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Working Paper

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ADBI Working Paper, No. 1489

Provided in Cooperation with:
Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Katwal, Saurav; Uematsu, Hiroki; Niraula, Baburam (2024) : Heterogeneous effect of out-migration on informal employment in rural Nepal, ADBI Working Paper, No. 1489, Asian Development Bank Institute (ADBI), Tokyo, https://doi.org/10.56506/YTSJ6557

ADBI Working Paper Series

HETEROGENEOUS EFFECT OF OUT-MIGRATION ON INFORMAL EMPLOYMENT IN RURAL NEPAL

Saurav Katwal, Hiroki Uematsu,
and Baburam Niraula

No. 1489
November 2024

Asian Development Bank Institute

Saurav Katwal is an economist and World Bank consultant in Kathmandu, Nepal. Hiroki Uematsu is an associate professor in the Department of International Relations at Ritsumeikan University, Kyoto, Japan. Baburam Niraula is an economist and ADB consultant in Kathmandu, Nepal.

Suggested citation:

Katwal, S., H. Uematsu, and B. Niraula. 2024. Heterogeneous Effect of Out-Migration on Informal Employment in Rural Nepal. ADBI Working Paper 1489. Tokyo: Asian Development Bank Institute. Available: https://doi.org/10.56506/YTSJ6557

Please contact the authors for information about this paper.

Email: bniraula53@gmail.com

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500
Fax: +81-3-3593-5571
URL: www.adbi.org
E-mail: info@adbi.org

Abstract

This research examines the heterogeneous impact of out-migration on the informal employment within the framework of rural transformation in Nepal. Employing a multinomial Probit model with instrumental variables, we analyze the influence of household-level migration on the informal employment choices made by non-migrating household members. In the rural Nepalese context, subsistence farming predominantly characterizes informal employment, but a diverse range of informal employment options exists. This study differentiates between these distinct categories of informal employment and estimates the heterogeneous effect of out-migration on these various types of informal employment for the household members who remain in the home country. Through this research, we aim to contribute to a more comprehensive understanding of the nuanced dynamics of migration's impact on informal employment within the context of rural transformation in Nepal. Our findings reveal that out-migration significantly increases the likelihood of subsistence work and informal farm self-employment for both men and women left behind. Conversely, out-migration reduces the probability of informal non-farm wage employment, particularly for men. These results suggest that migration may reinforce less productive forms of informal employment in rural Nepal, highlighting the need for targeted policies to promote more productive economic activities and formal employment opportunities in migrant-sending communities.

Keywords: out-migration, informal employment, labor markets, rural transformation, subsistence farming

JEL Classification: F22, J24

Contents

1. INTRODUCTION

International migration and informal employment are integral forces that shape labor markets globally. Notably, there are approximately 184 million migrants worldwide, accounting for roughly 2.3% of the global population (World Bank 2023), while over 2 billion workers, constituting over 60% of the world's working population, engage in informal employment (International Labour Organization (ILO) 2018). While informal employment is an important income diversification strategy at the household level, it has several downsides at the individual and household levels, such as increased vulnerability due to the lack of social protection and workplace safeguards for those employed informally (Perry et al. 2007; ILO 2018). At the macro level, while migration has played a crucial role in poverty reduction in many developing nations, it can also lead to the depletion of human capital in home countries (de Haas 2010; Démurger 2015). Similarly, a large informal sector, while providing employment opportunities, can result in reduced tax revenue and lower overall productivity in the economy.

The impact of migration on those left behind is multifaceted. While migrant-sending households benefit from remittances, enabling them to maintain stable consumption patterns (Adams and Page 2005), the departure of a family member to work abroad can have diverse effects on the labor market outcomes of those who remain at home. On the one hand, remittances from abroad augment households' unearned income, elevating the reservation wages of non-migrating members and subsequently discouraging their labor market participation. On the other hand, these remittances can mitigate credit constraints, potentially motivating non-migrating household members to invest in riskier economic ventures with the prospect of greater financial returns (Yang 2008). However, remittances can also create dependence and reduce incentives to make productive investments (Chami et al. 2018).

The mechanisms through which migration affects the informal employment in rural Nepal are complex and context specific. Beyond the income effect of remittances and the alleviation of liquidity constraints, social norms and cultural factors play crucial roles. In Nepal, traditional gender roles often dictate that women take on more household responsibilities, including subsistence farming, when male family members migrate (Maharjan, Bauer, and Knerr 2012). Moreover, the social status associated with receiving remittances can discourage participation in certain types of wage labor (Adhikari and Hobley 2015). Household bargaining dynamics also shift with migration, potentially altering labor allocation decisions. For instance, left-behind women may gain more decision-making power, but societal expectations might still limit their engagement in formal or non-farm employment (Slavchevska, Kaaria, and Taivalmaa 2016). Understanding these nuanced interactions is crucial for interpreting the impact of migration on informal employment patterns.

The interplay between out-migration and informal employment has significant policy implications. Migration potentially acts as either a catalyst or a deterrent for informal work among those left behind. While remittances might provide capital for small businesses or self-employment, potentially increasing informal employment, the increased income from remittances might allow household members to seek more stable formal employment. Understanding these dynamics is crucial for effective policy making in countries with high rates of both migration and informal employment (Ivlevs 2016).

The informal sector itself is characterized by significant diversity. This diversity arises from differences in the circumstances and motivations that drive individuals to engage in such work. Some individuals are compelled to enter the informal labor market due to limited alternatives, while others actively choose to participate in various informal activities (Perry et al. 2007; de Mel, McKenzie, and Woodruff 2008; Henley, Arabsheibani, and Carneiro 2009; Fields 2011). Furthermore, a portion of this diversity within informal employment can be attributed to the productivity gap in earnings between the agricultural and the non-agricultural sector, a well-documented phenomenon in developing countries (Gollin, Lagakos, and Waugh 2014; Hamory et al. 2021).

Nepal presents a compelling case study for examining the intersection of migration and informal employment as both phenomena are widespread and deeply intertwined with the country's socioeconomic fabric. With more than 2.1 million Nepali citizens, constituting 7.4% of the national population, residing abroad, it is evident that a significant portion of Nepal's populace has ventured overseas (Census Bureau of Statistics (CBS) 2022; Ministry of Labor, Employment and Social Security 2022). Notably, this migrating population is predominantly male (81%) (CBS 2022; Ministry of Labor, Employment and Social Security 2022).

Furthermore, over 25% of households in Nepal have at least one member engaged in foreign employment at any given time (World Bank Jobs Group 2020).[1] The remittances sent by these migrants play a pivotal role in Nepal's economy, constituting approximately 24% of the country's GDP in 2021 (Ministry of Labor, Employment and Social Security 2022). This underscores the substantial impact of international migration and remittances on Nepal's socioeconomic landscape, highlighting their vital role in poverty reduction and sustaining livelihoods (Uematsu, Shidiq, and Tiwari 2016).

Concurrently, Nepal's employment landscape is largely characterized by informal activities, particularly in rural areas. Approximately 61% of the rural working-age population is primarily engaged in subsistence work, with informal non-agricultural employment constituting a substantial 60% of all rural non-subsistence jobs (World Bank Jobs Group 2020). This underscores the significant role of informal employment within the rural Nepalese economy.

Given this context, our paper aims to examine the impact of household-level out-migration on the involvement of remaining household members in informal employment, particularly within the context of structural transformation—from farm to non-farm sectors—in rural Nepal. Rather than focusing solely on the divide between informal and formal work, our study recognizes the diversity within informal employment by exploring how migration influences different types of informal work. This approach allows us to capture the nuanced effects of migration on different types of informal employment, providing a more comprehensive understanding of labor market dynamics in rural areas undergoing structural transformation. Furthermore, we aim to investigate how these effects differ by gender, given the significant role that gender plays in shaping labor market outcomes in rural Nepal.

Our findings reveal that out-migration has heterogeneous effects on informal employment in rural Nepal. We find that households with migrants are more likely to engage in subsistence work and informal farm self-employment while being less likely to participate in informal non-farm wage employment. Moreover, women from migrant-sending households are less likely to be engaged in informal non-farm

[1] While the historical trend predominantly featured low-skilled laborers seeking opportunities in countries like India and the Gulf nations, recent data suggest a shift, with a decline in the share of low- and semi-skilled migrants and a corresponding increase in skilled migrants.

self-employment. These results suggest that migration may be reinforcing less productive types of informal employment, potentially slowing the process of structural transformation in rural areas. Our study contributes to the literature by providing a more nuanced understanding of the relationship between migration and informal employment, with important implications for policy making in rural development and labor markets.

The remainder of the paper is organized as follows. Section 2 provides a literature review. Section 3 describes the data and presents descriptive statistics. Section 4 describes the empirical strategy. The results are discussed in Section 5, while the concluding remarks are presented in Section 6.

2. LITERATURE REVIEW

A substantial body of research has examined the effects of migration or remittances on labor market outcomes for individuals in migrant-sending households who remain in their home country. Several of these studies have consistently indicated that households receiving remittances are less likely to participate in the labor market or work fewer hours, emphasizing the significance of the income effect and the influence of increased reservation wages for remittance-receiving households (Funkhouser 2006; Kim 2007; Justino and Shemyakina 2012). However, a different perspective emerged from the study by Cox-Edwards and Rodríguez-Oreggia (2009), who found that remittances do not have a significant effect on the labor force participation of individuals left behind.

Many studies have contributed to this literature by examining the effect of migration on labor market outcomes beyond the labor force participation or hours worked and considering the occupational choice. Several studies within this stream of research have demonstrated that remittances or emigration significantly enhance access to self-employment or entrepreneurship opportunities (Paulson and Townsend 2004; Acosta 2007; Woodruff and Zenteno 2007; Yang 2008; Vadean, Randazzo, and Piracha 2019).

Acosta (2007) showed that remittance can help to overcome liquidity constraints and thus encourages self-employment activities, especially in rural areas. Mendola and Carletto (2012) offered insights into the gender-specific repercussions of migration for the domestic labor market. Their findings indicate that, when a family member is working abroad as a migrant, it leads to a reduction in female paid labor participation while simultaneously increasing the amount of unpaid work performed by women at home.

Dary and Ustarz (2020) conducted a study in rural Ghana to investigate the impact of internal remittances on the employment decisions made by household heads. Their findings revealed that remittances have a dual effect: a negative influence on self-employment and a positive influence on domestic or family employment. Additionally, the study found that remittances have a negative impact on participation in farm employment. Importantly, these results remained robust across different measures of remittances, including whether households received remittances (as a binary indicator) and the actual income from remittances.

In the context of Nepal, Lokshin and Glinskaya (2009) delved into the impact of male migration on the employment patterns of women. Their study revealed that male migration leads to a decrease in women's labor market participation. In contrast, Shrestha (2017) examined village-level migration in Nepal and reported that an increase

in the migration rate is associated with higher labor force participation for both non-migrant and migrant households.

Phadera (2016) presented a comprehensive understanding of labor market dynamics in the context of migration in Nepal. The study explored various aspects of the labor supply, including wage employment, self-employment, and leisure consumption, to assess the gender-specific effects of emigration at the household level. It showed that the presence of international migrants in the family discourages wage employment for both genders, with women increasing their self-employment, primarily in subsistence farming, while men value leisure more due to remittances, reducing their labor hours. Notably, the research highlighted the varied effects on non-migrating household members based on their skill level and the household head status, revealing insights into household bargaining dynamics.

While a substantial body of literature has explored the impact of migration or remittances on employment in general, the influence of these factors on informal work remains a relatively understudied question. Nonetheless, a few studies have ventured into this specific area of investigation. Amuedo-Dorantes and Pozo (2006), drawing from data on Mexico, revealed that women, particularly in rural areas, tend to decrease their labor supply, whereas men exhibit a shift from formal to informal employment. They suggested that this dynamic may be attributed to a "disruptive effect" stemming from the outmigration of family members, which offsets the "income effect" generated by remittances from migrants.

In a multi-country study across six Eastern European and Central Asian countries, Ivlevs (2016) investigated the impact of remittances on informal employment, focusing on households that receive remittances as well as non-migrant households situated in regions characterized by a high prevalence of remittances. The study examined the relationship between remittances and three crucial labor market outcomes: unemployment, informal employment, and formal employment. The findings of this study indicated that receiving remittances increases the likelihood of engaging in informal employment. Furthermore, at the regional level, a higher concentration of remittances is associated with an increased likelihood of informal work among non-migrant households. This suggests that migration and remittances may contribute to the prevalence of informal employment within countries that are sources of migration.

Previous research examining the relationship between migration or remittances and informal employment has often operated under the assumption of uniformity within the informal economy, typically categorizing the labor market into two segments: formal and informal. Nevertheless, recent literature has pointed to the heterogeneous nature of the informal sector (Angel-Urdinola and Tanabe 2012; Henley, Arabsheibani, and Carneiro 2009; Parajuli 2014; Sahoo and Neog 2017). For instance, Angel-Urdinola and Tanabe (2012) distinguished between different types of informal employment in the Middle East and North Africa, including wage workers, the self-employed, and unpaid family workers. Henley, Arabsheibani, and Carneiro (2009) examined the heterogeneity of informal employment in Brazil, considering factors such as firm size, occupation, and social protection coverage. Sahoo and Neog (2017) explored the diversity within India's informal sector, categorizing workers based on their employment status, sector of work, and level of precarity. These studies highlighted the importance of recognizing the multifaceted nature of informal employment when analyzing its determinants and impacts.

This paper contributes to the existing literature by distinguishing between five categories of informal employment and analyzing the impact of household-level out-migration on these various types of informal activities. Specifically, we investigate the

heterogeneous impact of out-migration on six different kinds of employment: a) subsistence work; b) informal farm self-employment; c) informal farm wage employment; d) informal non-farm self-employment; e) informal non-farm wage employment; and f) formal work. The understanding of the nuances of informal employment and identification of the differentiated impact of out-migration on participation in informal activities have important policy implications for providing decent work opportunities and improving the livelihoods of the rural population.

3. DATA

We use cross-sectional data from the Nepal Labor Force Survey 2018 (NLFS III) for our analysis. The NLFS 2018 is a nationally representative survey that employed a two-stage stratified sampling procedure, whereby primary sampling units (PSUs) were selected in the first stage and a fixed number of households were randomly sampled from each PSU in the second stage. The NLFS 2018 used the 2011 National Population and Housing Census as the sampling frame and consisted of 900 sample PSUs and 18,000 households. We restrict our sample to the working-age population, those aged 15 years and above, and end up with 52,559 individuals and 17,988 households.

To understand the impact of household-level migration on informal employment, we categorize the labor market outcome of the left-behind household members into six groups: subsistence work, informal farm self-employment, informal farm wage employment, informal non-farm self-employment, informal non-farm wage employment, and formal employment. The main regressor of interest, household-level migration, that is, the presence of a migrant in a household, is based exclusively on international migration and excludes domestic migration. The instrumental variable used comes from the share of households that have a migrant living abroad in each municipality/palika,[2] and we obtain this information from the Nepal Population and Housing Census 2011.

We use GIS data on accessibility to critical services, such as district headquarters, financial institutions, and major markets, in Nepal (Banick and Kawasoe 2019). These are average traveling times aggregated at the municipality/palika level. We also use the median value of the daily VIIRS night light data in 2018 aggregated at the palika level to capture variations in light intensity as a proxy for economic output (Gibson et al. 2021).

Table 1 presents the descriptive statistics for two distinct samples—migrant-sending households and households that have not sent any migrants abroad. The employment outcomes are quite distinct for these two groups of individuals. A significantly larger share of individuals from migrant-sending households is engaged in subsistence work compared with individuals from non-migrant sending households—71% and 57%, respectively. Conversely, the number of individuals engaged in formal work is significantly higher among individuals living in non-migrant households, 6%, than among individuals living in migrant households, 3%.

Migrant households tend to be relatively wealthier than non-migrant households. A larger share of migrant households than non-migrant households also tends to own land. A larger share of migrant households than non-migrant households has dependents.

[2] Nepal is a federal state that consists of seven provinces and 753 local government units, also known as palika.

Table 1: Descriptive Statistics

	Living in a Migrant Household	Living in a Non-migrant Household	Difference (Migrant–Non-migrant)
Subsistence work	0.706	0.570	0.135***
Informal farm self-employment	0.075	0.064	0.011***
Informal farm wage employment	0.035	0.039	–0.004***
Informal non-farm self-employment	0.075	0.095	–0.020***
Informal non-farm wage employment	0.080	0.170	–0.089***
Formal employment	0.029	0.062	–0.033***
Female	0.678	0.516	0.162***
Unmarried	0.148	0.143	0.005***
Married	0.786	0.776	0.010***
Widowed/separated/divorced	0.066	0.081	–0.015***
Youth	0.450	0.425	0.025***
No formal education	0.448	0.424	0.024***
Primary schooling	0.295	0.299	–0.004***
Secondary schooling	0.242	0.241	0.002***
Secondary plus	0.015	0.037	–0.022***
Technical/vocational training	0.096	0.102	–0.005***
Wealth index	–0.318	–0.373	0.055***
Household owns land	0.840	0.798	0.042***
Household has dependents	0.500	0.440	0.056***
Household size	4.327	4.242	0.085***
Koshi province	0.158	0.186	–0.027***
Madhesh province	0.200	0.214	–0.014***
Bagmati province	0.096	0.191	–0.095***
Gandaki province	0.114	0.087	0.027***
Lumbini province	0.227	0.158	0.068***
Karnali province	0.058	0.075	–0.017***
Sudurpaschim province	0.147	0.089	0.058***
Traveling time to district headquarters	2.227	2.252	–0.047***
Nighttime light	1.918	2.140	–0.222***
Observations	11,130	25,127	

*** p < 0.01, ** p < 0.05, * p < 0.1.

Notes: The wealth index constructed for this study is based on the first principal component of an array of observable dwelling characteristics and ownership of consumer durables. These include the quality of the dwelling (foundation material, outer-wall material, and roof material), access to water, source of lighting and cooking fuel, quality of toilets in the dwelling, and whether the household owns a car or a motorcycle, a refrigerator, and a television and has access to the Internet and a mobile phone. By construction, the mean of the index is equal to zero.

4. EMPIRICAL STRATEGY

To determine the impact of household out-migration on the participation in informal employment among the left-behind family members, following Vadean, Randazzo, and Piracha (2019), this study uses a discrete occupational choice model. The utility attained through any choice of employment can be decomposed into a deterministic and a random component as follows:

$$U_{nj} = V_{nj} + \mathcal{E}_{nj} \quad (1)$$

$$V_{nj} = V(I_{nj}, S_n)$$

where U_{nj} is the true utility that individual n obtains from alternative j.

V_{nj} is a function of observed variables including household immigration status (I_{nj}) and other household- and individual-level variables (S_n).

$\mathcal{E}_{nj}$ is an error term that captures unobserved factors.

The probability that individual n chooses alternative j is as follows:

$$P_{nj} = \Pr[U_{nj} > U_{ni}, \forall_i \neq j] \quad (2)$$

The relationship between household out-migration and informal employment of the remaining members cannot be interpreted as a causal effect of migration due to the potential endogeneity of household immigration status. A fundamental issue is the fact that the error term is correlated with observed characteristics in equation 1. Households opting for migration may exhibit substantial dissimilarities from those that do not choose to send a migrant abroad, and these distinctions often extend beyond the scope of observable household characteristics. For example, households that are less risk averse are more likely to have a member who has emigrated abroad. At the same time, these households are more likely to be more enterprising in terms of their labor market engagement and may choose to participate in higher-risk, higher-return activities. As a result, it becomes challenging to attribute observed differences in informal employment solely to the migration status of households.

To estimate the effect of migration on informal employment, we use the instrumental variable multinomial probit model with the conditional mixed process (CMP) estimation technique (Roodman 2009). This approach permits the concurrent estimation of coefficients for the entire system and takes into consideration the correlation structure in the error terms across the employment outcomes (equation 3) and the first-stage equation (equation 4). We use this instrumental variable approach to address the endogeneity of household out-migration status and estimate the following system of equations:

$$Y_{ihp} = \alpha_2 + \beta M_h + \Theta Z_{ihp} + \gamma' X_{hp} + \varepsilon_{ihp} \quad (3)$$

$$M_{hp} = \alpha_1 + \delta M_{p,2011} + \gamma X_{hp} + \mu_{hp} \quad (4)$$

where Y_{ihp} is the employment outcome for individual “i” belonging to household “h” residing in palika/municipality “p.” M_h is the migration status of a household, taking the value of 1 if the household has one or more members living abroad. Z_{ihp} is a vector of individual characteristics, including gender, age group, marital status, educational attainment, and technical vocational training. Additionally, X_{hp} represents a vector of household- and palika/municipality-level attributes, including the household’s wealth index, land ownership, presence of dependents, and size, the province of residence, the distance from the house to the district headquarters, and nighttime light at the municipality level. ε_{ihp} represents the unobserved individual-, household-, and palika-level characteristics.

In this paper, we instrument the household-level migration with the migration rate at the palika/municipality level in 2011. Historical migration rates have served as instrumental variables for households' migration propensity in various contexts, including the study by McKenzie and Rapoport (2007). This approach has also been applied to the specific context of Nepal (Lokshin and Glinskaya 2009; Phadera 2016; Shrestha 2017). This instrumental variable relies on the premise that households in communities with well-established migration networks are more likely to participate in migration in the future.[3] At the same time, to interpret the estimate as a causal impact of migration on informal employment, the 2011 migration rates must be uncorrelated with the employment outcomes in 2018 except through its influence on current migration.

The use of historical migration rates as an instrument rests on the assumption that these rates are not directly correlated with current employment patterns except through their influence on current migration. While we acknowledge that unobserved historical factors might have influenced both past migration and current employment, we argue that the seven-year gap between our instrument (2011 migration rates) and our outcome variables (2018 employment patterns) mitigates this concern. Moreover, we control for a range of municipality-level characteristics, including economic development (proxied by nighttime lights) and connectivity (travel time to district headquarters), which should capture many of the relevant historical factors. The validity of similar instruments has been established in various contexts, including Nepal (Phadera 2016; Shrestha 2017), supporting our choice. Nonetheless, we interpret our results with caution, acknowledging the challenges in establishing perfect exogeneity.

5. RESULTS

Table 2 presents the marginal effects of household-level out-migration on the participation of left-behind family members in various types of informal and formal employment in rural Nepal, based on an instrumental variable multinomial Probit model. The results demonstrate that residing in a migrant-sending household significantly influences the employment patterns of those who remain behind.

Overall, out-migration amplifies the likelihood of engaging in subsistence work and informal farm self-employment. Specifically, having a migrant in the household increases the probability of engaging in subsistence work by 6.7 percentage points and of engaging in informal farm self-employment by 2.4 percentage points. This finding is consistent with previous research by Phadera (2016), who also found an increase in subsistence farming among households with migrants in Nepal. Conversely, our results show that out-migration reduces the probability of participation in informal non-farm wage employment by 4.3 percentage points. The impact on formal employment, while negative, is smaller in magnitude and less statistically significant.

When examining these effects by gender, we observe notable differences. The increase in subsistence work is more pronounced among men (7.6 percentage points) than among women (5.2 percentage points). Similarly, the reduction in informal non-farm wage employment is substantially larger for men (7.3 percentage points) than for women (2.1 percentage points). Women from migrant-sending households experience a significant reduction (4.1 percentage points) in informal non-farm self-employment. In contrast, men from these households are less likely to engage in informal farm wage

[3] To assess the strength of our instrument in our multinomial setting, we examine the F-statistic from the overall first-stage regression, in which our endogenous variable (household migration status) is regressed on the instrument (2011 migration rates at the palika level) and all other exogenous variables. The F-statistic indicates that our instrument is not weak overall.

employment. Notably, this latter effect is not observed among women. These gender-specific effects underscore the importance of considering gender dynamics when analyzing the impact of migration on employment patterns.

Table 2: Marginal Effects of Household Out-Migration on Informal and Formal Employment

	Informal Workers					
		Farm		Non-farm		
	Subsistence Work	Self-employment	Wage Employment	Self-employment	Wage Employment	Formal Employment
All (n=36,257)	0.0673***	0.0242***	-0.0118**	-0.0212*	-0.0433***	-0.0151*
	(0.0163)	(0.0101)	(0.0051)	(0.0120)	(0.0109)	(0.0080)
Female (n=20,328)	0.0516**	0.0222*	-0.0059	-0.0412***	-0.0207**	-0.0059
	(0.0206)	(0.0134)	(0.0066)	(0.0145)	(0.0096)	(0.0072)
Male (n=15,929)	0.0755***	0.0305*	-0.0163**	0.0041	-0.0725***	-0.0212
	(0.0271)	(0.0158)	(0.0082)	(0.0207)	(0.0229)	(0.0170)

Standard errors in parentheses.

*** p < 0.01, ** p < 0.05, * p < 0.1.

Notes: The table summarizes the estimation results presented in Tables A1 and A2 in the Annex. The marginal effects for men and women were estimated by running separate regressions for each gender. This approach allows for a more flexible model specification, accounting for potential differences in the way in which various factors affect employment outcomes for men and women.

The marginal effects of the other explanatory variables in the model are mostly in line with our expectations. Table A1 presents the estimated marginal effects of these covariates. Access to education enhances the likelihood of formal work and informal non-farm work while diminishing the likelihood of subsistence or informal farm work. For example, a worker with higher education is 22% more likely to be employed as an informal non-farm wage worker than an individual with no formal schooling. Furthermore, the positive effect of education on formal work is sizeable and is larger for each successive level of schooling. Technical/vocational training decreases the likelihood of subsistence work while increasing the probability of being employed in other forms of informal employment and formal employment. Vocational training reduces the likelihood of subsistence work by almost 15%.

Gender plays a significant role in an individual's employment outcomes. Female workers are less likely to be employed in all farm and non-farm informal and formal activities except subsistence work or self-employment in the informal farm sector. The gender effect on subsistence and informal non-farm wage work is sizeable. Women are significantly more likely than men to be engaged as subsistence workers; being female raises the probability of being a subsistence worker by about 24%. In contrast, women are 19% less likely to be employed as informal non-farm wage workers than men. These gender differences reflect the social norms that shape gender roles within families whereby women are more likely to be involved in childcare, food production, and other household activities (Raney et al. 2011; Najeeb, Morales, and Lopez-Acevedo 2020).

Youth is positively correlated with participation in informal wage employment (farm and non-farm) and negatively correlated with being employed as subsistence, self-employed, and formal workers. This suggests that workers enter the workforce at a relatively young age as informal wage workers and move to other informal and formal job opportunities as they acquire skills through experience and on-the-job training. Being young has a particularly large effect among men. Young male workers—aged

35 years or below—are about 12% more likely than older men to be employed as informal wage workers in the non-farm sector (Annex A2). Furthermore, young men are 7% less likely to be employed as subsistence workers than older men.

Household socioeconomic factors also affect individuals' occupational choices. The household wealth index is positively associated with informal self-employment and formal work while being negatively associated with subsistence work and informal wage employment. Land ownership, conversely, is positively associated with being engaged in subsistence work or informal farm self-employment and negatively associated with other forms of informal employment and formal work.

On the one hand, having dependents in the household increases the likelihood of employment in subsistence work while reducing the probabilities of being employed in all of the other employment categories. On the other hand, having a larger family seems to be negatively associated with being involved in subsistence farming and positively associated with some informal work. However, the effects are not very large in magnitude.

We find that connectivity also influences rural workers' employment decisions. For instance, the distance to the district headquarters is positively associated with subsistence employment. However, perhaps surprisingly, it is also positively associated with formal employment. In other words, the further away an individual lives from the district headquarters, the more likely they are to engage in formal employment. This counterintuitive finding may be explained by the distribution of public sector jobs in Nepal. The government often assigns civil servants to remote areas to ensure the provision of essential services across the country. These assignments create pockets of formal employment in areas far from district headquarters.

The median nighttime light variable, which is a proxy for economic growth,[4] has positive effects on formal employment and informal non-farm employment. In contrast, not surprisingly, living in an economically vibrant area reduces the likelihood of being engaged in subsistence work. The nighttime light variable, among other things, might be capturing the effect of proximity to urban and peri-urban centers, and proximity to these growth centers is likely to encourage formal and informal non-farm employment through one or more of the following channels: lower transaction and transportation costs for non-farm activities; improved marketing and technology linkages with urban markets; and new market opportunities for production inputs and consumption goods (Islam 2006; World Bank 2009; Sen et al. 2018).

6. CONCLUSIONS

In this research, we examined the heterogeneous impact of out-migration on informal employment within the context of rural transformation in Nepal. Our study aimed to discern the influence of household-level migration on the informal employment choices made by non-migrating household members. By employing a multinomial Probit model with instrumental variables, we differentiated between different categories of informal employment and estimated the effect of out-migration on these various forms of informal employment for the household members who remained in the home country.

Our findings shed light on the complex dynamics between out-migration and informal employment in rural Nepal. We observed that the rural Nepalese context is predominantly characterized by subsistence farming as a form of informal employment

[4] Gibson et al. (2021).

but that a diverse range of other informal employment options exists. The impact of out-migration on these different forms of informal employment varies significantly.

We find that the presence of a migrant in a household has heterogeneous effects on the informal employment choices of non-migrating household members. The presence of a migrant in a household appears to influence both men and women, prompting them to participate in relatively less productive employment, such as subsistence work and informal farm self-employment. Conversely, it tends to discourage engagement in more productive informal non-farm sectors and formal employment. Several factors could contribute to these patterns. On the one hand, the augmented unearned income from remittances may elevate the reservation wage of recipients, encouraging participation in lower-productivity subsistence and other informal farm work. On the other hand, limited alternatives, insufficient financial resources, and a lack of physical and human resources may compel left-behind members of migrant households to opt for relatively less productive activities within the informal labor market.

While our study provides valuable insights into the heterogeneous effects of out-migration on informal employment in rural Nepal, it has some limitations. First, our cross-sectional data limit our ability to track changes over time. Future research could benefit from panel data to capture the dynamic effects of migration. Second, our study does not account for the duration or destination of migration, which could influence its impacts. Future studies could explore these dimensions. Lastly, regional variations in the effects of migration on informal employment could be an important area for future research.

Our findings have important implications for understanding the process of structural transformation in rural Nepal and suggest several policy measures to address the impact of out-migration on informal employment. The increased likelihood of subsistence farming and informal farm self-employment in migrant-sending households indicates that migration may be slowing the shift toward more productive sectors. This “migration-induced informality” could create a feedback loop whereby remittances, while providing economic benefits, inadvertently reinforce less productive agricultural practices. Consequently, this may delay the reallocation of labor from low-productivity agriculture to the higher-productivity manufacturing and service sectors, which is a key aspect of structural transformation.

While Nepal has benefited significantly from migration and remittances, which have brought much-needed financial relief and improved living standards for many families, the very issue that prompted mass migration—a large informal economy that is heavily reliant on agriculture—remains largely unchanged. Our study shows that remittances have unintentionally reinforced dependence on subsistence farming and informal economic activities as many working-age individuals in remittance-receiving households often stay in or revert to informal and subsistence work. As a result, Nepal’s economic transformation remains incomplete.

To overcome these challenges, it is crucial to enhance access to formal employment opportunities by promoting skill development and providing support for entrepreneurship. This could help to create more and better jobs within the country, reducing Nepal’s dependence on migration and remittances. Additionally, given our finding that out-migration increases participation in subsistence work and informal farm self-employment, there is a need to improve the productivity and working conditions in these sectors. This could involve targeted training programs, access to improved agricultural technologies, and efforts to formalize certain aspects of these activities without compromising their flexibility.

Without such drastic measures, Nepal may find itself in a “low-productivity trap” that hinders long-term economic development and rural transformation. While migration provides immediate economic relief, it may create obstacles to the structural changes necessary for sustainable economic growth.

In conclusion, our research contributes to a more comprehensive understanding of the heterogeneous impact of out-migration on informal employment within the context of rural transformation in Nepal. By examining the distinct categories of informal employment and the differentiated effects of out-migration, we provide insights into the complex dynamics at play. Our findings have important implications for policy interventions aimed at improving the livelihoods of rural populations and promoting inclusive and sustainable economic development in Nepal.

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ANNEX

Table A1: Marginal Effects (Instrumental Variables Multinomial Probit)

	Informal Workers					
		Farm		Non-farm		
	Subsistence Workers	Self-employed Workers	Wage Workers	Self-employed Workers	Wage Workers	Formal Workers
Foreign migration	0.0673***	0.0242***	–0.0118**	–0.0212*	–0.0433***	–0.0151*
	(0.0163)	(0.0101)	(0.0051)	(0.0120)	(0.0109)	(0.0080)
Female	0.2385***	0.0106***	–0.007***	–0.0067**	–0.1925***	–0.0428***
	(0.005)	(0.0026)	(0.0018)	(0.0033)	(0.0040)	(0.0023)
Marital status (base group: unmarried)						
Married	–0.1522***	0.0249***	0.0082***	0.0375***	0.0461***	0.0353***
	(0.0062)	(0.0033)	(0.0022)	(0.0040)	(0.0043)	(0.0025)
Widowed/separated/divorced	–0.1026***	0.0035	0.0161***	0.0082	0.0589***	0.0157**
	(0.0125)	(0.0058)	(0.0050)	(0.0081)	(0.0110)	(0.0070)
Youth (age < = 35)	–0.0271***	–0.0168***	0.0112***	–0.0041	0.0608***	–0.0239***
	(0.0057)	(0.0031)	(0.0022)	(0.0038)	(0.0042)	(0.0025)
Education (base group: no formal schooling)						
Primary schooling	–0.0648***	0.0048	–0.0119***	0.0242***	0.0289***	0.0186***
	(0.0061)	(0.0034)	(0.0025)	(0.0041)	(0.0044)	(0.0021)
Secondary schooling	–0.0869***	–0.0025	–0.0202***	0.0225***	0.0256***	0.0615***
	(0.0073)	(0.0040)	(0.0027)	(0.0048)	(0.0052)	(0.0033)
Secondary plus	–0.3145***	–0.0403***	–0.018***	–0.0252***	0.2242***	0.1738***
	(0.0170)	(0.0063)	(0.0067)	(0.0082)	(0.0155)	(0.0115)
Technical/vocational training	–0.1458***	0.0324***	0.0054	0.0374***	0.0494***	0.021***
	(0.0084)	(0.0052)	(0.0037)	(0.0057)	(0.0063)	(0.0034)
Household wealth index	–0.0283***	0.0029***	–0.0093***	0.0236***	–0.0053***	0.0165***
	(0.0015)	(0.0008)	(0.0007)	(0.0010)	(0.0011)	(0.0007)
Household owns land	0.2255***	0.037***	–0.0305***	–0.0917***	–0.1132***	–0.0269***
	(0.0071)	(0.0029)	(0.0031)	(0.0056)	(0.0059)	(0.0034)
Dependents	0.0867***	–0.0253***	–0.0054***	–0.0228***	–0.0231***	–0.0099***
	(0.0051)	(0.0029)	(0.0019)	(0.0035)	(0.0038)	(0.0024)
Household size	–0.0069***	0.0026***	0.0006*	0.0024***	0.0019***	–0.0006
	(0.0009)	(0.0005)	(0.0003)	(0.0006)	(0.0007)	(0.0004)
Travel time to district headquarters	0.0104***	–0.0022***	–0.0075***	0.0019***	–0.0046***	0.002***
	(0.0011)	(0.0007)	(0.0007)	(0.0007)	(0.0008)	(0.0005)
Median night light	–0.0213***	0.0018	–0.0032***	0.0012	0.0181***	0.0033***
	(0.0024)	(0.0012)	(0.0010)	(0.0013)	(0.0014)	(0.0007)
N	36,257	36,257	36,257	36,257	36,257	36,257

Standard errors in parentheses.

*** p < 0.01, ** p < 0.05, * p < 0.1.

Table A2: Marginal Effects (Instrumental Variables Multinomial Probit) by Gender

	Female					
	Informal Workers					
		Farm		Non–farm		
	Subsistence Workers	Self-employed Workers	Wage Workers	Self-employed Workers	Wage Workers	Formal Workers
Foreign migration	0.0516**	0.0222*	–0.0059	–0.0412***	–0.0207**	–0.0059
	(0.0206)	(0.0134)	(0.0066)	(0.0145)	(0.0096)	(0.0072)
Marital status (base group: unmarried)						
Married	–0.0984***	0.0295***	0.0054*	0.0397***	0.0115***	0.0121***
	(0.0080)	(0.0046)	(0.0032)	(0.0052)	(0.0040)	(0.0024)
Widowed/separated/divorced	–0.0709***	0.0082	0.0114**	0.0062	0.0391***	0.0058***
	(0.0143)	(0.0074)	(0.0058)	(0.0091)	(0.0097)	(0.0050)
Youth (age < = 35)	–0.0018***	–0.0129***	0.0105***	0.0041	0.0198***	–0.0197***
	(0.0075)	(0.0044)	(0.0028)	(0.0050)	(0.0040)	(0.0030)
Education (base group: no formal schooling)						
Primary schooling	–0.0338***	0.0083*	–0.0096***	0.0241***	0.0015	0.0094***
	(0.0079)	(0.0050)	(0.0032)	(0.0054)	(0.0036)	(0.0020)
Secondary schooling	–0.0900***	–0.0106*	–0.0162***	0.0263***	0.0514***	0.0390***
	(0.0100)	(0.0056)	(0.0035)	(0.0066)	(0.0058)	(0.0041)
Secondary plus	–0.3452***	–0.0555***	–0.0086	–0.0020	0.2834***	0.1280***
	(0.0294)	(0.0075)	(0.0115)	(0.0142)	(0.0272)	(0.0185)
Technical/vocational training	–0.1555***	0.0446***	–0.0005	0.0586***	0.0371***	0.0157***
	(0.0117)	(0.0078)	(0.0045)	(0.0081)	(0.0065)	(0.0036)
Household wealth index	–0.0274***	0.0031***	–0.0087***	0.0237***	0.0021**	0.0069***
	(0.0020)	(0.0011)	(0.0008)	(0.0013)	(0.0010)	(0.0006)
Household owns land	0.1917***	0.0323***	–0.0334***	–0.1062***	–0.0650***	–0.0192***
	(0.0098)	(0.0043)	(0.0041)	(0.0076)	(0.0063)	(0.0035)
Dependents	0.0817***	–0.0276***	–0.0084***	–0.0301***	–0.0118***	–0.0037
	(0.0066)	(0.0040)	(0.0025)	(0.0045)	(0.0036)	(0.0023)
Household size	–0.0028**	0.0036***	(0.0004	0.0014	–0.0008	–0.0018***
	(0.0012)	(0.0007)	(0.0004)	(0.0008)	(0.0007)	(0.0005)
Travel time to district headquarters	0.0098***	–0.0040***	–0.0075***	0.0012	–0.0015*	0.0020***
	(0.0016)	(0.0010)	(0.0011)	(0.0010)	(0.0008)	(0.0004)
Median night light	–0.0056*	–0.0000	–0.0018	–0.0019	0.0077***	0.0017**
	(0.0030)	(0.0018)	(0.0013)	(0.0018)	(0.0013)	(0.0006)
N	20,328	20,328	20,328	20,328	20,328	20,328

continued on next page

Table A2 *continued*

	Male					
	Informal Workers					
		Farm		Non-farm		
	Subsistence Workers	Self-employed Workers	Wage Workers	Self-employed Workers	Wage Workers	Formal Workers
Foreign migration	0.0755***	0.0305*	–0.0163**	0.0041	–0.0725***	–0.0212
	(0.0271)	(0.0158)	(0.0082)	(0.0207)	(0.0229)	(0.0170)
Marital status (base group: unmarried)						
Married	–0.2292***	0.0165***	0.0093***	0.0326***	0.1045***	0.0662***
	(0.0104)	(0.0051)	(0.0034)	(0.0066)	(0.0085)	(0.0048)
Widowed/separated/divorced	–0.1095***	–0.0067	0.0222**	0.0164	0.0630***	0.0145
	(0.0240)	(0.0099)	(0.0098)	(0.0167)	(0.0227)	(0.0150)
Youth (age < = 35)	–0.0715***	–0.0195***	0.0126***	–0.0133**	0.1219***	–0.0301***
	(0.0092)	(0.0045)	(0.0035)	(0.0059)	(0.0083)	(0.0047)
Education (base group: no formal schooling)						
Primary schooling	–0.0894***	0.0022	–0.0162***	0.0204***	0.0512***	0.0316***
	(0.0096)	(0.0046)	(0.0041)	(0.0064)	(0.0088)	(0.0041)
Secondary schooling	–0.0775***	0.0046	–0.0259***	0.0159**	–0.0123	0.0952***
	(0.0114)	(0.0056)	(0.0045)	(0.0075)	(0.0100)	(0.0057)
Secondary plus	–0.3174***	–0.0346***	–0.0300***	–0.0542***	0.2063***	0.2300***
	(0.0201)	(0.0075)	(0.0076)	(0.0097)	(0.0221)	(0.0161)
Technical/vocational training	–0.1300***	0.0186***	0.0118**	0.0136*	0.0582***	0.0275***
	(0.0123)	(0.0067)	(0.0059)	(0.0082)	(0.0118)	(0.0063)
Household wealth index	–0.0294***	0.0026**	–0.0098***	0.0240***	–0.0156***	0.0282***
	(0.0025)	(0.0012)	(0.0011)	(0.0016)	(0.0023)	(0.0013)
Household owns land	0.2672***	0.0427***	–0.0245***	–0.0740***	–0.1750***	–0.0362***
	(0.0101)	(0.0037)	(0.0045)	(0.0084)	(0.0109)	(0.0064)
Dependents	0.0948***	–0.0211***	–0.0022	–0.0135**	–0.0403***	–0.0175***
	(0.0079)	(0.0041)	(0.0030)	(0.0054)	(0.0074)	(0.0045)
Household size	–0.0105***	0.0014**	0.0008	0.0032***	0.0051***	–0.0002
	(0.0014)	(0.0007)	(0.0005)	(0.0009)	(0.0013)	(0.0008)
Travel time to district headquarters	0.0107***	–0.0004	–0.0075***	0.0025**	–0.0076***	0.0022***
	(0.0016	(0.0009)	(0.0011)	(0.0011)	(0.0016)	(0.0010)
Median night light	–0.0450***	0.0033**	-0.0049***	0.0045**	0.0362***	0.0059***
	(0.0043	(0.0017)	(0.0017)	(0.0020)	(0.0030)	(0.0014)
N	15,929	15,929	15,929	15,929	15,929	15,929

Standard errors in parentheses.

*** p < 0.01, ** p < 0.05, * p < 0.1.