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Gendered Patterns of Labor in Agriculture

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1. INTRODUCTION

As countries experience structural and rural transformations, patterns and the nature of work within agriculture are changing. The overarching pattern is that as economies transform, people move out of agriculture and into manufacturing and services (Gollin 2010; Herrendorf, Rogerson, and Valentinyi 2014). These transformations likely result in a wide range of changes in the gendered patterns of labor across all types of agricultural operations: smallholder farms, pastoralist systems, contract-farming, outgrower schemes, and commercialized farms. It is well documented that in some places, the movement of men's labor out of agriculture has led to a concentration of women among those who remain working on farms (Kawarazuka, Duong, and Simelton 2020; Baada and Najjar 2020; Mukhamedova and Wegerich 2018; Radel, Claudia et al. 2012; Slavchevska, Kaaria, and Taivalmaa 2016). Yet, we know very little about the gendered patterns of labor provision in agriculture across countries. This has raised concerns both about the well-being of these women and their households as well as the impact on the agriculture sector more generally (Kawarazuka et al. 2022). Yet, if we focus only on this issue, we may miss other important changes that are less visible.

In this paper, we examine the gendered patterns of labor in agriculture. We take advantage of a newly harmonized data set that allows us to study labor supply across countries spanning the income per capita distribution to document key issues regarding the gendered aspects of structural change, focusing on agricultural labor. We do not find evidence that women's share of labor in production agriculture, either on the extensive or intensive margins, increases in the process of structural transformation,¹ yet the literature on specific locations provides evidence of myriad changes taking place. Women's economic roles are changing, and there are also shifts in the size and labor force composition of some upstream and downstream sectors, with implications for women's work. Across countries, very different patterns emerge, suggesting that the local context matters (Gottlieb et al. 2024).

Drawing on the literature, we identify five key areas that require attention as the gendered patterns of labor in agriculture change. First, many smallholder farms report joint ownership of the land and joint management of farm, but there is still much to understand about what jointness

¹ Slavchevska, Kaaria, and Taivalmaa (2016) argue that while there is a feminization of agriculture happening in some places, it is not a widespread phenomenon. Most of the papers on the feminization of agriculture, including those cited above, focus on the phenomenon in particular locations where it is occurring.

means across contexts. Second, in the areas where men are migrating off farm, there are different responses to the loss of their labor, including those who remain working more, hiring outside labor, and doing fewer labor-intensive farm activities. Third, we see shifts across sectoral boundaries, with changes in the gendered patterns of labor as people move from agricultural production to working in the agrifood systems. Fourth, the time spent on domestic services and care work affects decisions about where and how much to work in agriculture. And finally, these changing patterns of gendered labor are related to women's empowerment, particularly in the dimensions of time-use, decision-making, and control over income.

The outline of the paper is as follows. In section 2, we begin with a discussion of the various narratives around structural transformation and gendered patterns of labor, including the feminization of agriculture. Section 3 draws on a harmonized labor force survey data set to provide global evidence on women's contribution to agricultural production. Section 4 explores a set of key issues that we miss by considering only who is working in agriculture. Section 5 concludes.

2. NARRATIVES OF CHANGES IN AGRICULTURAL WORK

The declining share of agriculture in employment is a robust feature of economic growth (Restuccia, Yang, and Zhu 2008; Herrendorf, Rogerson, and Valentinyi 2014). Across countries and over time, we observe that economies with higher agricultural productivity and higher income levels devote smaller shares of the workforce to producing agricultural goods.² But this process of structural transformation unfolds differently in different geographies and different farming systems.

On smallholder farms and pastoralist systems, as some people move out, others remain and continue farming and raising livestock. The changes are shaped by changes in the productivity of agriculture relative to other sectors. For those remaining in agriculture, we may see increasing labor productivity, with increases in wages and improved working conditions. There may be a consolidation of farms and an increase in the scale of production (Adamopoulos and Restuccia 2014). On the other hand, we may see worsening agricultural productivity, especially in marginal less connected areas. In these areas, the market opportunities may dwindle

² See (Hayami and Ruttan 1985) for an early analysis of this issue.

and the agricultural sector may face both declining prices and productivity. The variation may be within countries or across countries. There is no automatic relationship between structural transformation and the quality of agricultural livelihoods. Moreover, the movement out of agriculture takes place on multiple margins. While the structural transformation primarily sees whole households moving out of agriculture (Doss et al. 2024), shifts also occur within households where some household members may continue farming while others shift to non-farm activities, either locally or by moving to other areas.

Structural transformation brings change not only to the sector of work but often to the structures of employment as well. Smallholder farmers are typically self-employed, with household members other than the head considered “contributing family workers” or “unpaid labor” within the data (Gollin 2018). Where farm consolidation takes place, depending on the nature of the production activities, some of this labor is transformed into wage work on larger-scale commercial agricultural enterprises. Various other possibilities blur these lines. When they participate in contract farming or outgrower schemes, smallholder farmers may remain “self-employed” in the data, but their autonomy as producers is circumscribed. People who leave their own farms to become wage laborers may be counted as “agricultural labor” (e.g. if they work on someone else’s farm) or “manufacturing labor” if they work in processing and packing. Understanding the experiences of those remaining in agriculture requires a more nuanced approach to the data than simply looking at data on the number of individuals who work in the agricultural sector.

Men and women are differently positioned to take advantage of these new opportunities due to both structural constraints, such as discrimination in labor markets, and gender norms. The gendered patterns of labor are changing within agriculture in myriad ways across very different contexts. The men and women who remain in agriculture are shifting their activities, reallocating their time across farm and nonfarm activities, changing the crops grown and livestock raised, and moving between self-employment and wage work. Some family members, particularly women, are taking on new identities as farmers and even innovators themselves, rather than simply as helpers (Farnworth et al. 2021; 2019). These changes have implications for rural households as well as for the agriculture sector itself.

One focus of the work on gender and agricultural labor has been to analyze what is often referred to as the “feminization” of agriculture. This term is now widely used to describe a phenomenon in which women are increasing their roles in agriculture relative to men. Definitions range from an increase in rural women’s measured participation in agriculture and a reported visibility of women in agricultural activities (Deere 2005) to a process whereby women have “broadened and deepened their role in agricultural production” (Lastarria-Cornhiel 2006, p. 1).

As researchers have tried to measure this phenomenon, they typically focus on the share of agricultural labor being done by women. This may be measured on the extensive margin, as an increasing share of agricultural workers who are women, or, occasionally, on the intensive margin, as an increase in the time that women spend in agricultural labor relative to men. This research often refers to agriculture as being “feminized” when women are more than 50% of the agricultural labor force.³ It assumes an artificial benchmark in the sense that there are few sectors (and few occupations) within any economy where there is a precise gender balance between women and men. Moreover, many authors suggest that it is important to distinguish between the feminization of agricultural labor and of agricultural management (Radel, Claudia et al. 2012; de Brauw et al. 2013). While agricultural labor may capture Deere’s (2005) notion of greater participation in agriculture, the notion of the broadening and deepening of roles encourages us to consider the extent to which women are playing a greater management role in agriculture.

This literature has two distinct narratives about what happens when men move out of agriculture and women provide more of the labor and management. The first is best captured by the proposed rephrasing of the term “feminization of agriculture” to the “feminization of agrarian distress” (Pattnaik et al. 2018). In this scenario, women, particularly in smallholder farm households, take on additional responsibilities for providing farm labor and management at a moment when smallholder farming is becoming less economically viable and when women typically have less access to the resources for farming than men (Padmaja et al. 2019; de Brauw, Kramer, and Murphy 2021; Tavenner and Crane 2018).

³ For example, Slavchevska, Kaaria, and Taivalmaa (2016) use this as one of several indicators of the feminization of agriculture.

The negative picture of the feminization of agriculture may also include the movement of rural women into agricultural wage labor jobs. Women often become casual farm laborers, working seasonally and with no job security. They predominate in the lowest-paid and most precarious agricultural jobs. There are often significant gender wage gaps throughout this sector (Fabry, Van den Broeck, and Maertens 2022; Fabry, Schuster, and Maertens 2024).

The second narrative is much more optimistic. It suggests that the changes in the agricultural sector may open up new opportunities for women (Krumbiegel, Maertens, and Wollni 2020; Anderson et al. 2021). If men are less involved in agriculture, it creates space for women to increase their roles and benefit from these new opportunities. These new roles on the family farm may lead to women's greater voice within the community and in agricultural organizations.

In addition, this narrative suggests that good opportunities are being created for rural women in the agricultural wage labor sector. Women may be able to move out of agricultural production into related downstream activities, such as packing and processing operations. These wage-earning opportunities provide a means for women to earn an income of their own, with potentially positive impacts on their empowerment and well-being.

The reality, of course, lies somewhere between these two extremes. When the rural areas are stagnant and offer few opportunities, those who remain in the rural areas face difficult times. If the migrant sends remittances, this may alleviate some of the stress and create opportunities for investment, both on- and off-farm. When the rural sector is dynamic, new opportunities may open for women, but only some women are positioned to benefit from them. Some women may choose to leave the agricultural sector if better opportunities are available in services or manufacturing.

It is also worth noting that the concern about the feminization of management is not that women will take over commercial farms and run them successfully. Instead, the concern about the feminization of management is that productivity will decline when women manage farms. While there is an extensive literature on gender and agricultural productivity, the analyses do not consider what happens when women take over the management of an existing farm. Instead, the studies compare productivity on farms managed by men and women, controlling for the use of inputs and farmer and farm characteristics. The results are mixed, with some finding no

productivity differences once the use of inputs are controlled for while others do find that women are less productive farm managers and use inputs less efficiently (See Doss 2018 for a discussion of this literature; more recent work includes Singbo et al. 2021; Diiro et al. 2018; and Lee 2024.)

3. GLOBAL PATTERNS OF THE “FEMINIZATION OF AGRICULTURE”

To the extent that the feminization of agriculture is due to structural transformation and increasing opportunities available in the non-agricultural sectors, especially for men, we would expect to see that women are a greater share of those working in agriculture in countries that have undergone structural transformation and have higher levels of per capita income. In this section, we measure these patterns across the full spectrum of countries, considering both the extensive and the intensive margins. First, we analyze the gendered patterns of agricultural workers across the income distribution of countries. Second, we study the intensive margin, and document hours worked by women and men who work in agriculture.

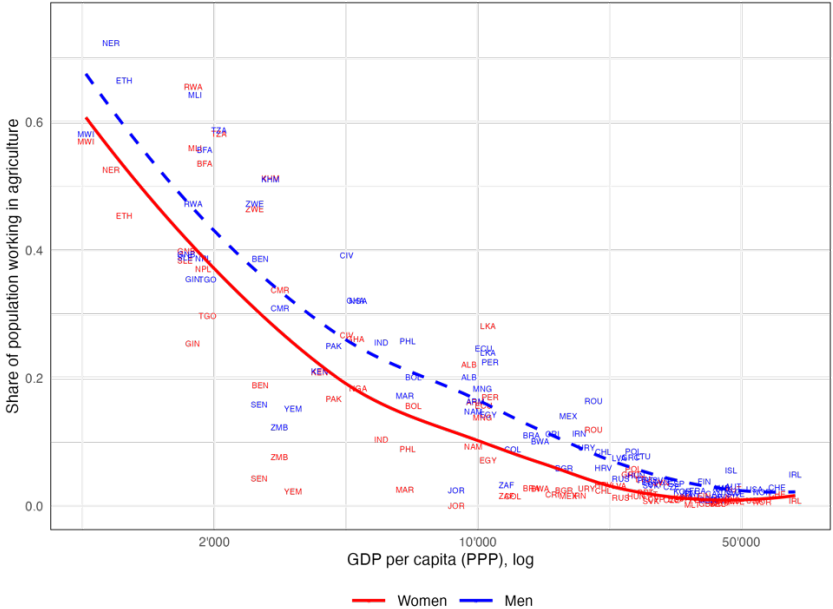
We use the Harmonized World Labor Force Survey (HWLFS) dataset, which includes individual-level data from 123 countries. For this analysis, we use all surveys from the HWLFS that (i) are nationally representative household or labor force surveys and contain information on (ii) individual characteristics (age and sex), (iii) employment status and sector of employment in the main job and (iv) information on hours worked in the main job. Since our focus is on the study of cross-country differences in the gender division of agricultural work for each country, we use a survey conducted around 2015. Our sample provides these data for 85 countries (see Appendix Table 1 for a complete list of surveys) across the whole GDP per capita distribution. The poorest country in our sample was Malawi in 2016, with a GDP per capita level of 913 USD (PPP), and the richest country was Ireland in 2016, with 69,502 USD (PPP).

We use these data to measure (1) the share of the working-age population of men and women who work in agriculture, (2) the share of men and women in agricultural employment, and (3) the weekly hours worked by men and women who work in agriculture.⁴ We focus on the working-age population (age 15-65).

⁴ We measure hours worked in the main job. If available, we use information on actual hours worked; otherwise, we use data on usual hours.

Figure 1 shows the percentage of working-age men and women working in agriculture for countries at different levels of GDP per capita. The percentages of men and women working in agriculture are smaller among high-income countries than in low-income countries. In rich countries, relatively few people work in agriculture, and the gap in the absolute share of men and women working in agriculture is lower. In low-income countries (below 5k), the gender gap is 5.8 percentage points, while in rich countries (above 30k), it amounts to 1.5 percentage points. Also, Figure 1 contains a LOESS line of best fit for each gender, showing that, on average, more men work in agriculture than women across all levels of GDP per capita.

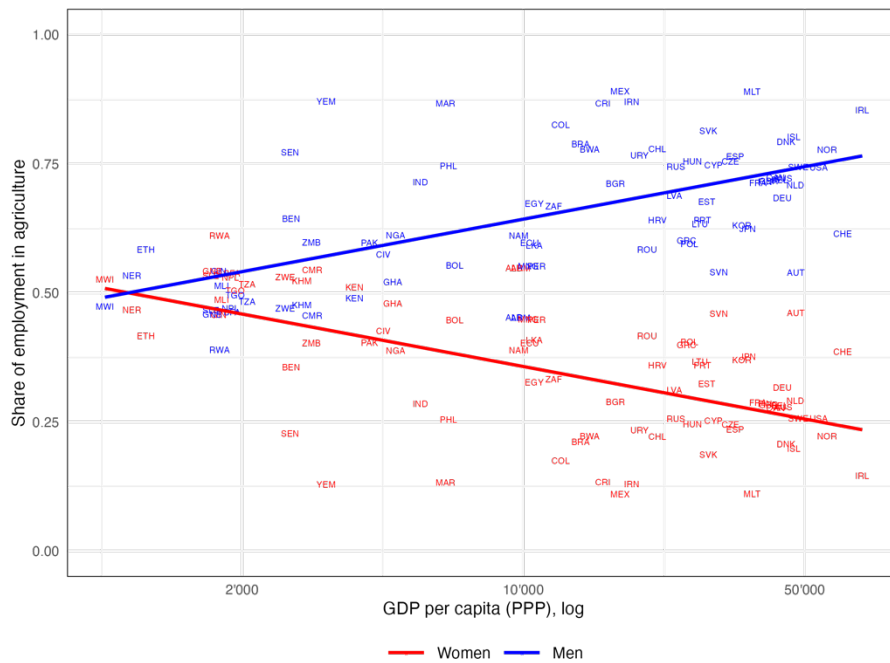
Figure 1. Share of the working-age population who works in agriculture across countries by gender.



Notes: Each dot shows the share of individuals aged 15-65 that work in agriculture for a country survey, plotted against country GDP per capita (PPP) from the Penn World Tables (Feenstra et al. 2015) for the corresponding year. It features a LOESS (locally estimated scatterplot smoothing) line for each gender,

Figure 2 shows the gender composition of agriculture employment across countries. In most countries and at most income levels, men comprise more than half of those working in agriculture. Notable exceptions are Rwanda, Albania, Sri Lanka, and Cameroon.

Figure 2. Gender composition of agricultural employment across countries.



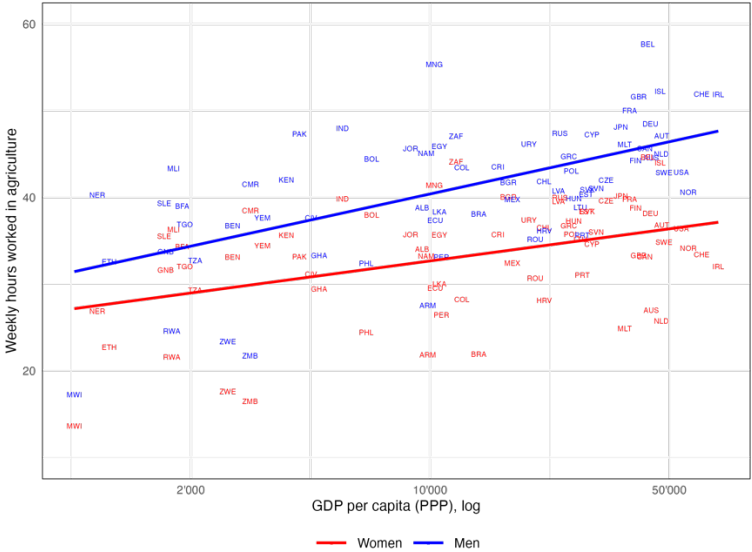
Notes: Each dot shows the share of men/women in agriculture employment for a country survey, plotted against country GDP per capita (PPP) from the Penn World Tables (Feenstra et al. 2015) for the corresponding year. It features a linear line of best fit for each gender.

This figure documents the composition of employment for countries at different income level. What is striking is the large dispersion for countries that are in the middle of the income distribution. In middle-income countries, we see some countries where men and women are each 50% of the agricultural labor force and other countries in which the majority of the agricultural workers are men. This evidence suggests that (1) across countries agricultural work is done predominantly by men, (2) the gender gap in agricultural work is higher in high-income countries, and (3) for middle-income countries, there is a large heterogeneity in the way agricultural work is split between men and women, suggesting that there is no single story about gendered agricultural labor in middle-income countries.

The above graphs show the patterns on the extensive margins, we now study the intensive margin. Figure 3 reports hours worked for men and women who work in agriculture for 84 countries. It shows that the average hours worked per week by those in agriculture is smallest in the low-income countries and larger in the high-income countries. In most, but not all countries,

men who work in agriculture spend more hours working in agriculture than women. The gender gap in hours worked also widens slightly across the distribution. In low-income countries, women who work in agriculture work 5.6 hours less per week than their male counterparts. In rich countries, the corresponding number is 11.6 hours.

Figure 3. Hours worked of agricultural workers across countries by gender.



Notes: Each dot shows the average hours worked by individuals who work in agriculture for a country survey, plotted against country GDP per capita (PPP) from the Penn World Tables (Feenstra et al. 2015) for the corresponding year. It features a linear line of best fit for each gender.

The global evidence we provide in this section suggests that there is no robust evidence in support of the feminization of agriculture across the distribution from low-income to high-income countries. However, it does raise questions about why we see such a wide dispersion with regard to women’s work in agriculture in the middle-income countries (Gottlieb et al. 2024).

The evidence we provide is consistent with that of Slavchevska, Kaaria, and Taivalmaa (2016) who identify only a small number of countries in Asia and Africa where women’s share of agricultural employment has increased significantly over the period of 1998-2014. These

included Armenia, Nepal, Botswana, and Morocco.⁵ While Botswana and Morocco are not in our sample, Armenia and Nepal are featured, and in line with this literature, we find that most of the agricultural work is done by women. This is also true in Cameroon, Tanzania (see Figure 3). Nepal, in particular, has been widely studied as an example of the feminization of agriculture. But to understand these patterns, we need to study the wide variety of country/region-specific patterns that we observe, recognizing that there is a feminization of agriculture in some countries, and certainly in some locations, but also that it is not an empirical regularity in the cross-section of countries.

4. KEY DIMENSIONS OF LOCAL CHANGES

Simply considering the share of agricultural labor that is done by women over time misses many of the important gender dimensions of the changes that are occurring in agriculture. The definitions used above are narrow and just consider the numbers of those working in agriculture or the hours worked. They say nothing about the conditions of work or the wages or income generated. Nor do they distinguish the quality of the work, counting both casual field laborers and managers of commercial farms as workers in agriculture. A broader focus on the gendered patterns of labor in agriculture requires us to go beyond narrow accounting of numbers of people or hours.

4.1 Changing gender roles on smallholder farms

A number of pathways may lead to an increase in women's involvement in farm management. In some areas, women traditionally manage their own plots, typically for home consumption and local market sales. In other areas, patterns of management and decision-making shift within smallholder household, due to structural changes in the rural economy, shifts in gender norms, or interventions designed to increase women's economic empowerment in agriculture.

Increasing attention is being paid to questions about the ownership and management of plots within smallholder farms. Recent data, particularly that collected at the plot level, has

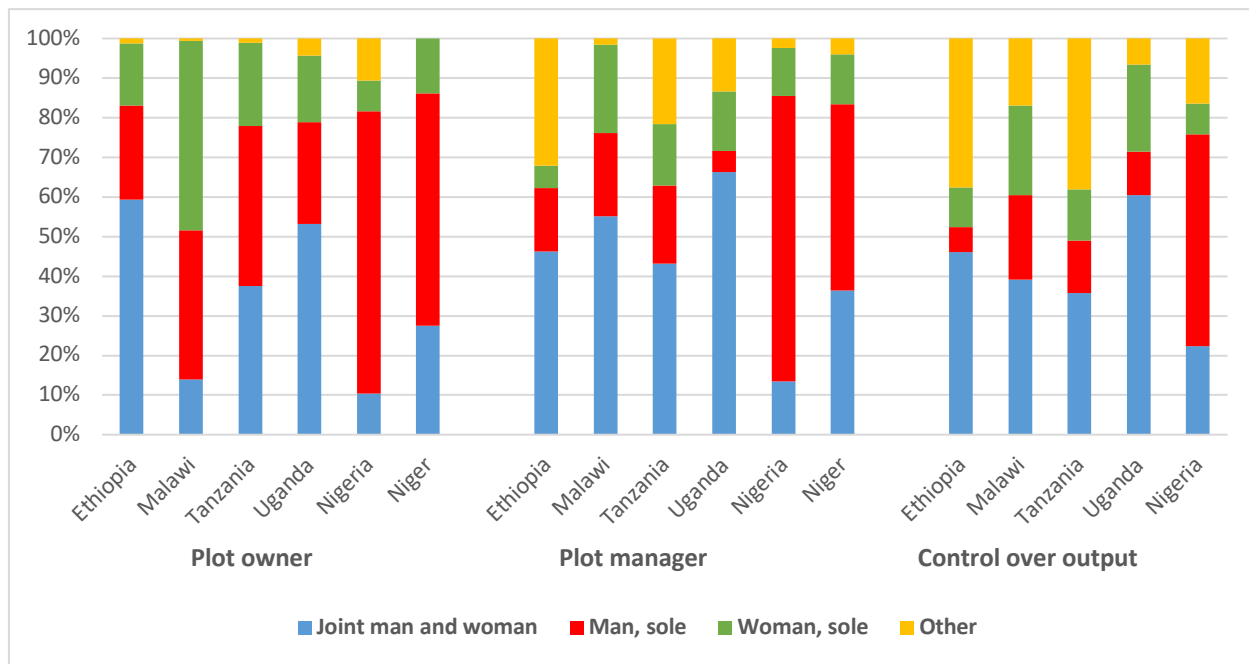
⁵ They faced significant challenges in obtaining data that was consistent across countries and across time.

allowed for cross-country comparisons. These data have demonstrated the extent to which the joint ownership and management of agricultural plots by men and women is widely reported. While there is now considerable evidence about men's and women's ownership of agricultural land (Deere and Leon 2003; Kieran et al. 2015; Doss et al. 2015; Agarwal, Anthwal, and Mahesh 2021), one of the key insights is the extent to which land is reported as jointly owned. Similarly, many farm households report joint management.

Figure 5 presents the distribution of plots by the form of ownership, whether owned individually by a man, a woman, or jointly by a man and woman, or some other combination (such as multiple men or women) for six countries in Africa. In Ethiopia and Uganda, over half of the plots are reported as jointly owned by a man and a woman. Only in Nigeria and Malawi do we see fewer than 25% of plots reported as jointly owned. Reporting of joint ownership doesn't necessarily mean that, in practice, spouses have equal rights regarding the land (Jacobs and Kes 2015), but it does suggest that we need a greater understanding of the implications of joint ownership.

The person reported as the owner is not necessarily the manager (Slavchevska et al. 2021). Figure 5 also identifies the plot manager, from these same six countries, where the plot manager is defined as the person responsible (whether individually or jointly) for making the primary decisions on the crops to be planted, input use, and the cropping activities. We see many women playing a role in the management of the household farm alongside their husband. Between 13% (Nigeria) and 66% (Uganda) of the plots were reported as being managed jointly by a man and a woman.

Figure 5. Distribution of plots by form of ownership, management, and control over outputs.



Adapted from Slavchevska et al. 2021 using data from: the 2013–2014 Ethiopia Economic Survey (ESS), the 2013 Malawi Integrated Household Panel Survey (IHPS), the 2011 Niger Enquête Nationale sur les Conditions de Vie des Ménages et l’Agriculture (ECVM/A), the 2012–2013 Nigeria General Household Survey (GHS), the 2012–2013 Tanzania National Panel Survey (TZNPS) and the 2010–11 Uganda National Panel Survey (UNPS). Information about these surveys, including the data, is available: <http://surveys.worldbank.org/lsm/programs/integrated-surveys-agriculture-ISA>

The final columns in Figure 5 indicate a different measure of management, which is who has control over the agricultural output. The distribution of plots by who controls the outputs differs both from that of owners and managers. In Uganda, in 60% of the plots, there is joint management over the output. In Nigeria, where relative few plots were reported as jointly manager, a greater share report that there is joint control over the output.

These numbers don’t tell us a dynamic story; they are a cross-section from one point in time. But they do show a variation across Africa in terms of who owns and manages agricultural plots and the extent of joint ownership and management. But they also demonstrate the

challenge of measuring farm management. There are multiple layers of decision-making. The strategic management of the farm would involve both crops and livestock; it could involve the allocation of plots across individuals or across crops. It involves deciding whether to invest in new crops, particularly crops such as coffee or oil palm, which require long term investments. For livestock, this would be the decisions about whether to buy, sell, or slaughter livestock or to call the vet when needed. Another level is the day-to-day operational management, such as deciding when to plant, weed or harvest. It would be the responsibility of the daily care and feeding of livestock. These different dimensions are often invisible in the discussions about the feminization of agricultural management, yet we don't have good data on how patterns of management at these different levels are changing, nor do we have panel surveys that are long enough to capture these changes.

Program interventions are now starting to consider how they can involve both men and women as recipients both of assets and information. Asset transfers, such as land or livestock may increase women's voice in farming (Johnson et al. 2015; Santos et al. 2014). Trainings that involve both husbands and wives in learning about agricultural practices can positively increase women's voice regarding farm management (Lecoutere and Van Campenhout 2023).

Projects are also seeking ways to involve women in contract farming. Typically these contracts are made in the names of male household heads, which leaves the management to men while women may be involved in providing the labor (Maertens and Swinnen 2012; Adams, Gerber, and Amacker 2019). But there are some successes in increasing women's roles. For example, an intervention designed to encourage men who were outgrowers on a sugar cane scheme in Uganda to transfer rights to some of the cane blocks increased women's involvement in managing and marketing cane (Ambler, Jones, and O'Sullivan 2022).

4.2 Labor responses when men migrate off smallholder farms.

One question raised by the feminization of agriculture literature is whether and to what extent women are taking on different or additional roles as men leave agriculture. While there is not evidence of a global shift towards greater involvement of women in agriculture, there are regions where men's outmigration results in the necessity of adjusting to the lack of their labor.

Agricultural households respond in many different ways to men's out-migration, with correspondingly different consequences for the patterns of labor and agricultural production in rural areas. Moreover, the implications for both men and women appear to vary with the context. A wide range of contextual factors seem to matter here –notably the different opportunities available to women and men in the broader economy, as well as the gender norms regarding the appropriateness of different types of work, both on and off-farm.

One outcome when men leave the farm is for those remaining to take on additional agricultural work. These patterns vary both within and across countries. In China, when a migrant leaves, some women take on much more work while others do much less (Mu and van de Walle 2011). In Nepal, in rural households with a male migrant, the men who remain on the farm reduce their labor in non-farm work without increasing their labor elsewhere, while the women take on new responsibilities on the farm and increase their labor contribution. The women do not move into activities with higher returns, either on or off-farm. Nor do they shift into new or higher value crops, instead continuing to primarily produce staple grains (Slavchevska et al. 2020).

A second approach to a reduction in household labor is to hire in labor to replace that of the household members who have left. This is only possible when there are workers available who do not have better options. When productivity on the farm is low (and thus the reason for the outmigration), the cost of hiring labor may be higher than the value of the potential returns. On the other hand, there may be short-term tasks, such as field preparation, that require additional labor in order for the farm to have any output. Moreover, women farmers may face particular challenges in managing hired male labor.

A third approach is for households with male out-migrants to engage in fewer labor-intensive activities. They may change their crop mix, their agricultural practices, or shift out of farming altogether. For example, in Vietnam, one study documented the practice of a migrant planting acacia trees in place of his usual crops of rice, cassava, maize, sweet potatoes and groundnuts before migrating. The acacia trees had low labor requirements while he was away and he harvested the trees upon his return several years later (Kawarazuka, Duong, and Simelton 2020). Other changes in agricultural practices may be related to livestock. Because collecting fodder for livestock is time-intensive in the mid-hills in Nepal, households with migrants had

fewer livestock than households without migrants (Bhawana and Race 2020). And some households with migrant men abandon farming altogether (Bever 2002).

Mechanization may be labor saving. Yet, mechanization is not gender neutral. Given that many agricultural tasks are assigned by gender in low- and middle- income countries, mechanization may have different impacts on the demand for men's and women's labor on the farm. For example, in Syria, mechanization replaced men's tasks on the farm much more than women's tasks. Men were then able to take advantage of new opportunities in construction and industry, which meant that women provided an increasing share of labor on the farm (Abdelali-Martini, Malika, Bailey, and Goldey 2004). A review of the literature on agricultural mechanization in Africa (Daum and Birner 2020), found mixed evidence regarding whether only men benefit from mechanization. In India, when mechanization reduced the demand for women's labor, they did not take on additional non-farm activities (Afridi, Bishnu, and Mahajan 2023) The impact of mechanization will depend on whose activities are mechanized and what other work is available for those who are displaced.

One of the factors that shapes what happens on the farms when there is a migrant is whether or not remittances are sent. The remittances may be used for a variety of investments, including housing, children's schooling, or a move to urban areas. But they may also be used to invest in the farm and these investments may influence labor allocations. Farm households may experience significant financial challenges when remittances are not sent, particularly if money was borrowed to send the migrant.

Finally, new opportunities within the agricultural sector may also result in people moving back in. For example, men who had left agriculture in one region of Nepal, returned as the opportunities for growing high value citrus developed. Some women in the area were also able to take advantage of new opportunities in commercial citrus growing (Rana, Banskota, and Sharma 2018).

4.3 Shifts across sector boundaries

In the discussion above, agricultural employment is defined as agricultural production – the work on the farm. However, the agri-food systems are expanding and involve a higher level of processing and packaging of agricultural products. These activities are classified as

manufacturing rather than agriculture. Deere (2005) noted this change almost 20 years ago in Latin American agriculture, where women found employment in the packing and processing of agricultural products, especially those for export. In addition, there is employment upstream from agricultural employment. In Tajikistan, women have taken over some of the roles in irrigation services (Mukhamedova and Wegerich 2018). To study these processes, however, requires going beyond a narrow focus on agricultural employment statistics.

The patterns that we see will then depend on how broadly we want to think about agriculture-related employment. A range of evidence suggests that women often predominate in the food processing and packing firms, particularly in the seasonal and low-paid jobs.

Taking the definition to its broadest level, the recent FAO report, *Women's Status in Agrifood Systems* (FAO 2023), included manufacturing based on agricultural products and the transport of agricultural goods as part of the nonfarm agri-food system.⁶ While the report finds changes in women and men's employment in agriculture that are consistent with our findings above, they also consider the share of women in nonfarm agrifood systems as a share of the total population of employed women and then the same for men. They find little change in this for women or for men when comparing 2005 and 2019 (FAO, 2023; Annex Figure 1.2).⁷ Across regions, women had the highest share of nonfarm agrifood systems employment in Southeast Asia (23%), but there was no change in the percentages over this time period. The largest change was for men in Southern Asia, with a decrease of 5 percentage points. For Latin America, the percentage of those working in nonfarm ag was similar for men and women (17 and 18%). The net changes are primarily from employment in agricultural production to non-agrifood systems.

A narrower definition of employment in agrifood systems might focus on activities that were immediately downstream from farm production – such as packing, processing, and

⁶ Nonfarm agriculture includes food and beverage service activities; undifferentiated goods and services producing activities of private households for own use; manufacture of food products and beverages, non-food agricultural products, tobacco, textiles, leather and related products, wood and wood products from wood and cork except furniture, paper and paper products. Wholesale trade and retail trade, except of motor vehicles and motorcycles. They also estimated the agrifood system share for land, water, and air transport and transport via pipelines; warehousing and support activities for transportation; and postal and courier activities.

⁷ It went from 11% to 12% for women and 12% to 11% for men.

transport – but excluding manufacturing sectors that are less closely linked to farming (e.g., textile manufacturing). The gender composition of labor varies across all of these activities, with additional variation across contexts. For instance, in some countries (such as Bangladesh), textile and garment production labor is primarily done by women; but the production of leather goods may not be. Packing and processing of fruits is often done by women, but packing and processing of meat is frequently done by men. Thus, it is difficult to make broad generalizations about how structural change will alter the gendered patterns of labor in the broader agrifood systems.

The impacts of these changes also vary widely. Most studies agree that women’s wages are lower than men’s, throughout the agri-food system. In Kenya, the involvement of women in the value chains depends on the level of commercialization. In the export value chain, women are primarily involved in production agriculture or low-paying jobs in packing and processing (Oduol et al. 2017). Yet, while women’s wages were lower in the agro-industry in Peru, women have similar non-wage dimensions of the quality of employment as men and are slightly more likely to have decent work conditions (Fabry, Van den Broeck, and Maertens 2022). And in Senegal “women benefit more and more directly through labor market effects than through product market effects in these chains” (Maertens and Swinnen, 2012, p. 142). Thus, women’s disadvantage was less for wage work in commercial agriculture than for smallholder production.

Again, the interesting questions are less about the overall numbers of men and women working in agriculture adjacent employment, but about which types of jobs men and women are moving into and what the job quality and wages are. Who is moving into permanent and well-paid positions? What are the pipelines for these jobs? To what extent do people take on some of this work seasonally, while continuing to work in agricultural production? How do gender norms and structural constraints affect which jobs are available and for whom?

4.4 Domestic Services and Care work

One challenge with understanding women’s roles in agriculture is that women on smallholder farms are often multi-tasking, engaging in farming activities while also taking care of children and managing household tasks. Thus, it is difficult to separately identify the time spent in agriculture and home production. Women may be hoeing in the fields while carrying a baby on their back or feeding the chickens while waiting for the soup to boil.

In addition, they may see these farming activities as part of their household work, rather than as part of agricultural production. They may not report themselves as a farmer or agricultural worker, even though they spend many hours working on the farm. Instead, social norms define them as wives and helpers (Twyman, Muriel, and Garcia 2015; Galiè, Jiggins, and Struik 2013) and they report themselves as not working. Men also may not see women as having roles in agricultural production. In an ethnographic account from Mexico, one man was asked if his wife ever worked in the field. He replied, “No. [My wife] works here in the house for us making tortillas and *pozole*, raising chickens and pigs...” (Radel, Claudia et al. 2012) Thus working in the fields was agricultural work, while raising pigs and chickens was domestic work.

While agricultural production counts within the system of national accounts regardless of whether it is done for market sale or for home consumption, the same is not true of domestic services. If those are sold in the market, they fall into the system of national accounts, but if they are for family members, they do not. Thus, we see women’s activities moving back and forth across the national accounts boundaries (Gottlieb et al. 2024).

Care work and domestic services require many hours of labor in many rural areas. Fetching water from a distance, hand shelling maize or peas, collecting firewood, and washing clothing all take time. The responsibility for these tasks may limit women’s ability to work in the agri-food system, particularly for young women (Dolislager et al. 2021). To understand how the changing patterns of labor both on and off farm affect women’s well-being, we also have to understand changes in women’s total workload. In some areas, changes in social norms may result in men taking on some of the household responsibilities, but in other areas, women simply add new activities to their day. Because men may take over some of the activities, it is important to also have data on their total workload beyond market work.

4.5 Empowerment

These changes in labor patterns in agriculture will both be affected by and directly and indirectly affect women’s empowerment. We consider three dimensions of women’s empowerment – time-use, decision-making, and control over income – to analyze the potential relationships.

The amount of time that people spend working is often used as an indicator of their well-being; concerns are raised, particularly for women, about program interventions that increase

women's work time. The Women's Empowerment in Agriculture Index (WEAI) includes two indicators regarding time-use. One is whether the individual is above a given threshold in terms of time allocated to productive and domestic tasks. The second is satisfaction with the available time for leisure activities. But the number of hours worked may not capture the dimensions that we are interested in. Working more hours may be a sign of agrarian distress or it may be that the person is choosing to take advantage of new opportunities to improve their lives or those of their children. And the number of hours spent working may be less important than people's experiences of their agency over time. In Nepal, mothers- and daughters-in-law reported similar amounts of time working, but their experiences were vastly different, since the mother-in-law controlled how the daughter-in-law spent her time (Doss et al. 2022). Recent work has sought to understand time agency or the control that people have over how their time is spent (Sinharoy et al. 2023; Eissler et al. 2022).

Increasing decision-making authority is also considered an indicator of empowerment. But simply having more responsibility does not necessarily make one more empowered. Having responsibility for decision-making and control, without the resources needed to accomplish the tasks, may actually increase one's distress. In that spirit, if a woman has sole responsibility for the family farm without having access to the inputs needed for productive operation (e.g., labor) this responsibility may simply be an added burden.

A woman's decision-making authority does not necessarily increase just because her husband migrates out of the area. She may be fully responsible for the day-to-day operational management, but her husband may retain some control while he is away -- or at least control over the strategic decision making. As one author notes, "today's migrant sending and receiving locations are linked through new and widespread telecommunication technologies, a relatively constant flow of migrants, and a web of social relationships that facilitate men's virtual presence in sending households" (Radel et al. 2012, p. 104). In the mid-Hills of Nepal, one survey found that in the households with a migrant, only 37% of the women made the farming decisions alone while 20% reported making the decisions jointly. While men made many of the decisions, they conveyed their decisions for such things as buying and or acquiring a loan by phone (Bhawana and Race 2020). If a father-in-law is present in the household, he may retain primary decision-making power (Spangler and Christie 2020). Women's activities on the farm and in the

community may be monitored by neighbors or other family members and reported back to the husband.

It is not necessarily the case that women making more decisions alone is necessarily better for their well-being. Joint decision-making may be empowering. For example, using DHS data from 19 African countries, one study found that in households where both the man and the woman reported that decisions were made jointly, there was a substantively lower level of intimate partner violence (Donald et al. 2023). But responses of joint decision-making in surveys may reflect very imbalanced decision-making processes, where the woman has some, but not much, input into the decision (Acosta et al. 2020). Within a given context, it is important to understand what is meant by a joint decision and how this may be changing.

Finally, earning an income and having control over it, rather than simply contributing labor to the family farm is also often used as an indicator of empowerment. The impact of wage employment on empowerment and well-being differs depending on the conditions of the work. In Syria, Abdelali-Martini and Dey de Pryck (2015) find the increase in women's as labor contractors and was women's wage labor groups resulted in modest improvements in women's empowerment. In this case, women are working in traditionally women's activities at wage rates that are low relative to those of men. And one reason that Maertens and Swinnen (2012) found that women benefitted more from employment in agro-industries than smallholder contract-farming was that the wages earned increased their intrahousehold bargaining power. These changing labor patterns may present women with other opportunities to earn and control income. In Vietnam, women used remittances to invest in agriculture and bought pigs to raise which is an activity considered within women's sphere The pigs are a source of income that the women then manage (Karawazuka, Duong, and Simelton 2020).

While many of these changes may be empowering for women, the women themselves may be agents of the change within their households. The discourse around the women "left behind" as men migrate, suggests a passive role for these women who remain on the farm without either the skills or the resources to succeed. Yet, these women may have been involved in the decision about who migrates; they may raise the funds to send a husband or son to the city or overseas to find better work. And women may creatively manage the challenges and social norms that they face. Thus, we cannot make assumptions or generalizations about how a change

in workload or increase roles in decision-making will affect women's empowerment or the well-being of women and their families.

5. CONCLUSION

The cross-country data doesn't provide clear evidence of the feminization of agriculture across the income distribution. The national level data continue to show that, while women play an important role in agriculture, men are still the majority of agricultural workers in most countries, with this pattern being more pronounced in high-income than in low-income countries. Yet, among middle-income countries, there are large differences in the gender division of agricultural work. This evidence suggests that we need to move beyond thinking about the feminization of agriculture in terms of the share of women in the agricultural labor force and instead consider the broader gendered patterns of labor within agriculture.

With structural transformation, women's work in agriculture may be broadening and deepening in a number of ways. Women may take on increasing responsibility for the family smallholder farm, as well as providing labor for new activities. They renegotiate roles and responsibilities within their households. They may commercialize their farms and expand into high value crops. They may also take on new roles in commercial agriculture, including both crop and livestock agriculture, moving beyond the typical work for women in this area as casual day laborers. Or they may become involved in contract farming or outgrower schemes. Similarly, men's work may also change.

This opens up questions about how men and women who remain in agriculture are reallocating their labor across various agricultural activities as well as unpaid household chores and nonfarm work. In low- and middle-income countries, even as people transition out of agriculture, others remain, and we need to better understand the work that they are doing. Where are new opportunities opening up within production agriculture? Who can take advantage of the new opportunities will be shaped not only by gender but also other factors such as whether they own land, their ethnicity or religion, their education level, and their status within the household and the community. It may be that as men move out of agriculture, women take over some of the roles and responsibilities. Are the people who are remaining in agriculture able to take advantage of these new opportunities? Or are they "left behind" without the resources to improve their livelihoods?

To shed light on these questions, gender should be employed as an analytical category rather than merely as a way to disaggregate the data. This entails moving beyond simply reporting differences in labor patterns between men and women to analyzing how gender shapes individuals' opportunities and actions. Such an approach is essential for understanding the diverse labor dynamics observed across regions, particularly in the middle-income countries. A prerequisite for this analysis is ensuring the visibility of women's work in data. Given that women's work is often underrepresented in the data on market work, as defined by the System of National Accounts (SNA), and their significant contributions to home production, the collection of time-use data is critical. Time-use data will also provide insights into how men's work is changing across the SNA boundaries. This data not only makes women's work visible but also helps explain the underlying reasons for observed patterns and supports the development of evidence-based policy.

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Appendix Table 1: List of labor force and household surveys

Country	Year	Survey name
Albania	2013	Labour Force Survey
Armenia	2015	Labour Force Survey
Australia	2015	Household, Income and Labour Dynamics in Australia
Austria	2015	European Labor Force Survey
Belgium	2015	European Labor Force Survey
Benin	2015	Enquête Modulaire Intégrée sur les Conditions de Vie des ménages
Burkina Faso	2018	Enquête Harmonisée sur le Conditions de Vie des Ménages
Bangladesh	2011	Integrated Public Use Microdata Series - International
Bulgaria	2015	European Labor Force Survey
Bolivia	2015	Encuesta Continua de Empleo
Brazil	2015	Pesquisa Nacional por Amostra de Domicílios
Botswana	2011	Integrated Public Use Microdata Series - International
Canada	2015	Labour Force Survey
Switzerland	2015	European Labor Force Survey
Chile	2015	National Employment Survey
Côte d'Ivoire	2018	Enquête Harmonisée sur le Conditions de Vie des Ménages
Cameroon	2014	Fourth Cameroon Household Survey
Colombia	2015	Gran Encuesta Integrada de Hogares
Costa Rica	2015	Encuesta Continua de Empleo
Cyprus	2015	European Labor Force Survey
Czechia	2015	European Labor Force Survey
Germany	2015	Socio-economic Panel
Denmark	2015	European Labor Force Survey
Ecuador	2015	Encuesta Nacional de Empleo, Desempleo y Subempleo
Egypt	2015	Harmonized Labor Force Survey
Spain	2015	European Labor Force Survey
Estonia	2015	European Labor Force Survey
Ethiopia	2013	National Labour Force Survey
Finland	2015	European Labor Force Survey
France	2015	Enquête emploi en continu
United Kingdom	2015	European Labor Force Survey
Ghana	2017	Living Standard Survey
Guinea	2014	Integrated Public Use Microdata Series - International
Guinea-Bissau	2018	Enquête Harmonisée sur le Conditions de Vie des Ménages
Greece	2015	European Labor Force Survey
Croatia	2015	European Labor Force Survey
Hungary	2015	European Labor Force Survey
India	2017	Periodic Labor Force Survey
Ireland	2015	European Labor Force Survey
Iran	2011	Integrated Public Use Microdata Series - International
Iceland	2015	European Labor Force Survey
Jordan	2016	Harmonized Labor Force Survey
Japan	2017	Employment Status Survey
Kenya	2019	Kenya Continuous Household Survey Programme

Cambodia	2013	Integrated Public Use Microdata Series - International
South Korea	2015	Korean Labor and Income Panel Study
Sri Lanka	2015	Labor Force Survey
Lithuania	2015	European Labor Force Survey
Latvia	2015	European Labor Force Survey
Morocco	2014	Integrated Public Use Microdata Series - International
Mexico	2015	Encuesta Nacional de Ocupación y Empleo
Mali	2014	Living Standards Measurement Survey
Malta	2015	European Labor Force Survey
Mongolia	2015	Labor Force Survey
Malawi	2016	Integrated Household Survey
Namibia	2016	Labor Force Survey
Niger	2014	National Survey on Household Living Conditions and Agriculture
Nigeria	2012	Living Standards Measurement Survey
Netherlands	2015	European Labor Force Survey
Norway	2015	European Labor Force Survey
Nepal	2011	Integrated Public Use Microdata Series - International
Pakistan	2015	Labor Force Survey
Peru	2015	Encuesta Nacional de Hogares
Philippines	2015	Labor Force Survey
Poland	2015	European Labor Force Survey
Portugal	2015	European Labor Force Survey
Romania	2015	European Labor Force Survey
Russia	2015	Russia Longitudinal Monitoring Survey
Rwanda	2016	Enquête Intégrale sur les Conditions de Vie des Ménages
Senegal	2013	Integrated Public Use Microdata Series - International
Sierra Leone	2018	Integrated Household Survey
Slovakia	2015	European Labor Force Survey
Slovenia	2015	European Labor Force Survey
Sweden	2015	European Labor Force Survey
Togo	2018	Enquête Harmonisée sur le Conditions de Vie des Ménages
Tunisia	2015	Enquête nationale sur la population et l'emploi
Tanzania	2014	Integrated Labour Force Survey
Uganda	2014	Integrated Public Use Microdata Series - International
Uruguay	2015	Encuesta Continua de Hogares
United States	2015	Current Population Survey
Yemen	2013	Labor Force Survey
South Africa	2015	Labor Market Dynamics
Zambia	2017	Labour Force Survey
Zimbabwe	2014	Labour Force and Child Labour Survey
Georgia	2015	Integrated Household Survey
