Women Farmers in Timor-Leste: Bridging the Gender Gap in Agricultural Productivity

KEY FINDINGS

- Female farmers produce on average 15% less per hectare of land compared to male farmers.
- Adjusting for land size the gap becomes as large as 31%. This result is similar across geographic regions in Timor-Leste.
- The gap is almost entirely explained by gender differences in factors of production, the most important of which are female farmers’ lack of access to hired labor and farming tools, such as axes, hoes and shovels, their lower literacy, as well as their limited involvement in cash crop production and farmers’ groups.

CONTEXT

Agriculture is the predominant economic activity in Timor-Leste, with more than 80% of households engaged in at least minor farming work, with 70% of farmers over the age of 40. Despite its leading role in the livelihoods of Timorese households, the agricultural sector has not fulfilled its potential and cereal yields in Timor-Leste are among the lowest in the East Asia and the Pacific (EAP) region. This is a direct barrier in the country’s efforts to achieve its National Development Strategy and the 2030 Agenda for Sustainable Development.

2 Cereal yield per hectare, World Bank Databank, 2014
Previous research has shown that gender differences in agricultural productivity is a significant obstacle to growth in developing economies. In Timor-Leste, women play an important role as cultivators, laborers and family workers, with 66% of employed women self-employed as farmers, compared to 62% of men. Unequal access to land and agricultural inputs such as improved crop varieties, training, information and marketing services has a consequence for their own productivity as well as that of their families. International evidence suggests that constraints female farmers face may be different from those faced by male farmers. Consequently, to effectively increase agricultural productivity and enhance economic performance, policy makers need to be aware of the existing gender inequalities in the agriculture sector and the factors contributing to them. As such, this analysis aims to deepen understanding of existing data on the gender dimensions to the sector and highlight gaps in data that could be filled through further agricultural analysis and data collection exercises.

**WHAT DID WE DO?**

We use data from the 2014 Timor-Leste Survey of Living Standards, which is a nationally representative household survey to estimate the gender gap in the value of agricultural production per hectare on the plots managed by women and plots managed by men. We carried out our analysis on a sample of 3,012 farming households. Of these households, 549 (18%) report a female in charge of agricultural activities (a female manager). This includes households where both adult women and men are present and a man is considered the head of the household as well as female-headed households.

We first estimated the size of the gap between female and male farmers for the entire country and for two main agricultural regions, Coastal and Central. As women often work on smaller plots, to get a more refined estimate, we adjusted the gap, so it

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**FIGURE 1: THE GENDER GAP IN AGRICULTURAL PRODUCTIVITY IN TIMOR-LESTE**

<table>
<thead>
<tr>
<th>Region</th>
<th>Raw Productivity Gap</th>
<th>Adjusted Productivity Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Region</td>
<td>8.8</td>
<td>30.9</td>
</tr>
<tr>
<td>Central Region</td>
<td>15.3</td>
<td>30.8</td>
</tr>
<tr>
<td>Entire Country</td>
<td>15.3</td>
<td>31.0</td>
</tr>
</tbody>
</table>

**SIZE OF PRODUCTIVITY GAP BETWEEN FEMALE AND MALE FARMERS**

Estimates in bold are statistically significant.

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3 For instance, Goldstein, Markus; Westman, Moa; Torkelsson, Asa. 2015. Costing the Gender Gap. Gender Innovation Lab Policy Brief; no. 13. World Bank, Washington, DC. © World Bank
4 2018 Census Analytical Report on Agriculture
5 Ministry of Agriculture and Fisheries & Seeds of Life, 2013
6 O’Sullivan, Michael; Rao, Arathi; Banerjee, Raka; Gulati, Kajal; Vinez, Margaux. 2014. Levelling the field: improving opportunities for women farmers in Africa (English). World Bank, Washington, DC. © World Bank
8 The average value (in USD) of agricultural output produced per hectare of land, which is a standard measure of productivity in related studies, such as in footnotes 3 and 5, for example.
9 See Policy note (referred to in 7) for details on household composition and definitions of plot management in the Survey of Living Standards.
compares plots of similar size and in the same region. We then applied the Oaxaca-Blinder decomposition method\(^\text{10}\), which allows us to distinguish between **differences in factors of production** (such as availability of agricultural tools or years of education) and **differences in returns to these factors of production** (such as amount of output attributable to using an agricultural tool) in explaining the gender productivity gap.

**WHAT DID WE FIND?**

We found that female farmers produce on average 15% less than male farmers in Timor-Leste. When we compared male and female farmers with similarly sized plots of land and within the same sub-district, we found a higher gap, close to 31%. The adjusted gap does not vary across the main agricultural regions, Coastal and Central.

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**TABLE 1: DIFFERENCES IN ACCESS TO RESOURCES, EXPLAINING THE GAP**

<table>
<thead>
<tr>
<th></th>
<th>Female Farmers</th>
<th>Male Farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Literacy rate among farmers</strong>(^\text{11})</td>
<td>20%</td>
<td>41%</td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
<td>3.9</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Hired Labor (male)</strong></td>
<td>0.64 days per ha</td>
<td>1.06 days per ha</td>
</tr>
<tr>
<td><strong>Agricultural Implements Index</strong>(^\text{12})</td>
<td>-0.19</td>
<td>0.21</td>
</tr>
<tr>
<td><strong>Participated in a Farming Group</strong></td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Produced Processed Coffee Beans (cash crop)</strong>(^\text{13})</td>
<td>16%</td>
<td>22%</td>
</tr>
<tr>
<td><strong>Sold Any Crops</strong></td>
<td>52%</td>
<td>56%</td>
</tr>
</tbody>
</table>

**FIGURE 2: MAIN FACTORS EXPLAINING THE GENDER GAP IN AGRICULTURAL PRODUCTIVITY**

% of gender gap explained

- Literacy: 15%
- Agricultural Implements: 20%
- Sale of Crops: 9%
- Cash Crop Production: 15%
- Farming Groups: 9%
- Household Size: 20%
- Hired Labor: 4%

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\(^\text{11}\) Literacy rate among farmers is much lower than the national average of 63.1 percent for men aged 15 years and above and 52.5 percent for women (as per 2015 Census).

\(^\text{12}\) The agricultural implements index reflects ownership of tools such as hoes, shovels and axes. It is constructed using principal components analysis and standardized to mean zero and standard deviation of one. Therefore, negative values stand for ownership of such assets below average, and vice versa.

\(^\text{13}\) The analysis explores the contributions of other crops to the gender gap in agricultural productivity but concludes that only differences in production of processed coffee beans is a statistically significant factor in explaining the gender gap.
We then applied the Oaxaca-Blinder decomposition to shed light on the factors that contribute to the gender gap. We found that the gap is entirely explained by differences in access to factors of production.\textsuperscript{14} Figure 2 lists the contributions of the most important factors of production to the gender gap in agricultural productivity. Table 1 provides information on the gender gaps in these factors.

**WHAT DO THE FINDINGS TELL US?**

At 31\% the gender gap in agricultural productivity in Timor-Leste is high. This initial analysis, however, finds that the gap is nearly entirely explained by differences in factors of production that male and female farmers have access to.

Based on the analyzed data, of particular importance is women’s disproportionately lower access to hired labor, agricultural implements, such as shovels, hoes and axes, farming networks as well as the ability to produce cash crops rather than subsistence crops. It is important to note that even though men’s access to the above factors is low in Timor-Leste, women have even lower access.

These findings point to the following avenues of future research and potential policy actions:

1. Taking into consideration the disparity in literacy between female and male farmers in the process of developing agriculture materials, extension services or trainings for farming communities may make such trainings more accessible to both groups.

2. Women and men’s perceptions of extension services and farming groups need to be better understood to identify where further investments are needed, noting the low fraction of women among extension workers (only 11\%) and women’s unequal childcare or household responsibilities.

3. Greater understanding of intra-household decision-making around crop selection and sales is needed alongside analysis of access to markets to understand barriers and choices faced by individual women and men farmers and how it affects their decisions as a household.

4. While providing relevant information, this analysis highlights the limitations of currently available data on gender dimensions to the agriculture sector. Consequently, investing in developing capacities on gender sensitivity in agriculture data collection and analysis, beyond sex and age-disaggregated data, is critical to strengthen the effectiveness of the sector’s policy and programming investments.

\textsuperscript{14} 88\% of the gender gap in productivity is explained by observed differences in the factors of production. Only 11\% is attributable to the difference in returns to these factors, but this result is not statistically significant. Please see the note for more details.