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The Impacts of Rural Outmigration on Women's Empowerment

Evidence from Nepal, Senegal, and Tajikistan

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ABSTRACT

Using primary survey data collected in Tajikistan, Nepal and Senegal, three countries with high male outmigration rates, this study analyzes the impacts of migration on the empowerment of women who remain in rural areas. The study uses indicators from the Abbreviate Women's Empowerment in Agriculture Index (A-WEAI) to measure women's empowerment in five domains (decision-making autonomy around agricultural production, resources, control over income, group membership and workload) and instrumental variable approaches to address the endogeneity between the migration of a family member and women's empowerment. It finds that male outmigration leads to women's empowerment in agriculture in some domains and disempowerment in others. In Tajikistan, where women start with low levels of empowerment, women in households with a migrant are more likely to be involved in decisions in productive activities on the household farm, control income, own assets and achieve workload balance than women in non-migrant households. In Nepal and Senegal, women start at higher levels of empowerment and we see fewer differences in their empowerment based on whether they live in a migrant-sending household. The impacts of migration on empowerment depend on the context, whether the household receives remittances or owns land, and women's position within the household.

Keywords: rural outmigration, women's empowerment, A-WEAI, Tajikistan, Senegal, Nepal

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1. INTRODUCTION

Rural outmigration is strongly gendered; in many areas, men migrate out, either seasonally or for a period of several years, with family members remaining in the rural community. This often contributes to the phenomenon of the feminization of agriculture, where women are an increasing share of those working in agriculture and managing household farms. These changes potentially empower women as they take over the management of the farm and control more of the output and income. On the other hand, women may simply end up with more responsibilities without the time or financial resources to handle them, resulting in what has been termed, "the feminization of agrarian distress" (Pattnaik, Lahiri-Dutt, Lockie, & Pritchard, 2018).

In response to male outmigration, the women and men who remain typically adapt their livelihood strategies and provide labor to different activities. They may relocate labor away from non-agricultural activities to work within the household or on the household farm (Binzel & Assaad, 2011; Lokshin & Glinskaya, 2009; Mendola & Carletto, 2012; Mu & Van de Walle, 2011). While the impacts of rural outmigration on labor patterns of the people who remain has received significant attention, less is known about how rural outmigration is transforming gender relations and influencing women's empowerment (Mueller, Kovarik, Sproule, & Quisumbing, 2015), especially within the agricultural sector.

Women's empowerment is a multi-dimensional process that involves the possibility of participating in and benefiting from economic activities and the ability to make and carry out one's own choices (Alkire, et al., 2013). For rural women, five dimensions of empowerment have been identified as particularly relevant: decision-making autonomy around agricultural production, resources including land, control over income, membership in groups and workload (Alkire, et al., 2013).[1]

[1] These are the five dimensions included in the Women's Empowerment in Agriculture (WEAI) family of indices. While the full WEAI uses ten composite indicators to measure empowerment across the five dimensions, the A-WEAI includes six of these indicators, with weights for each indicator adjusted accordingly.

Men's outmigration often leads to increased work burdens for the women who remain in rural communities. Higher work burdens can be disempowering, limiting the capacity to make a full range of choices, and with harmful effects on their health. In Vietnam, women's workload increased as they had to take all the management decisions on the farm and also do activities which were traditionally done by their husbands such as irrigation, dredging field canals, applying fertilizer and pesticides and taking the output to the market (Paris, et al., 2010). Higher workloads may accompany greater autonomy and responsibility, as Yabiku, Agadjanian, and Sevoyan (2010) find in Mozambique. This suggests that there may be trade-offs among the different domains of empowerment.

Numerous studies find significant gains in women's decision-making autonomy following the migration of male family members in across a range of country contexts including Bangladesh (Hadi, 2001), Morocco (Sadiqi & Ennaji, 2004), Mozambique (Yabiku, et al., 2010), Guatemala (Stanley, 2015), and countries in Southeast Asia (Paris, et al., 2010). Other studies, however, do not find compelling evidence of such gains, including research from Armenia and Guatemala (Menjívar & Agadjanian, 2007), México (Radel & Schmook, 2009), and China (Mu & Van de Walle, 2011). These studies use a range of indicators for women's empowerment, including different domains of decision-making.

Three sets of factors mediate the way that male outmigration influences women's empowerment. These factors may explain why the results differ so widely across studies. First, household landownership is often both an indicator of household wealth and a factor that shapes the livelihood opportunities for the household, particularly in contexts with thin land and labor markets.

Second, women's position within the household in the rural areas will also condition how they experience male outmigration. Some women are able to take on the responsibilities of the house and farm. But when

a woman lives with her in-laws, she may face restrictions on her freedom of movement (Sapkota & Wie, 2019) or have little control over her own time and labor (Doss, Meinzen-Dick, Pereira, & Pradhan, 2020).

A final mediating factor is whether the migrant sends remittances. Even when women who remain have greater autonomy over the productive activities in the household, they may not have the resources they need to make an adequate living for the family left behind. Depending on the context, institutional barriers including high illiteracy rates among women, inadequate infrastructure, and restrictive social norms may greatly limit women's economic opportunities compared to men's (Sadiqi & Ennaji, 2004). The burden may intensify particularly if remittances are not sent, as the remaining household members experience both additional work obligations and substantial financial distress. When migrants are unable to send remittances, families left behind are often particularly vulnerable to poverty (Maharjan, Bauer, & Knerr, 2012; Sadiqi & Ennaji, 2004).

Most of the evidence of male outmigration on women's empowerment is from small-scale qualitative studies. While they provide deep insights about the processes through which male outmigration may influence changes in gender relations and women's empowerment, more research is needed to quantify the effects and establish a causal link between migration and changes in women's empowerment across contexts.

Little research empirically explores how male outmigration leads to women's empowerment across different dimensions. A study in Guatemala is one of the few quantitative studies, which directly explores the linkages between migration and various individual-level measures of women's empowerment with a focus on agriculture (Stanley, 2015). The findings are largely drawn from descriptive analyses comparing women in households with a male adult migrant to women in households without migrants; the analyses do not control for other confounding factors and do not address the endogeneity of migration decisions. Addressing endogeneity when measuring the impacts of women's empowerment is necessary to separate

the impacts of migration from the decision to migrate. More empowered women may have greater influence on the husband's decision to migrate. One of the few studies that addresses the endogeneity of migration decisions uses Nepal Demographic Health Survey and finds that women in households with a migrant are more likely to have the final say on their own healthcare. But other aspects of empowerment are negatively impacted by migration (Sapkota & Wie, 2019).

There are significant gaps in the literature on the linkages between rural outmigration and women's empowerment. This is often attributed to the lack of data as most existing surveys focus on either migration or women's empowerment but rarely on both issues. In response to the gaps in gender-relevant data around rural outmigration and agriculture, in 2017 FAO and the World Bank carried out a unique survey that collected comprehensive information on all types of migration from rural areas, as well as detailed information on livelihoods in sending areas and women's empowerment in agriculture using the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) survey instruments. The survey was implemented in three countries with relatively high levels of men's rural outmigration – Nepal, Senegal and Tajikistan. The analysis explores whether rural outmigration is associated with positive impacts on gender roles and women's empowerment and how factors such as land ownership, the structure of the household, and the receipt of remittances may mediate these impacts.

The study finds evidence that male outmigration leads to women's empowerment in agriculture in some domains, but there might be disempowering effect in others. Male outmigration is linked to larger impacts in contexts such as Tajikistan, where women start with low levels of empowerment, and somewhat smaller impacts in context, where women are more empowered to start with. In Tajikistan, women in households with a migrant are more likely to engage in the decision-making in productive activities on the household farm, control income, own assets and achieve workload balance than women in non-migrant households. In Nepal, women in households with a migrant boast a greater likelihood of having access to financial accounts, control over income and involvement in community groups, but they also report higher workloads

and declines in empowerment in productive inputs. The impacts of migration on the women in sending communities in Senegal are more subtle as compared to Tajikistan and Nepal. There is a strong impact on access to and decisions over credit, but also some indication of a loss of assets. In all contexts, the impacts are mediated by whether the household receives remittances, its ownership of land and the women's position in the household.

2. COUNTRY CONTEXTS

Tajikistan, Nepal, and Senegal are particularly relevant for studying the impacts of rural outmigration on women's empowerment. Migration is an important phenomenon in all three countries and remains largely driven by men particularly in rural areas. The rural populations largely depend on agricultural production on the family farm and in all three countries men migrate for new ways to earn income. They are drawn by economic prospects and pushed out due to increasingly scarce agricultural land or economic opportunities in rural areas, which are often made worse with climate change.

The majority of men in Tajikistan and Nepal head to international destinations. The primary destination for Tajik migrants is Russia for temporary seasonal employment. In Nepal, some migrate to semi and low skilled employment opportunities in Gulf countries and Malaysia for several years, while lower skilled migrants migrate to India for seasonal employment for a shorter period (IOM, 2019). Unlike Tajikistan and Nepal, migration in Senegal is both internal and international. International destinations include countries in West Africa, Europe, the Americas, and the Middle East (Dia, 2020).

Migration in all three countries is largely regarded as the means to support the needs and desires of the migrant and his family. Both Tajikistan and Nepal are traditionally migrant sending countries where migration is the norm and the migration of young men is expected as a way to accumulate resources for the household. Migrant families in both countries rely heavily on remittances. In Tajikistan, for more than 60 percent of households in 2010 remittances made up more than half of their income. In Nepal, remittance flows in 2019 contributed to nearly one-fourth of the gross domestic product (GDP), and as many as one in three households receive remittances (WDI). In 2019, remittances in Tajikistan were the equivalent of 28 percent of the country's GDP. Remittances sent home in Senegal are lower; contributing to 11 percent of the country's GDP in 2019 (WDI).

For rural migrant households, agriculture remains a primary livelihood. Women make up a large share of agricultural employment (FAO, 2011; WDI). Whether women's roles change in an empowering way on the household farm likely depends on their relationship to the migrant and whether they are receiving remittances, and thus have some control over the household income. It also depends on the others in the household, women's positions in the household and age. In Nepal and Tajikistan, patrilocal family systems are common, where young women move into their in-laws' households once they are married (UNWomen, 2019). Younger brides within these households may be governed by husband's family and this may limit their autonomy. In Senegal, households are large; more than eight members per household on average and the majority of households are extended family households. Polygamous marriages are common particularly in rural areas. At least one-third of marriages are polygamous (Rossi, 2019).

The women who remain in the rural areas often face considerable discrimination, both in terms of the laws and the social norms that limit their activities. The Women, Business and the Law Index measures the legal differences between men's and women's access to economic activities (World Bank, 2021). Of our countries, Nepal ranks the highest with a score of 80.6, followed by Tajikistan at 78.8. Senegal has a much lower score of 66.9. A higher score indicates more equal rights. The Social Institutions and Gender Index (SIGI) considers four dimensions: discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restructured civil liberties. All three countries fall into the "medium" category of the 2019 SIGI, with Tajikistan having a score of 32.4, followed by Nepal with a score of 36.2 and Senegal with 37.0; a higher number on this index reflect more discrimination of women (OECD, 2021). Both sets of these scores are national scores and may not fully reflect the situation of poor, rural women.

3. DATA AND DESCRIPTIVE STATISTICS

Survey instruments

The study uses comparable survey data from three countries to study the impacts of rural, male dominated outmigration on women's empowerment. Indicators of women's empowerment come from the Abbreviated Women's Empowerment in Agriculture index (A-WEAI) questionnaire (Table A1 in Annex A). The A-WEAI collects self-report information on five domains of empowerment—input into decisions about agricultural production, access to and decision-making about resources (including ownership of assets and access to and decisions about credit), control over use of income, group membership, and time use (Alkire, et al., 2013).[2]

The A-WEAI questionnaire used in this study was administered to one person per household.[3] In households with a migrant, enumerators were instructed to interview the spouse of the migrant. If the migrant was not married, or if the spouse was unavailable, the A-WEAI instrument was administered to another woman in the household who was randomly selected. In households without a current migrant, the A-WEAI instrument was administered randomly either to the man or woman of the primary couple.

Each survey also included a household questionnaire, which was completed by the family member who was reportedly most knowledgeable about the affairs of the household. In addition to household demographics, the household questionnaire was designed to capture detailed individual-level information on both non-migrant and migrant household members as well as the household's migration history. The

[2] The A-WEAI is a shorter version of the original women's empowerment in agriculture index. It excludes some of the modules that were difficult to implement such as autonomy in decision-making (Malapit, Kovarik, Sproule, Meinzen-Dick, & Quisumbing, 2015).

[3] Typically, the A-WEAI survey is administered to two respondents per household: the primary male and female. In this study, modules were administered to one individual per household because it is impossible to interview the man or woman of the primary couple in households where one of the partners is a migrant and the components of the index and the individual indicators rather than the index itself are of primary interest for the study.

migration modules build on existing surveys and closely follow guidelines and recommendations for collecting migration data (De Brauw & Carletto, 2012).

Sampling

Data was collected in 2017 in all three countries. In Tajikistan, the sample is nationally representative of rural households. In Nepal and Senegal, the sample is representative of rural households in selected districts.

The full sample in Tajikistan consists of 1,967 rural households covering all four regions (focusing on 41 districts of 58 districts). The household instrument collected individual-level demographic, employment and migration information for 13,256 individuals within these 1,967 households but, as mentioned earlier, this study is concerned with the women who completed the A-WEAI instrument. Thus, the sample for this study consists of 402 women from households with an international migrant and 719 from households without a migrant.

In Nepal, the sample covers five districts: Achham, Rolpa, Nawalparasi, Makwanpur, and Jhapa, These districts were selected purposefully based on two criteria: (i) high emigration rates based on latest census data, and (ii) wide geographic coverage. The selected districts are distributed across two ecological zones (the hills and the Terai) and the five former developmental regions.[4] The full sample consists of 1,002 households (5,229 individuals within these households). The sample for this study comprises 421 women from a household with a current international migrant and 305 from households without a current migrant.

In Senegal, 999 rural households from two regions (Matam and Kaolack) were surveyed (the individual-level sample included 10,380 individuals). As in Nepal, the two regions were purposefully selected because of their high rates of internal and international migration. The sample for this study comprises 154 women

[4] This is the administrative division before the new constitution in 2015 in Nepal.

from households with an international migrant, 181 women from households with an internal migrant and 200 women from households without any current migrants.

Characteristics of migration

We first compare migrants within migrant households to non-migrants in both migrant and non-migrant households in the three countries (Tables 1A, 1B, and 1C) using the full (adult) individual sample. In all three countries, men dominate rural outmigration. Around 91 percent of Tajik migrants and 93 percent of Nepali migrants are men. In Senegal, 91 percent of international migrants and 83 percent of internal migrants are men.

In Senegal nearly 80 percent of migrants are married, mostly monogamously, compared to slightly more than 50 percent of internal migrants. In Nepal, migrants are younger on average than non-migrants and nearly all (96 percent) are married, suggesting that young people migrate after marriage. In Tajikistan, nearly three-fourths of migrants are married.

Education levels are extremely low among both those who remain and those who migrate in Nepal and Senegal. Seventy-eight percent of the working-age population in the Senegal sample has not completed primary education, though internal migrants are somewhat better educated, which could be also capturing education-related migration. Nearly 50 percent of the working-age population in Nepal has no education. In Tajikistan, nearly all adults in the sample have a secondary education.

In Tajikistan, the different ethnic groups are proportionately represented among the migrant sample. However, in Nepal and Senegal, the data suggests certain ethnic groups are overrepresented among migrants. In Nepal, migrants from low castes are overrepresented among international migrants compared to their share in the population in the sampled regions – 21 percent of migrants are from a lower caste but only around 12 percent of those who remain are from a lower caste. In the Senegal sample, about 53

percent of those who remain in rural areas are Pulaar, but Pulaar comprise 80 percent of the international migrants. The Wolof/Libou, on the other hand, are more likely to migrate internally. The Wolof/Libou account for 24 percent of the adult sample, but only about 12 percent of all international migrants and 37 percent of all internal migrants.

While both internal and international migration are prominent and have distinct characteristics in Senegal, we merge these two groups for the rest of the paper and analyze the impacts of living in a household with *any* type of migrant on women's empowerment. We do this because the sample of women who completed the A-WEAI questionnaire is relatively small and we are unable to explore the differential impacts of the two types of migration on women's empowerment.

Table 1. A. Difference in individual characteristics of migrants and non-migrants in households with and without migrants, Tajikistan

	International Migrants		Non-Migrants		Diff
	Mean	SE	Mean	SE	
Demographics					
Female	0.09	0.01	0.53	0.006	***
Age (years)	32.87	0.355	37.73	0.191	***
Education					
No education	0.007	0.003	0.018	0.002	**
Primary education	0.006	0.003	0.024	0.002	***
Secondary education	0.987	0.004	0.956	0.002	***
Nationality					
Tajiks	0.825	0.013	0.83	0.004	
Uzbeks	0.169	0.013	0.16	0.004	
Kyrgyzs	0.005	0.002	0.01	0.001	
Civil status					
Never married	0.27	0.015	0.21	0.005	***
Married	0.703	0.016	0.698	0.005	
Cohabiting	0.006	0.003	0.025	0.002	***
Widow/divorced	0.025	0.005	0.067	0.003	***
Relation to HH head					
HH head	0.238	0.014	0.235	0.005	
Spouse	0.018	0.005	0.199	0.005	***
Son/Daughter	0.639	0.016	0.333	0.005	***
Son/Daughter-in-law	0.045	0.007	0.173	0.004	***
Other	0.059	0.008	0.06	0-003	
Obs.	868		7,746		

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal individual-level data collected through the household survey instrument. Notes: The Table shows the means and standard errors of the main individual characteristics for International Migrants and Non-Migrants. Significance level of the mean difference also reported. *** p<0.01, ** p<0.05, * p<0.1.

Table 1. B. Difference in individual characteristics of migrants and non-migrants in households with and without migrants, Nepal

	International Migrants		Non-Migrants		Diff
	Mean	**SE**	**Mean**	**SE**	
Demographics					
Female	0.07	0.02	0.57	0	***
Age (years)	31.19	0.47	37.93	0.44	***
Education					
No education	0.09	0.02	0.33	0.03	***
Primary education	0.24	0.04	0.18	0.01	
Secondary education	0.67	0.05	0.48	0.03	***
Caste and religion					
High caste	0.41	0.07	0.43	0.07	
Low caste	0.21	0.06	0.12	0.03	**
Muslim	0.04	0.03	0.02	0.02	
Civil status					
Never married	0.24	0.03	0.2	0.01	
Married	0.75	0.03	0.73	0.01	
Widowed/divorced	0.01	0	0.07	0.01	***
Relation to HH head					
HH head	0.23	0.03	0.29	0.01	**
Spouse	0.17	0.03	0.28	0.01	***
Son/Daughter	0.52	0.03	0.25	0.02	***
Son/Daughter-in-law	0.03	0.01	0.12	0.01	***
Other	0.05	0.01	0.06	0.01	
Obs.	530		2,910		

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal individual-level data collected through the household survey instrument. Notes: The Table shows the means and standard errors of the main individual characteristics for International Migrants and Non-Migrants. Significance level of the mean difference also reported. *** p<0.01, ** p<0.05, * p<0.1.

Table 1. C. Difference in individual characteristics of migrants and non-migrants in households with and without migrants, Senegal

	International Migrants (1)		Internal Migrants (2)		Non-Migrants (3)		Diff (1 vs 2)	Diff (1 vs 3)	Diff (2 vs 3)
	Mean	SE	Mean	SE	Mean	SE			
Demographics									
Female	0.09	0.02	0.17	0.02	0.53	0.01	***	***	***
Age (years)	38.73	1.11	29.71	0.52	35.36	0.38	***	***	***
Education									
No education	0.78	0.03	0.64	0.04	0.78	0.02	***		***
Primary education	0.07	0.02	0.08	0.01	0.07	0.01			
Secondary education	0.15	0.02	0.28	0.03	0.15	0.02	***		***
Ethnicity									
Pular	0.8	0.06	0.48	0.07	0.53	0.06	***	***	
Serer	0.06	0.03	0.12	0.03	0.2	0.05		***	**
Wolof	0.12	0.04	0.37	0.07	0.24	0.05	***	**	**
Civil status									
Never Married	0.2	0.02	0.47	0.02	0.27	0.01	***	***	***
Monogamous marriage	0.63	0.03	0.44	0.02	0.44	0.02	***	***	
Polygamous marriage	0.17	0.03	0.07	0.01	0.21	0.02	***		***
Widow/divorced	0.01	0	0.02	0.01	0.08	0.01		***	***
Relation to HH head									
HH head	0.15	0.03	0.09	0.01	0.19	0.01	**		***
Spouse	0.08	0.01	0.04	0.01	0.24	0.01	**	***	***
Son/Daughter	0.54	0.04	0.65	0.03	0.31	0.01	**	***	***
Son/Daughter-in-law	0.01	0.01	0.01	0	0.06	0.01		***	***
Other	0.22	0.02	0.22	0.03	0.2	0.02			
Obs.	410		813		4971				

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal individual-level data collected through the household survey instrument. Notes: The Table shows the means and standard errors of the main individual characteristics for International Migrants, Internal Migrants and Non-Migrants. Significance level of the mean differences also reported. *** p<0.01, ** p<0.05, * p<0.1.

Tables 2a, 2b, and 2c compare the individual and household characteristics of migrants and non-migrants of the women sample (those who completed the A-WEAI modules). In all three countries the household structures of migrant households are different from non-migrant households. Migrant households have more adults than non-migrant households. Given that a large share of the migrants are sons of the household heads (Tables 1a, 1b, 1c), a large share of the migrants' households are likely extended family households in all three countries. In Tajikistan, 64 percent of migrants are identified as the son or daughter of the household head, suggesting that a large share of households is extended family. In Nepal and Senegal, slightly over half of the migrants are identified as the son (or daughter) of the household's head.

In all three countries, a similar share of migrant households own agricultural land as non-migrant households. In Tajikistan 70 percent of migrant and non-migrant households own agricultural land. In Nepal, about 80 percent of migrant and non-migrant households own agricultural land. In Senegal, 76 percent of percent of households without a migrant and 67 percent of households with a migrant own agricultural land. In Tajikistan and Senegal, there are also no significant differences in terms of wealth based on the wealth index and total livestock units (TLU). In contrast, in Nepal, migrant households are poorer than non-migrant households. They have significantly lower wealth index score and tend to live farther away from a main road or a financial service.

Average annual remittances received by migrant families are the lowest in Senegal followed by Tajikistan. Migrant households receive on average about 95 USD per year in Senegal on average about 250 USD per year in Tajikistan. In comparison, in Nepal, migrant households receive on average more than 2,000 USD per year.

Table 2. A. Individual and household characteristics. Household with and without Migrants. Women A-WEAI sample, Tajikistan

	With Migrants		Without Migrants		Diff
	Mean	SE	Mean	SE	
Demographics					
A daughter-in-law	0.09	0.01	0.1	0.01	*
Age (years)	46.34	0.65	46.01	0.54	
Education					
No education	0.01	0.01	0.02	0	
Primary education	0.03	0.01	0.03	0.01	
Secondary education	0.95	0.01	0.95	0.01	
Nationality					
Tajiks	0.81	0.02	0.83	0.01	
Uzbeks	0.18	0.02	0.15	0.01	
Kyrgyzs	0.01	0	0.02	0	
Civil status					
Never married	0.03	0.01	0.04	0.01	
Married	0.82	0.02	0.77	0.02	**
Cohabiting	0.04	0.01	0.05	0.01	
Widow/divorced	0.11	0.02	0.14	0.01	
Household members					
# children <5 years	0.88	0.06	0.68	0.04	***
# children 5-10 years	0.95	0.06	0.91	0.04	
# males 11-14 years	0.21	0.02	0.27	0.02	**
# females 11-14 years	0.28	0.03	0.26	0.02	
# males 15-17 years	0.24	0.02	0.2	0.02	
# females 15-17 years	0.22	0.02	0.19	0.02	
# male adults	2.35	0.06	1.83	0.04	***
# female adults	2.14	0.05	1.93	0.04	***
Household characteristics					
Wealth index	0.18	0.07	0.1	0.05	
Own Land	0.71	0.02	0.69	0.02	
Land hectares own	6.98	0.49	7.24	0.39	
Tropical livestock Unit	5.7	1.66	4.76	1.24	
Remittances amount (USD)	239.99	11.84	14.08	2.98	***
Cash assistance received	0.24	0.02	0.19	0.01	**
Obs.	402		719		

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal data. Notes: The Table shows the means and standard errors of the main individual characteristics for women in A-WEAI sample and in households with and without Migrants. Significance level of the mean difference also reported. *** p<0.01, ** p<0.05, * p<0.1.

Table 2. B. Individual and household characteristics. Household with and without Migrants. Women A-WEAI sample, Nepal

	With Migrants		Without Migrants		Diff
	Mean	SE	Mean	SE	
Demographics					
A daughter-in-law	0.22	0.03	0.13	0.03	*
Age (years)	37.52	1.24	38.45	0.92	
Education					
No education	0.49	0.05	0.49	0.05	
Primary education	0.14	0.02	0.18	0.03	
Secondary education	0.37	0.06	0.33	0.05	
Caste and religion					
High caste	0.4	0.06	0.38	0.08	
Low caste	0.19	0.04	0.1	0.03	**
Muslim	0.04	0.03	0.01	0.01	
Civil status					
Never married	0	0	0	0	
Married	0.96	0.01	0.91	0.02	***
Widow/divorced	0.03	0.01	0.09	0.02	***
Household members					
# children <5 years	0.42	0.04	0.45	0.04	*
# children 5-10 years	0.6	0.05	0.5	0.05	
# males 11-14 years	0.21	0.03	0.21	0.03	
# females 11-14 years	0.19	0.03	0.18	0.02	
# males 15-17 years	0.17	0.02	0.18	0.03	
# females 15-17 years	0.14	0.02	0.21	0.04	
# male adults	1.96	0.07	1.5	0.04	***
# female adults	1.76	0.06	1.55	0.04	***
Household characteristics					
Wealth Index	0.43	0.35	0.71	0.33	*
Own Land	0.79	0.04	0.8	0.04	
Total cultivated land (hectares)	0.91	0.08	0.92	0.09	
Tropical livestock Unit	1.11	0.11	1.1	0.1	
Remittances (USD)	2030.32	225.3	208	62.54	***
Non-labour income (USD)	30.68	5.58	47.93	13.65	
Distance nearest road (km)	9.32	2.05	7.08	1.56	**
Distance nearest transport station (km)	6.49	1.24	6.39	0.97	
Distance nearest financial service facility (km)	14.93	2.48	12.51	2.02	***
Obs.	421		305		

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal data. Notes: The Table shows the means and standard errors of the main individual characteristics for women in A-WEAI sample and in households with and without Migrants. Significance level of the mean difference also reported. *** p<0.01, ** p<0.05, * p<0.1.

Table 2. C. Individual and household characteristics. Household with and without Migrants. Women A-WEAI sample, Senegal

	With Migrants		Without Migrants		Diff
	Mean	SE	Mean	SE	
Demographics					
Daughter-in-law	0.06	0.02	0.05	0.02	
Age (years)	41.56	1.38	39.19	1.42	*
Education					
No education	0.87	0.02	0.86	0.03	
Primary education	0.06	0.02	0.08	0.02	
Secondary education	0.07	0.02	0.07	0.02	
Ethnicity					
Pular	0.63	0.07	0.5	0.07	*
Serer	0.09	0.03	0.24	0.06	***
Wolof	0.24	0.06	0.21	0.05	
Civil status					
Never Married	0.02	0.01	0.02	0.01	
Monogamous marriage	0.55	0.03	0.54	0.05	
Polygamous marriage	0.27	0.03	0.27	0.04	
Widow/divorced	0.17	0.03	0.16	0.04	
Household members					
# children <5 years	1.01	0.08	1.22	0.13	
# children 5-10 years	1.69	0.11	1.86	0.14	
# males 11-14 years	0.44	0.04	0.5	0.05	
# females 11-14 years	0.36	0.04	0.43	0.06	
# males 15-17 years	0.40	0.05	0.39	0.05	
# females 15-17 years	0.47	0.04	0.34	0.04	***
# male adults	3.17	0.13	2.19	0.12	***
# female adults	3.10	0.14	2.45	0.12	***
Household characteristics					
Wealth Index	0.18	0.18	-0.17	0.19	
Own Land	0.67	0.05	0.76	0.04	
Tropical livestock Unit	1.89	0.3	2.17	0.45	
Remittances (USD)	94.77	17.25	2.88	1.65	***
Cash assistance received	0.17	0.04	0.21	0.03	
Non-labour income (USD)	301.41	56.92	221.83	39.18	
Obs.	335		200		

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal data. Notes: The Table shows the means and standard errors of the main individual characteristics for women in A-WEAI sample and in households with and without Migrants. Significance level of the mean differences also reported. *** p<0.01, ** p<0.05, * p<0.1.

Characteristics of women

In comparing the sample of women in households with a current international migrant with women in non-migrant households we see some differences (Tables 2a, 2b, 2c). In Nepal and Tajikistan, a statistically significant smaller share of women in the sample in non-migrant households live with their mother-in-law than women in migrant households. In Senegal, the same share of women in the sample of non-migrant households are daughters-in-law as the women in migrant households. In Senegal and Tajikistan, marital status is similar for women in migrant and non-migrant households. In Senegal about 55 percent of women are in monogamous unions, and 27 percent of women are in polygamous unions. In Tajikistan about 80 percent of women are married. In Nepal 95 percent of women in migrant households are married compared to 91 percent of women in non-migrant households.

In Tajikistan, women in households with a migrant have similar ethnic backgrounds as women in non-migrant households. In Nepal women in migrant households are more likely to come from a lower caste. In Senegal, women in households with a current migrant are more likely to be Pulaar and less likely to be Serer than women in households without a migrant.

Table 3 compares the mean empowerment indicators in all three countries for the sample of women in households with a current migrant with women in non-migrant households. It includes six of the indicators in the five domains of empowerment that are traditionally used to calculate the A-WEAI. These are input in productive decisions; ownership of assets; access to and decisions on credit; control over the use of income; group membership; and workload. It also includes a continuous empowerment score that is a weighted average of these indicators where indicators are weighted by 1/5, except for ownership of assets which is weighted by 2/15 and access and decisions on credit by 1/15 following Malapit et al. (2015). While not part of the A-WEAI, we also include an indicator for access to a financial account. Having access to a financial account is important in the context of migration because of the ability to receive and save

remittances. Table A1 in the annex provides more information on how these indicators are defined (see Malapit, et al. (2015) for more details on A-WEAI indicators).

In Tajikistan and Nepal, there are not meaningful differences in migrant households as compared to non-migrant households in the share of women who achieve empowerment across the indicators. In Senegal, women in migrant households are more likely to achieve empowerment in access and decisions about credit but less likely to achieve empowerment in ownership of assets than non-migrant households.

Of the three countries, the lowest empowerment scores, both overall and for the various dimensions, are for women in Tajikistan. In Tajikistan, the overall empowerment score for women is between 0.33 and 0.37, meaning that most women are empowered in only one or two domains. Women report relatively low levels of engagement in productive activities (not presented in tables). Fewer than 30 percent of women engage in any agricultural activity. With the exception of high value crop farming, there are no significant differences in terms of the types of activities women in households with a migrant and those without a migrant engage in. Twice as many women in households with a migrant than women in households without a migrant engage in high value cropping, but the share is overall low. Perhaps because of their low participation in any productive activity in agriculture, women in Tajikistan also self-report low levels of participation in decision-making about productive activities. Only 26 percent of women in households with a current migrant and 20 percent of women in households without a migrant achieve empowerment in input in productive decisions (Table 3); this difference is statistically significant. Only about 4 percent have access and make decisions about credit. The indicator on group membership suggests none of the women are active members of an organization. The majority of women do achieve empowerment in ownership of assets and in workload, which means they own at least one large asset and work less than 10.5 hours during the past 24 hours regardless of the migration status of the household. Beyond the WEAI scores, the access to financial account indicator suggests that few women have access to an account.

In contrast, women in Nepal score relatively high in these measures, with an overall empowerment score of 0.75, irrespective of the migration status of the household, which means they achieve empowerment in 3 to 4 domains on average. Women appear to have high decision-making power over productive activities and also achieve high ownership of assets. About 50 percent of all women have access and inputs in decisions on credit and about the same share has sole or joint access to a financial account. A large share of women is active in at least one agricultural, financial, social, or religious group. Women in Nepal are less likely to achieve empowerment in workload; about half worked more than 10.5 hours in the past 24 hours, there are no significant differences between women in households with a migrant and those with no migrants.

In Senegal, the empowerment score is around 0.60, suggesting women achieve empowerment in 2 to 3 domains on average. Fewer women in Senegal than in Nepal participate in decision-making around productive activities. This could be in part explained by Senegalese women overall low levels of participation in agricultural activities regardless of the migration status of the household (statistics not reported in the table). While only 11 percent of women in households without any migrants can access and participate in decisions about credit, 23 percent of women in households with a migrant access and make decisions on credit. Nevertheless, only 3 percent of women in the sample can access, solely or jointly, a financial account. Less than a third of all women actively participate in any community group. Women in households with a current international migrant work fewer minutes per day than all other women, and the difference is statistically significant. Nevertheless, nearly all women report working fewer than 10.5 hours in the last 24 hours.

Table 3. Empowerment indicators, by migration status of the household

	With Migrant			Without Migrant			Diff
	Obs	Mean	SE	Obs	Mean	SE	
Tajikistan							
Input in productive decisions	364	0.26	0.02	719	0.2	0.01	
Ownership of assets	364	0.79	0.02	719	0.72	0.02	
Access and decisions on credit	364	0.04	0.01	717	0.03	0.01	
Control over use of income	364	0.2	0.02	718	0.16	0.01	
Group membership	364	0.01	0	719	0	0	
Workload	364	0.83	0.02	719	0.82	0.01	
Access to a financial account	364	0.01	0.01	719	0	0	
Empowerment score	364	0.37	0.01	719	0.33	0.01	
Nepal							
Input in productive decisions	408	0.96	0.01	291	0.96	0.01	
Ownership of assets	421	0.99	0	305	1	0	
Access and decisions on credit	421	0.46	0.03	305	0.51	0.04	
Control over use of income	421	0.94	0.01	305	0.97	0.01	
Group membership	421	0.56	0.05	305	0.47	0.04	
Workload	421	0.49	0.06	305	0.55	0.05	
Access to a financial account	421	0.55	0.06	305	0.48	0.06	
Empowerment score	421	0.75	0.02	305	0.75	0.01	
Senegal							
Input in productive decisions	334	0.33	0.04	200	0.29	0.03	
Ownership of assets	334	0.88	0.02	200	0.90	0.02	*
Access and decisions on credit	334	0.23	0.03	200	0.11	0.03	**
Control over use of income	335	0.74	0.03	200	0.73	0.04	
Group membership	335	0.32	0.04	200	0.33	0.04	
Workload	335	0.96	0.01	200	0.92	0.02	
Access to a financial account	334	0.03	0.01	200	0.03	0.01	
Empowerment score	335	0.60	0.02	200	0.58	0.01	**

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal data. Notes: The Table shows the number of observations, means, and standard errors of the main empowerment indicators for individuals in households with International Migrants (Nepal and Tajikistan) or any migrant (Senegal), and without Migrants. Significance level of the mean differences also reported. *** p<0.01, ** p<0.05, * p<0.1.

4. METHODOLOGY

The impact of male outmigration on women's empowerment is estimated using six of the indicators that are traditionally used to calculate the A-WEAI (input in productive decisions; ownership of assets; access to and decisions on credit; control over the use of income; group membership; and workload), a continuous empowerment score, and an additional indicator capturing access to a financial account. Thus, Y_{ij} denotes the empowerment of the female respondent in household *i* based on indicator *j*, where j=1 to 8. Since there may be heterogeneous impacts on women's empowerment depending on the wealth of the household, women's position within the household and whether the migrant sends remittances, in addition to the full women sample, we also explore these groups separately. We use ownership of agricultural land as an indicator of household wealth and restrict the full sample to landowning households. The data includes the relationship of the respondent to the household head and not her relation to the migrant. As such, to capture women's position, we restrict the full sample based on her being in a couple household or if she is in an extended family household, we focus on women who are 35 years or older. These women are less likely to be governed by older family members within the household. Finally for remittances, we limit the migrant sample to only those who send remittances.

The decision to migrate may be based on the same factors that affect empowerment outcomes of the family members who remain. Migration may change intra-household dynamics and women's decision-making power, but women who are more empowered may exert a higher influence on the husband's migration decision (Nobles & McKelvey, 2015). To address this potential endogeneity, we use an instrumental variable approach. For the empowerment score, which is a continuous variable, we estimate the impact of migration on women's empowerment using a two-stage least squares estimator. To assess how migration affects the empowerment of the women who remain in rural areas, we model women's empowerment, Y_{ij}, as a function of whether they live in a household with a current migrant, M_i, and their individual, household, and community characteristics, X_i:

$$M_i = \beta_0 + \beta_1 IV_i + \beta_2 X_i + \delta_i \quad (1)$$

$$Y_{ij} = \alpha_0 + \alpha_1 M_i + \alpha_2 X_i + \varepsilon_i. \quad (2)$$

The recursive biprobit estimator is used for the other indicators, Y_{ij} , all of which are binary, as it takes into account that the endogenous regressor, M_i, is also binary. The recursive biprobit models a system of two probit equations in which the errors are allowed to be correlated and the binary dependent variable in one of the equations to be an endogenous regressor in the other equation. For these models, in the first equation, we model the decision for the household to send a migrant abroad as a function of the respective instrumental variables, IV_i, and individual, household and village characteristics. We allow the error terms in the two equations (ε_i and δ_i) to be correlated; the correlation parameter captures the correlation of the error terms. A non-significant correlation parameter suggests that M_i is exogenous to the outcomes of interest and there is no need for an instrumental variable approach.

In Nepal we use three instrumental variables. Two of the instrumental variables are metrics of historic weather variability. Historic weather variability is expected to have influenced the household decisions to migrate, but not have a direct effect on the empowerment indicators. Climate change, through both slow onset events (such as increased weather variability and increasing temperatures) and extreme events (such as droughts and floods), increases the insecurity of agricultural livelihoods and pushes some households to diversify livelihoods through migration. There is a growing body of literature showing that migration is used by households in rural areas, as a strategy to adapt to climate change (Arslan, Egger, Mane, & Slavchevska, 2020; Baez, Caruso, Mueller, & Niu, 2017; Bohra-Mishra et al., 2017; Dallmann & Millock, 2017; Thiede, Gray, & Mueller, 2016). These metrics are the (positive) percentage deviation of the monsoon rainfall and the (positive) percentage deviation of the winter rainfall in the three years before the year of

migration relative to the long-run average (over the last 30 years).[5] For households with no migrants, we use the median value of the instrumental variable at the ward (community) level. To construct the weather variables, the high-resolution (0.05 degrees) rainfall data from CHIRPS for the last three decades were merged with the GPS locations of the households.[6]

For the third instrument we follow Taylor, Rozelle, and de Brauw (2003) and construct a proxy for the community norm to remit. We construct the proxy at the community level by taking the average remittance amount sent by all households in the community excluding the remittances of the particular household. The community norm to remit is expected to influence the household decision to send a migrant and the level of remittances received by the household, but it is not expected to influence the household members' current levels of empowerment.

We use the similar instrumental variables in Senegal, but the weather instrumental variables in the Senegal models are slightly different than in Nepal. We use the absolute percentage deviation of the seasonality index from the long-run average (over the last 30 years) and the absolute (negative) percentage deviation of the average rainy season mean temperature from the long-run average (over the last 30 years). As in Nepal, we include the average remittances received at the community level, excluding the remittances received by the particular household. Given that in Senegal we deal with diverse types of migration, we also include as instruments the international migration network (the share of households in the community with an international migrant) and the internal migration network (the share of households in the community with an internal migrant). The village migration network is widely used as an instrument for the decision to migrate (Acosta, 2006; Binzel & Assaad, 2011; Lokshin, Bontch-Osmolovski, & Glinskaya, 2010; Mendola & Carletto, 2012).

[5] We run models with both negative and positive derivations but the coefficient on the negative deviation was not statistically significant and for simplicity we stick to a model positive deviations only.
[6] For more information about the CHIRPS data: http://chg.geog.ucsb.edu/data/chirps/.

We did not have access to weather data for Tajikistan. So in Tajikistan, we use as instruments for the migration decision: (i) the international migration network (the share of households in the village (sampling cluster) with at least one international migrant); and (ii) the family migration history. The family migration history is a binary indicator equal to one if someone else in the household migrated in the past. This data comes from the module designed to capture family migration history.

Vector X includes individual characteristics (age, age squared, marital status, education, and ethnic/caste background); household demographic characteristics (number of children of different age and sex categories, and the number of male and female adults); household wealth and productive assets (ownership of land, land area cultivated, and livestock ownership in Tropical Livestock Units (TLU)); and the amount of non-earned income such as from social assistance and pensions. In Nepal, we also capture the remoteness of the household by including a set of control variables indicating the distance to a main road, a transport station and a financial service institution.[7] We control for district/department fixed effects.

The explanatory variable of interest is M_i which indicates a household with at least one current migrant. As mentioned earlier, in the cases of Nepal and Tajikistan we focus on international migration and in the case of Senegal we focus on *any* type of migration (domestic or international). Households with no current migrants form the base category.

[7] The distance variables are calculated from the GPS coordinates of each household using the mapping software ArcGIS.

5. RESULTS AND DISCUSSION

Living in a household with a current migrant is linked to significant gains in the empowerment of the women who remain in the sending areas but the impacts differ by country.

Women's empowerment scores are the lowest in Tajikistan. Yet, Tajikistan shows the greatest positive impact of male outmigration on the empowerment of women remaining in rural communities (Table 4. A). While having a migrant in the household affects some dimensions of women's empowerment in each of the countries, Tajikistan is the only country where it affects the overall empowerment index.

In Tajikistan, the regression results indicate that there are meaningful increases in the share of women who are empowered in households with a migrant as compared to those without a migrant (Table 4. A) for four of the six A-WEAI indicators. Not only are women more empowered overall and with regard to input into productive decisions, ownership of assets, and control over use of income, they are more empowered in terms of workload. So we do not see this trade-off between women having more input into decisions and increasing their workload (Table 4. A); women in households with a migrant are less likely to work more than 10.5 hours per day.

When we look at the analyses of the sub-samples, we find that the positive impacts of male outmigration on empowerment in Tajikistan seem to be largely driven by the 85 percent of the households that receive remittances from migrants (Table 4.A, the last panel). Household structure also mediates women's empowerment. The women in our sample in Tajikistan are relatively older, so there are few young women living in extended family households. We find larger impacts when we exclude this latter group. When a man migrates and his wife is not living in an extended household, she becomes a *de facto* household head taking on most household decisions. In comparison, in extended families, other adults in the household may moderate the behavior of women, particularly of young women (such as young brides). The results of

increased empowerment are largely driven by women who are older or do not live in extended families (Table 4 , the third panel). Finally, we consider the sub-sample of households that own agricultural land. In Tajikistan, 70 percent of households own land. The regressions indicate that the outmigration of a family member is linked with significant empowerment impacts on the women who remain in land-owning households, but these are not significantly larger than the outcomes for the full sample.

In Nepal, the regression results indicate that living in a household with a migrant decreases the share of women who are empowered in input in productive decisions compared to those who are not in a migrant household (Table 4.B). These results are likely driven by the fact that women in households with a current migrant have shifted more of their productive work time into agriculture and, as a result, they participate in a fewer number of different productive activities, and thus have input into a smaller number of production decisions than do women in households without a migrant. That is, they have a less diversified portfolio than those who live in households without a migrant.

While we do not find an impact of living in a household with a migrant on the share of women who are empowered in access and decisions on credit, we do find an increase in the share of women from migrant households with access to a financial account. This impact is similar when we consider the sub-sample of the 90 percent of households which receive remittances from migrants (Table 4.B, the last panel). When we consider the subsample where we drop the young women and those who live in extended households, the impact of having a migrant on having a financial account is larger. This may be because they use the financial account to either receive or hold remittance income.

In Nepal, the regression results find no significant difference in the share of women who are empowered in control over use of income in migrant households compared to non-migrant households. These results do not change even when we focus on older women (35 years or older) or who do not live in extended families.

A large share of women in households with a migrant (94 percent) achieve empowerment in the control over income suggesting they likely control the remittances.

4. A. The impacts of outmigration on women's empowerment in Tajikistan.

	A-WEAI indicators						Additional	Score (A-WEAI)
	Input in productive decisions	Ownership of assets	Access and decisions on credit	Control over use of income	Group membership	Workload	Access to a financial account	Empowerment score
Total								
Migrant	0.0872***	0.156***	0.0197	**0.0908*** **	0.0209	**0.0578***	0.0384	0.0680***
	(0.0316)	(0.0447)	(0.0189)	**(0.0326)**	(0.0130)	**(0.0303)**	(0.0705)	(0.0174)
Log SD error								-1.719***
								(0.0415)
Correlation between error terms	-0.238**	-0.461***	-0.596*	-0.302**	-0.136	-0.263**	-0.691	-0.314***
	(0.121)	(0.140)	(0.318)	(0.129)	(0.128)	(0.126)	(1.505)	(0.0864)
Obs.	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060
Land-owning households								
Migrant	0.119***	0.151***	0.00418	0.129***		0.0578*	0.0194	0.081***
	(0.0460)	(0.0472)	(0.0207)	(0.0406)		(0.0336)	(0.0171)	(0.0213)
Log SD error								-1.667***
								(0.0372)
Correlation between error terms	-0.159	-0.492***	-0.447	-0.315**		-0.217	-0.226	-0.311***
	(0.126)	(0.183)	(0.318)	(0.135)		(0.140)	(0.369)	(0.0987)
Obs.	737	737	737	737		737	737	737
Women older than 35 years or who do not live in extended families								
Migrant	0.115***		0.0270	0.102***		0.0642**		0.0862***
	(0.0383)		(0.0188)	(0.0357)		(0.0317)		(0.0184)
Log SD error								-1.680***
								(0.0439)
Correlation between error terms	-0.210*		-0.491**	-0.299**		-0.295**		-0.358***
	(0.118)		(0.231)	(0.125)		(0.134)		(0.0931)
Obs.	912		912	912		912		912
Households receive remittances								
Migrant	**0.451*** **	**0.115*** **	0.00564	**0.0922*** **		0.0463		**0.0609*** **
	(0.0706)	**(0.0408)**	(0.0133)	**(0.0299)**		(0.0286)		**(0.0153)**
Log SD error								-1.774***
								(0.0366)
Correlation between error terms	-11.71***	-0.201	-0.282	-0.492**		0.0626		-0.223*
	(0.913)	(0.179)	(0.254)	(0.221)		(0.180)		(0.124)
Obs.	1,022	1,022	1,022	1,022		1,022		1,022

Table 4. B. The impacts of outmigration on women's empowerment in Nepal.

	A-WEAI indicators						Additional	Score (A-WEAI)
	Input in productive decisions	Ownership of assets	Access and decisions on credit	Control over use of income	Group membership	Workload	Access to a financial account	Empowerment score
Total								
Migrant	-0.0451*	-	0.029	-0.00203	**0.192*** **	**-0.113***	**0.138****	0.0277
	(0.0245)		(0.0587)	(0.0168)	(0.0558)	(0.0604)	(0.0554)	(0.0192)
Log SD error								-1.897***
								(0.0308)
Correlation between	0.493	-	-0.229**	-0.165	-0.236**	0.227*	-0.368***	-0.0912
error terms	(0.305)		(0.113)	(0.209)	(0.112)	(0.129)	(0.137)	(0.103)
Obs.	716		716	716	716	716	716	718
Land-owning households								
Migrant	-0.0159	-	0.0336	-0.0205	**0.132***	**-0.0919**	**0.115***	0.006
	(0.0307)		(0.0489)	(0.0134)	(0.0744)	(0.0637)	(0.0618)	(0.0206)
Log SD error								-1.934***
								(0.0263)
Correlation between	0.0936	-	-0.240**	0.0332	-0.172	0.0942	-0.362**	-0.0878
error terms	(0.352)		(0.108)	(0.232)	(0.146)	(0.146)	(0.177)	(0.114)
Obs.	568		568	568	568	568	568	570
Women older than 35 years or who do not live in extended families								
Migrant	-0.0456	-	0.0334	0.0127	**0.124****	**-0.0972**	**0.188*****	0.0151
	(0.455)		(0.0638)	(0.0106)	(0.0616)	(0.0835)	(0.0706)	(0.0241)
Log SD error								-1.875***
		-						(0.0358)
Correlation between	0.789		-0.274**	-0.471***	-0.104	0.227	-0.433***	-0.0354
error terms	(5.941)		(0.129)	(0.154)	(0.146)	(0.173)	(0.163)	(0.127)
Obs.	536		536	536	536	536	536	538
Households receive remittances								
Migrant	-0.0206	-	0.0327	-0.0143	**0.148*****	**-0.0858**	**0.114****	0.0172
	(0.0307)		(0.0475)	(0.0207)	(0.0529)	(0.0554)	(0.056)	(0.0179)
Log SD error								-1.891***
								(0.031)
Correlation between	0.344	-	-0.323**	0.143	-0.148	0.175	-0.288*	-0.034
error terms	(0.408)		(0.146)	(0.342)	(0.14)	(0.145)	(0.159)	(0.134)
Obs.	665		665	665	665	665	665	666

Table 4. C. The impacts of outmigration on women's empowerment in Senegal.

	A-WEAI indicators						Additional	Score (A-WEAI)
	Input in productive decisions	Ownership of assets	Access and decisions on credit	Control over use of income	Group membership	Workload	Access to a financial account	Empowerment score
Total								
Migrant	0.0393	-0.0574	**0.191*** **	0.0734	-0.0440	0.0378	0.0140	0.0258
	(0.0822)	(0.0593)	**(0.0405)**	(0.0902)	(0.0833)	(0.0381)	(0.0202)	(0.0400)
Log SD error								-1.700***
								(0.0419)
Correlation between error terms	-0.150	0.192	0.164	-0.324	0.0141	0.224	-0.274	-0.103
	(0.163)	(0.179)	41.958	(0.257)	(0.173)	(0.242)	(0.317)	(0.127)
Obs.	497	497	496	497	497	497	497	535
Land-owning households								
Migrant	**0.158***	-0.0512	**0.214*** **	0.140	-0.0126	0.0865		**0.0715** **
	(0.0857)	(0.0381)	**(0.0388)**	(0.101)	(0.101)	(0.126)		**(0.0340)**
Log SD error								-1.767***
								(0.0393)
Correlation between error terms	-0.445**	0.356	-0.245	-0.387	-0.0970	-0.298		-0.287**
	(0.202)	(0.219)	(0.154)	(0.321)	(0.257)	(1.149)		(0.127)
Obs.	357	357	357	357	357	357		388
Women older than 35 years or who do not live in extended families								
Migrant	-0.0542	-0.0883**	0.147***	0.0169	-0.0418	-0.0345	0.0383*	-0.0179
	(0.0792)	(0.0423)	(0.0484)	(0.0738)	(0.124)	(0.0327)	(0.0231)	(0.0323)
Log SD error								-1.740***
								(0.0469)
Correlation between error terms	-0.0339	0.406**	-0.155	-0.249	0.136	0.535*	-0.705	0.0359
	(0.143)	(0.176)	(0.174)	(0.229)	(0.251)	(0.274)	(0.546)	(0.114)
Obs.	339	339	339	339	339	339	339	364
Households receive remittances								
Migrant	0.0268	-0.0552	0.183***	0.0944	-0.0479	0.0331	0.0237	0.0241
	(0.0800)	(0.0460)	(0.0394)	(0.0994)	(0.0818)	(0.0377)	(0.0190)	(0.0378)
Log SD error								-1.727***
								(0.0451)
Correlation between error terms	-0.0660	0.198	-0.189	-0.407	0.0325	0.221	-0.425	-0.0757
	(0.166)	(0.142)	(0.168)	(0.321)	(0.172)	(0.234)	(0.261)	(0.126)
Obs.	435	435	435	435	435	435	435	470

Source: Calculated by authors from the Tajikistan, Nepal, and Senegal data. Notes: The Table shows the marginal effects from the recursive biprobit model. All regressions include control variables and district/department fixed effects. Control variables include individual characteristics (age, age squared, marital status, education, and ethnic/caste background); household demographic characteristics (number of children of different age and sex categories, and the number of male and female adults); household wealth and productive assets (ownership of land, land area cultivated, and livestock ownership in Tropical Livestock Units); and the amount of non-earned income such as from social assistance and pensions. We use four instrumental variables, (i) the absolute percentage deviation of the seasonality index from the long-run average (over the last 30 years), and (ii) the absolute (negative) percentage deviation of the average rainy season mean temperature from the long-run average (over the last 30 years), as metrics of historic weather variability, (iii) the average remittance amount received by all households in the community excluding own household, (iv) the share of households in the community with an international migrant (international migration network), and (v) the share of households in the community with an internal migrant (internal migration network). For (i) and (ii) in households with no migrants the median value of the instrumental variable at the ward level was used. "Log SD error" accounts for the logarithm of the standard deviation for the error in equation 2 (*Insig_2* parameter when using cmp *Stata* command). "Correlation between error terms" accounts for the arc-hyperbolic tangents correlation between the error terms of the two equations (*atanhrho_12* parameter). Standard errors clustered at the commune/arrondissement level in Senegal in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Women in households with a migrant are significantly more likely to be active members of influential community groups compared with women in households without a migrant (Table 4.B). While the indicator remains significant, the impact is smaller when we focus on older women (35 years or older) or who do not live in extended families, suggesting for young women in extended families in Nepal, involvement in community groups is notable. A number of programs in Nepal target young mothers, often using group-based approaches.[8] Women may also increase their participation in other rural groups, such as water associations (Meinzen-Dick, Pradhan, & Zhang, 2021).

Male outmigration does appear to increase women's work burden in Nepal. A larger share of women in households with a migrant work more than 10.5 hours a day on average. This is no longer significant when we focus on older women (35 years or older) or who do not live in extended families, suggesting this may be largely driven by increased time burden placed on younger women in extended households with a migrant.

In Nepal, the impacts of the migration on women's empowerment in the full sample are similar to the impacts in the sample of landowning households. We might have expected that having a migrant in a landowning household would result in women taking over more of the farm management, but we do not find evidence of this.

The impacts of male-dominated outmigration on the women who remain in Senegal are more muted as compared to Tajikistan and Nepal. The only indicator that is affected by living in a household with a migrant is that of access to and decisions over credit (Table 4.C). This holds true in all three of the sub-samples. In Senegal, remittances have been shown to increase the likelihood of someone in the household obtaining a loan (Mbaye, 2015); our findings suggest that women are involved in managing these loans.

[8] One example is the USAID funded Suahaara Project, https://www.usaid.gov/nepal/fact-sheets/suaahara-project-good-nutrition

In Senegal, only 51 percent of the households with any migrant (domestic or international) receive remittances. Also, the overall amount of remittances received is rather low even when migrants send remittances. Some international migrants reach Europe and may access better paying jobs, but the majority migrate to neighboring countries where income-generating opportunities might not allow for sufficient remittances to be sent back home. The impacts of having a migrant do not change when we consider only households in which remittances are sent.

Two other mediating factors are important in Senegal. The first is landownership. In the sub-sample of landowning households, women are significantly more likely to be empowered in the domains of input in productive decisions and access to and decision-making on credit than women in households without a migrant. In addition, the overall empowerment index is positively affected by living in a household with a migrant, supporting the finding that the migration of a family member is associated with women's empowerment but the effects seem to be restricted to households that own land. The second mediating factor is position within the household. When we consider only the sub-sample of women who are older or do not live in an extended household, we find surprising impacts of living in a household with a migrant. While having a migrant still has a positive impact on empowerment in the domain of credit, it has a negative impact on women's asset ownership. These women are less likely to be live in extended families where economic support is provided. In addition, there is evidence that women play an active role in financing the migration of a family member, especially a mother in a polygamous household financing the migration of a son (Mondain & Diagne, 2013).

6. CONCLUSION

The outmigration of men from rural communities changes the dynamics of the households in the sending communities. Using the A-WEAI to measure empowerment in various domains and instrumental variable approaches to account for the endogeneity of having a migrant in the household, this study analyzes the impacts of male-dominated outmigration on the empowerment of women who remain in rural areas in three countries with significant male outmigration – Tajikistan, Nepal and Senegal. We find that male outmigration is linked to women's empowerment in agriculture in some domains and disempowerment in others. The evidence does not a paint a clear picture of women in migrant households being more empowered across the three countries; it depends on the context, and the impacts are mediated by whether the household receives remittances or owns land, and women's position within the household.

In Tajikistan and Senegal, all of the impacts that we measure are positive. We are not seeing evidence of "the feminization of agrarian distress" (Pattnaik, Lahiri-Dutt, Lockie, & Pritchard, 2018) due to male outmigration in these countries. Migration does not increase women's workload even when they have more input in input into productive decisions. We do not see a loss of wealth in Tajikistan, although there is evidence of older women in Senegal having fewer assets as a result of men's outmigration.

In Nepal, we see trade-offs in the different dimensions of empowerment when men migrate out. There is some indication of increased workload and declines in empowerment in productive inputs. Yet, this coincides with women's greater likelihood of having access to financial accounts and continued control over income. It also coincides with women's greater involvement in the community, particularly younger women.

A household owning land may mediate the impacts of men's outmigration through two channels. First, owning land is an indicator of household wealth. Second, there is greater scope for women to take over

productive activities in smallholder households that own land. For all three countries, the patterns of men's migration improving women's empowerment are similar in the full sample and the subsample of land-owning households. In Tajikistan, the coefficients on migration are slightly larger in the landowning sample than in the full sample and in Nepal they are smaller. In Senegal, men's outmigration increases the probability that women have input into productive decisions in landowning households, but not the full sample. This suggests that it is the second channel that is important here; women in landowning households are taking on more management responsibilities for agricultural production.

Household structure and a woman's position within it also mediate her empowerment outcomes. In a second subsample, we drop the younger women (under age 35) who live in extended households. Thus, we have older women or younger women who are living in smaller, typically nuclear households. In this sample, in Tajikistan, the impact of men's outmigration is larger for input in productive decisions than in the full sample. Again, this is consistent with a story where when men move out, the women who remain take over productive activities. In Nepal, younger women and those in extended households are driving some of the result in group membership and older women see greater impacts in terms of accessing a financial account. And while men's outmigration in Nepal decreases women's empowerment in terms of workload, there is less impact in this subsample, suggesting that the impacts are stronger for younger women and those living in extended households. This could be the effect of being the daughter-in-law in the household. Finally, in Senegal we see the unexpected result that when men move out, older women and those living in smaller households are less likely to own assets. This could be linked to women selling land to finance the migration of a family member or to cope with the short-term economic losses incurred when a family member migrates. The story is also consistent with reduced engagement in (extensive) agriculture and reduced need for large landholdings.

Finally, we consider remittances as a mediating factor and exclude households with migrants that do not receive remittances. In Tajikistan, women in migrant households that receive remittances are much more

likely to have input into productive decisions compared to the full sample. Having a migrant also increases asset ownership, but the coefficient is smaller than in the full sample. In Nepal and Senegal, the patterns are similar in this subsample.

Thus, even the mediating factors have different impacts depending on the context. In Tajikistan, we see the results we expected; living in a landowning household, being older or living in a smaller household, and receiving remittances all mediate the impact of men's outmigration on women's input into productive decisions. In Nepal and Senegal, the mediating factors are relevant, but play a smaller role.

The dimensions of empowerment that we consider here relate to economic empowerment within agriculture. The literature has documented the psychological stress that women may face when their husbands migrate out. Increased responsibility and input into production decisions may be empowering, but it may also be disempowering if women are faced with these additional responsibilities without the necessary resources in terms of both money and labor or if they are left to manage non-profitable, marginal farm lands. Inadequate access to land have been linked to increased financial and mental stress among women in households with a migrant spouse (Pattnaik, Lahiri-Dutt, Lockie, & Pritchard, 2018; Nelson, 1992). More research is needed to examine how agricultural land ownership mediates the impacts of migration on women who remain. Migration may also impose emotional costs and women may miss their husbands when they are away (Meinzen-Dick et al, 2020).

Finally, if men's outmigration and the remittances received allow women to move out of the agriculture sector, women in these households may appear less empowered in domains such as inputs in productive decisions and even control over income because the A-WEAI modules used to calculate these indicators are heavily weighted towards agriculture-based livelihoods. Moreover, with this additional income, women may move to more urban areas, both because it may be easier for women without a resident husband to live

in urban areas compared to rural areas and because the educational opportunities for their children may be better. We cannot see these women in our country samples as the surveys focused on rural areas.

These findings remind us of the importance of understanding women's empowerment within a particular context. Initial levels of women's empowerment as well as the mediating factors of land ownership, household structure, and remittances all have the potential to shape the ways in which women are empowered or disempowered when men migrate out. Longer panel studies are needed to examine whether these impacts are sustained when the migrants return.

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Annex:

Table A1. The domains and indicators in the A-WEAI

Domain		Indicator	Indicator definition
Production	1.1	Input in productive decisions	=1 if the respondent has input or feel can make decision about agricultural activities
Resources	2.1	Ownership of assets	=1 if the respondent solely or jointly owns AT LEAST two small assets
	2.2	Access to and decisions on credit	=1 if the respondent has access to and participates in decision-making concerning credit
Income	3.1	Control over the use of income	=1 if the respondent decides about the use of income
Leadership	4.1	Group membership	=1 if the respondent is an active member in at least one economic or social group
Time	5.1	Workload	=1 if the respondent worked less than 10.5 hours in the previous 24 hours

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