond the results

Technical analysis of the kind contained within this Report can produce results that have statistical significance but which lack economic plausibility. It is therefore necessary to go beyond the boundaries of the analysis when considering a range of possible policy options, because pre-existing policy arrangements, agro-ecological conditions and data limitations can shape the final determinants of the gender gaps that emerge from the data. Five particular sets of policy intervention domains seem important to consider, in the context of rural Ethiopia:

- policy interventions that improve ownership of, access to and size of land for female plot operators, which was important in the unconditional analysis but was not part of the conditional analysis upon which the bulk of the conclusions in this Report are derived;
- a significant expansion of publicly-financed gender-responsive irrigation, as this is the most important driver of increases in agricultural productivity more generally. This was not significant in the analysis, but that can be explained by the extremely low level of irrigation in the country;
- the introduction of gender-responsive technologies into farming, including not only access to improved seeds and, as already noted pesticides, herbicides and fungicides (which should be more environmentally-responsive), but also small-scale appropriate environmentally-responsive mechanization, which were of lesser importance in the analysis because of the low level of mechanization in the country;
- the introduction of policies that facilitate diversification into higher-value crops that can be both used for household food security and can be sold on markets when surpluses are generated, which is not part of the survey upon which the analysis is based;
- the introduction of policies that take advantage of female-specific farm knowledge to foster innovations that enhance food crop productivity more generally, which is not part of the survey upon which the analysis is based.

As the technical analysis presented here can only answer some of the possible reasons why there is a gender gap in agricultural productivity in Ethiopia, the results contained in the analysis need further investigation, in order to be substantiated.

6 Moving forward

This Report has highlighted the importance of fully including women in the agricultural development process. The findings and recommendations are aligned to Ethiopia's Growth and Transformation Plan 2015/16 – 2019/20. This Report has also identified the costs of the gender gap in agricultural productivity in Ethiopia, as well as the factors that contribute the most to this gap. Yet the Government is aware that very little is known about what exactly works in narrowing the gender gap, and how much it would cost to narrow the gender gap, in Ethiopia.

This Report has highlighted a **lack of access** to adequate labour, soil and plant protection technologies as major contributors to the majority of the gender gap in Ethiopia. Women's limited skills undoubtedly only exacerbate this gap. It has also been suggested that the distribution of **unpaid care and domestic work** may contribute to this gender gap, in that it reduces women's time for work on their plots. Finally, it has been noted that in a number of areas it is necessary to recognize how existing policy, agro-ecological conditions and data availability can shape what emerge as the final determinants of the gender gap in agricultural productivity in Ethiopia. The next step for policy makers within Government is to engage in a cost-benefit analysis of possible policy interventions to identify where the benefit of closing the gender gap outweighs the cost of the respective policy option. Naturally, the relative cost-benefit ratio of various interventions should also be weighed against other factors, such as ease of implementation, and the cultural and social context. Nonetheless, by identifying some of the policies that may have the highest benefit-to-cost ratio it should be possible to provide a useful starting point for further analysis that could offer practical guidance for policy makers who need to work out how to respond to the gender gap while making the best use of the limited resources that they have at their disposal. The next stage needs to be for the Ministry of Agriculture and Natural Resources to find cost-effective solutions through combining the implementation of innovative pilot interventions with careful evaluation. Because the gender gap in agriculture operates within the broader context of the bigger gender gap in society, it is important that policy makers, donors, and development partners in Ethiopia carefully consider their understanding of which key problems women face,

why particular policies would work, and what operational challenges they may face when trying to implement policies. Because the gender gap is deeply cultural and societal, it is imperative that policy makers use a combination of economic and behavioral shifts to narrow the gender gap in agriculture.

So, what would be some characteristics of good and cost-effective policies that would narrow the gender gap in agriculture in Ethiopia?

Good policies work on improving choices

If the aim of development policy is to ensure that women become more productive and are lifted out of poverty, then policy makers should carefully consider if women are operating out of choices that they want to make or the constraints that they face. Since there can be a thin line between the two, agricultural gender policy should be cognizant of how women farmers make their agricultural decisions. Various policy instruments affect women's constraints and choices differently.

Good policies are built upon refined and redefined problems

Investing in carefully diagnosing and refining the scope of problems can significantly reduce implementation costs and ensure that policies are cost-effective. Lessons can be learned from experiments and research in other development efforts. For example, lack of access to clean water was diagnosed as one of the factors leading to a high number of cases of diarrhea among children in rural Kenya. One intervention implemented was to cover water springs at the source in order to avoid contamination. Yet the intervention only moderately helped improve the quality of water at home (Ahuja, Kremer, and Zwane 2010). Closer diagnosis revealed that the problem was in fact the contamination of the water at home.

Similarly, it is quite possible that the gender gap in agricultural productivity is not caused by a lack of access

to pesticides, herbicides and fungicides per se, but to a lack of pesticides, herbicides and fungicides marketed in small enough quantities that the price makes them affordable for women to use on their smaller plots. Carefully refining and redefining policy scope is critical to maximizing benefits from closing the gender gap.

Good policies may have to shift cultural norms

Government agencies, donors, and development practitioners

work within embedded social and cultural norms. Tackling the problem of the gender gap in agricultural productivity first begins with shifting the mindset through which policy is framed and implemented. It requires making it acceptable for women to hire in male labour from outside the household, cultivate cash crops, and use a range of productive agricultural technologies. It means that men must find it acceptable to work for a woman. Tools that may be particularly useful here are behavioral policy instruments such as identity cues and framing, micro incentives, and reminders. Policy makers, donors, and international agencies must reassess the realities under which they frame agricultural policies.



Kebela Gure, one of the beneficiaries of JP RWEE from the Oromia region weeding her maize plantation that she invested in using the income she generated through loan and skills provision. (Photo: UN Women/Fikerte Abebe).

Appendix A

Methodology for quantifying the cost of the gender gap in agriculture

The study estimates agricultural productivity in terms of gross value of output (in local currency) per unit of land (in hectares). It obtains the quantity produced of each crop on each plot and multiplies the total crop quantity by the median crop sale value per appropriate unit in the respective enumeration area. If village-level unit sale prices are not available for some crops, the prices available are used for the next higher level geographical area. Next, the study adds the values of the output of all the crops grown on the plot and divides the aggregate value of output by the plot size in order to obtain the gross value of output per hectare.³⁰ The difference in these values of output per hectare obtained on male- and female-managed plots constitute the unconditional gender gap in agricultural productivity.

Based on the identified gender gap in agricultural productivity and the estimate of the share of land under women's control, the study monetizes the gender gap in terms of potential gains in agricultural production and total economic output. To do this, the following formula to estimate the total quantity of output obtained by women and men at the national level is useful (FAO, 2011):

$$Q = Y \cdot A \quad (\text{A.1})$$

Here Q is the total harvested output (in local currency units for the year of the survey), Y is the mean harvest value per hectare, and A is the total arable land,³¹ which can be obtained from the World Bank's World Development Indicators.³² The mean harvest value per hectare on female plots (female productivity, Y_f) is expressed in terms of the

mean harvest value per hectare on male-managed plots (male productivity, Y_m) using the estimate of the gender gap—say, an unconditional gap of 10.6 percent in Ethiopia—in the following manner:

$$Y_f = 0.894 Y_m \quad (\text{A.2})$$

The total harvested value obtained from women's and men's cultivated land at the national level is expressed as below.

$$Q = Y_f P A + Y_m (1-P) A \quad (\text{A.3})$$

Here P represents the proportion of land controlled by female managers based on the fraction of plots controlled by women. This fraction is based on the average area of their plots relative to the average area of men's plots. In Ethiopia, for example, women's plots are, on average, 0.48 hectares smaller than men's plots, and thus the proportion of area under women's control is far less than that of men.

Substituting equation A.2 into equation A.3 gives the total harvested value, Q , in the presence of the identified gender gap in agricultural productivity. This scenario is referred to as the baseline in the study. It is also possible to obtain the potential harvest value, Q^* , under the scenario of no gender gap in agricultural productivity, that is, when $Y_f = Y_m$.

The additional output from closing the gender gap in agricultural productivity, as a proportion of the baseline harvest value, is expressed as follows.

$$\Delta = (Q^* - Q) / Q \quad (\text{A.4})$$

In Ethiopia's case, closing the unconditional gender gap will lead to an increase of total crop harvest of 1.4 percent.

30. Ideally, plot size data measured by global positioning system (GPS) should be utilized.

31. Arable land includes land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or pasture, land under market or kitchen gardens, and land temporarily fallow. For more information, see the World Development Indicators table notes (available at http://data.un.org/_Docs/WDI%20definitions.pdf). Since arable land includes plots that are temporarily fallow, it may be useful to adjust the estimate by obtaining an estimate of fallow land from the micro-level surveys and subtract that fraction from the total arable land to better estimate cultivated land. Often, farmers' reports of fallowing are rather low.

32. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators> (accessed 13 July 2017).

To link the increase to agricultural GDP and total GDP, the study needed a few more pieces of information. First, it needed to know what fraction of agricultural GDP comes from crop production.³³ For example, in Ethiopia crop production forms 71 percent of total agricultural GDP. This 1.4 percent higher crop output translates to a 1.1 percent higher agricultural GDP, which is roughly around \$229 million in 2010 prices.

Because of the many economy-wide spill-over effects between the agricultural sector and the rest of the economy, total GDP is expected to be higher by more

than the \$229 million. The study needs an estimate of the multiplier between the agricultural sector and the rest of the economy. Here the study draws on economy-wide models for Ethiopia (Diao and Nin-Pratt 2007). For instance, the multiplier for Ethiopia is about 1.12, implying that each additional dollar generated in the agricultural sector leads to an additional \$0.12 in benefits in the non-agricultural sector. Consequently, the \$229 million higher agricultural GDP in Ethiopia due to closing the agricultural gender productivity gap results in a total benefit of \$257 million added to total GDP. Overall, total GDP will be higher by 0.33 percent if the gender gap in agricultural productivity is closed.



Kebela Gure, one of the beneficiaries of JP RWEE from the Oromia region and her husband (Hussen Ushi) weeding her maize plantation that she invested in using the income she generated through loan and skills provision. (Photo: UN Women/Fikerte Abebe).

33. Agricultural GDP includes forestry, hunting, finishing, livestock, and crop production (again, see the World Development Indicators table notes available at http://data.un.org/_Docs/WDI%20definitions.pdf).

Appendix B

Methodology for costing the factors of production contributing to the gender gap in agricultural productivity

Plots managed by women farmers may be less productive due to observable factors including inequalities in manager attributes such as experience and education, plot characteristics, agricultural technology and input use, and crop choice. A gender gap may persist even after accounting for these factors. For example, after controlling for manager characteristics, plot characteristics and size, input use, and geographical features, the gender gap in Ethiopia decreases to 9.8 percent and is no longer statistically significant at any level. The portion of the gap that cannot be explained by observable factors may be associated with differences in the returns associated with using these factors of production on women's plots as compared to men's. To determine exactly how much of the gap is due to levels of inputs used and how much is because of returns to those inputs, the study employs an Oaxaca-Blinder-type decomposition. The central piece in the Oaxaca-Blinder decomposition approach is the following production function.

$$1n(Y_{ih}) = c0 + \alpha F_{ih} + M_{ih} \gamma + X_{ih} \delta + 1n(I_{ih})\eta + 1n(L_{ih})\theta + C_{ih}\theta + \lambda_h + \varepsilon_{ih} \quad (B.1)$$

Here i denotes the plot planted by a member of household h ; Y is the value of agricultural output per unit of land (hectare); F equals 1 if the plot is managed by a woman, and 0 otherwise. M is a vector of explanatory variables pertaining to other characteristics of the plot manager; X is a set of plot-level characteristics including size and quality; I is a vector of plot-level controls for non-labour input use; L is a set of plot-level controls for labour inputs; C is a vector of indicator variables accounting for whether the primary crop cultivated on the plot is a cash crop;³⁴ ε is an error term. The term λ_h captures community and geographical characteristics.

The Oaxaca-Blinder decomposition attempts to explain how much of the mean outcome difference between two groups (female- and male-managed plots) are accounted for by group differences in the predictors. The aggregate decomposition follows from the linear model specified below.

$$Y_l = X_l' \beta_l + \varepsilon_l, E(\varepsilon_l) = 0 \quad (B.2)$$

where $l \in \{f, m\}$ and stands for female-managed plots (f) or male-managed plots (m),³⁵ X is a vector of predictors (and a constant term), and β is a vector of slope coefficients including the intercept. The study writes the gap as

$$R = E(Y_m) - E(Y_f) = E(X_m)' \beta_m - E(X_f)' \beta_f \quad (B.3)$$

where $E(\varepsilon_l) = 0$.

Using algebraic manipulations, the expression in equation B.3 can be re-written into a part of the differential due to differences in the levels of the predictors and a part due to differences in the co-efficients associated with the predictors. The latter part is often referred to as the discrimination component, especially if it is linked to an immutable characteristic such as gender (Fortin, Lemieux, and Firpo 2011). The study assumes that there is some non-discriminatory co-efficient vector β^* through which the difference in the predictors is weighted so that

$$R = (E(X_m) - E(X_f))' \beta^* + (E(X_m)' (\beta_m - \beta^*) + E(X_f)' (\beta^* - \beta_f)) \quad (B.4)$$

The expression in equation B.4 provides a two-fold decomposition,

$$R = Q + U \quad (B.5)$$

where

$$Q = (E(X_m) - E(X_f))' \beta^*$$

gives the proportion of the gender productivity gap that results from group differences in the predictors (referred to in the literature as level effect); and

$$U = (E(X_m)' (\beta_m - \beta^*) + E(X_f)' (\beta^* - \beta_f))$$

is the residual or unexplained part that results from unequal returns to the predictors (structural effect) (Aguilar et al. 2015; Blinder 1973; Fortin, Lemieux, and Firpo 2011; Jann 2008; Oaxaca 1973).

34. The primary crop is identified by the respondent of the survey.

35. Under male-managed plots, we also included jointly managed plots.

The non-discriminatory vector of co-efficients β^* can be estimated in a number of ways (Fortin, Lemieux, and Firpo 2011; Jann 2008). Here β^* is estimated from a pooled regression over all plots, with a dummy variable identifying group membership (plots managed by a woman versus plots managed by a man as suggested in Jann 2008 and Fortin Lemieux, and Firpo 2011).

The primary focus from the decomposition results is on the contribution of differences in the levels of factors of production to the gender agricultural productivity gap. The main goal is to estimate how much additional output could be obtained from closing the gender gap in accessing the various factors of production that contribute most to

the gender productivity gap. For example, if differences in pesticide, herbicide and fungicide use explain a significant fraction of the gender gap in agricultural productivity, then the study discusses how much of the benefits associated with closing the gender gap in productivity could be achieved by closing the gender gap in access to pesticides, herbicides and fungicides. While equitable access to production factors such as land, physical inputs, machines, and livestock may have benefits beyond increasing agricultural productivity, the approach taken here only focuses on the benefits obtained from improved agricultural productivity by equalizing access to these factors.



Ila Robale, one of the beneficiaries of JP RWEE from the Oromia region displays the maize she harvested using her own pair of oxen she purchased with the loan received through the programme. Before Ila, who is a widowed woman, used to rent from others. (Photo: UN Women/Fikerte Abebe).

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Ila Robale, one of the beneficiaries of JP RWEE from the Oromia region, collects livestock feed for her oxen from the government's distribution site in her village. (Photo: UN Women/Fikerte Abebe).



Birtukan Fikadu, one of the beneficiaries of JP RWEE from Yaya Gulele district of the Oromia region works in her vegetables garden that she expanded using improved seeds and new farming skills. (Photo: UN Women/Fikerte Abebe).

Development Partners



Joint Programme on Rural Women's Economic Empowerment (JP RWEE) Partners



Ethiopia's Ministry of Agriculture and Natural Resources seeks to create a modern, technologically-advanced agricultural system that enables the country to eliminate poverty and be environmentally sustainable. To achieve this mission, the Ministry promotes inclusive market-led agricultural development that sustains Ethiopia's natural resources, empowers women and youth, and creates the resilience needed to cope with the challenges of a market-oriented agricultural system.

UN WOMEN, grounded in the vision of equality as enshrined in the Charter of the United Nations, works for the elimination of discrimination against women and girls; the empowerment of women; and the achievement of equality between women and men as partners and beneficiaries of development, human rights, humanitarian action, and peace and security. Placing women's rights at the Centre of all its efforts, UN Women leads and coordinates United Nations system efforts to ensure that commitments on gender equality and gender mainstreaming translate into action throughout the world. It provides strong and coherent leadership in support of Member States' priorities and efforts, building effective partnerships with civil society and other relevant actors.

The **POVERTY-ENVIRONMENT INITIATIVE** of the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) supports country-led efforts to mainstream poverty-environment linkages into national development planning and budgeting. The Poverty-Environment Initiative provides financial and technical assistance to government partners to set up institutional and capacity-strengthening programmes and carry out activities to address the poverty-environment context. The Poverty-Environment Initiative is funded by the governments of Norway, Spain, Sweden, the United Kingdom, and the European Union, with core funding from UNDP and UNEP.



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