Remittance Receiving Status, Determinants and its Usage: Evidence from Rural Households in Tigray, Northern Ethiopia

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Abstract

This study investigates the status, determinants of remittance receipt and its utilization in rural agricultural households. Employing a cross-sectional survey, 521 participants were randomly selected across rural households of six Tabias (Sub Districts) in three Woredas (Districts). The study applies statistical tools and logistic regression models to analyze remittance receiving status, determinants and its usage in migrant-sending rural households of Tigray, Ethiopia. Findings indicate that 71.5% of surveyed households receive remittance, primarily for family support (73.6%) and agricultural investments (59.9% for fertilizers). Remittance inflows contribute significantly to household economic stability, covering 44.2% of agricultural expenditure. Key determinants of remittance income include the number of dependents and household literacy status, while factors such as household asset ownership show no significant impact. The study aligns with the New Economics of Labor Migration (NELM) theory, suggesting that migration serves as a household risk diversification strategy rather than solely an individual decision. However, remittances are predominantly used for consumption rather than productive investments, underscoring the need for policy interventions to enhance their developmental impact.

Keywords: Remittances, Rural Households, Agricultural Productivity, Socioeconomic Impacts, Remittance Usage

1   INTRODUCTION

The United Nations (2019) reported that one in nine people globally receive remittances from a migrant family member, which accounts for about 60% of household income. Around 75% of remittance covers essentials such as food and housing, while the rest is saved or invested in income-generating activities and coping with shocks. According to the International Organization for Migration (IOM) (2022), Ethiopia's remittance grew from USD 173 million in 2005 to USD 1.8 billion in 2014. However, since 2014, it declined to an average of USD 400-450 million between 2017 and 2021.

Key factors influencing remittance receipt include household demographics, dependency ratios, and the number of migrants, along with economic and political conditions in both origin and destination areas (Lacuesta, 2010; Lubambu, 2014). Remittances bolster household income through invest-

ments in land, agricultural inputs, education, and local non-farm activities (Carter, 1997; Dugbazah, 2007) Migrants' incomes in destination countries and conditions at home significantly affect remittance flows. Parida and Madheswaran (2011) highlighted remittances as part of long-term contracts shaping household consumption and investment, though there is no consensus on their most significant determinants. While some studies emphasize the role of remittances in capital accumulation, others argue that they may not always be invested productively (Chami et al., 2005; Simiyu, 2013).

Migration influences agricultural production through labor loss and remittance inflows, which can alleviate credit constraints. These effects may counterbalance or lead to net positive or negative productivity outcomes. Empirical studies offer mixed findings; some indicate a higher marginal propensity to consume among remittance-receiving households, while others suggest productive investments (Taylor & Mora, 2006). Demurger (2015) noted that selection bias and endogeneity complicate conclusions. In addition, the relationship between migration, remittances, and agricultural productivity is complex, and shaped by agricultural conditions, social contexts, and production factors. Research on remittances in Ethiopia's rural agricultural sector, particularly in Tigray, remains limited. Hence, this study examines factors influencing remittance receipt and its usage and role in agricultural production in Tigray, where farming is a primary livelihood.

Data were collected in March 2024 through a cross-sectional survey of 521 randomly selected rural households across six Tabias in three Weredas: Kola Tembien, Tahtay Mai-chew, and Kilte-awlaelo. Statistical tools and logistic regression models were applied for analysis. The findings highlight key factors affecting remittance receipt, offering insights for policymakers and bridging gaps in research on rural out-migration and remittance utilization.

2 THEORETICAL AND EMPIRICAL LITERATURE REVIEW REMITTANCE

The UN and the International Monetary Fund (IMF) (2009) define remittances as cross-border payments of relatively low value, often recurring person-to-person transfers by migrants. This definition, which emphasizes international remittances, overlooks internal remittances funds sent by migrants within the same country which can have similar purposes and impacts. McKay and Deshingkar (2014) note that while international remittances have been widely studied, internal remittances remain underexplored despite their significance for local economies. Understanding all forms of remittances is crucial for assessing their determinants, usage and impact on agricultural productivity. In this study, remittances refer to money or material goods (convertible to money) sent to rural households by both internal and international migrants.

Migration theories, including Ravenstein's gravity theory (1885), Lewis's two-sector model, the Harris & Todaro's human capital theory, Lee's push-pull model, Stark's New Economics Labor Migration (NELM) theory, and migration network theory, examine rural labor migration and its effects on household income. Early theories viewed migration as an individual decision with minimal remittance impact. However, NELM (Stark & Lucas, 1985) argues that migration is a household strategy to maximize welfare, responding to capital and insurance market failures (Stark, and Lucas, 1985). NELM suggests that rural households often lack access to credit and income insurance. By sending migrants, they create financial intermediaries, ensuring liquidity and insurance (Stark & Lucas, 1985). Remittances help overcome production barriers, diversify income, and strengthen migrant-family ties (Gibson & Gurmu, 2012).

Taylor (1999) defines migration through three hypotheses. The first one is Relative Deprivation Hypothesis. According to this hypothesis, households migrate when they perceive themselves as income-poor compared to others, with remittances improving their relative status (Stark & Taylor, 1989). The second one is Investment Hypothesis. This hypothesis implies that migration is a strategy to finance investments, removing financial constraints (Taylor, 1999). The third and final one is Insurance Hypothesis which indicates that migration hedges against risks like unemployment, agricultural failures, or food insecurity (Massey et al., 1993). (Stark & Lucas, 1985) argue that remittances are contractual, based on tempered altruism or enlightened self-interest.

Empirical studies on remittance determinants, usage, and impact yield mixed results. Some highlight altruism as the primary motive (Osili, 2007), while others emphasize investment (Funkhouser, 1995). Stark and Lucas (1985) and Docquier and Rapoport (1998) suggest skilled migrants remit to support unskilled workers due to wage differentials. Stark and Lucas (1985) identify self-interest motives, such as securing inheritance and improving origin-country conditions.

Demographic factors also influence remittances. Vanwey (2004) found that older household heads receive more remittances, indicating altruism toward the elderly. Nepal and Henning (2013) identified household head's age, gender, and family structure as key determinants. Mannan and Farhana (2014) and Naufal (2007) highlighted gender, labor force status, and migration destination. Piracha and Saraogi (2012) stressed the role of migrant and household characteristics, along with community variables.

Regarding remittance usage, empirical studies present varying findings. Adams and Cuecuecha (2013) found that remittances positively impact rural asset accumulation in Pakistan, with households investing in livestock, farm improvements, and equipment. Zarate-Hoyos (2004) observed that migrant households spent more on durable goods and productive ventures than non-migrant households. Similarly, Lucas (2003) noted enhanced crop productivity and cattle accumulation in South Africa.

In contrast, some studies highlight negative effects. Hyden et al. (1993) found limited agricultural investments from remittances. Bryan et al. (2014) and Lagakos et al. (2020) observed declining welfare and investment among migrant-sending households. Lim and Simmons (2015) and Mendola (2006) reported that remittances in certain regions primarily fund consumption rather than investment. In Turkey, Koc and Onan (2004) found that 80% of remittances were spent on daily expenses, with minimal investment. Clement (2011) noted similar patterns in Tajikistan, and Zhu et al. (2014) observed that remittances in China were treated as permanent income and rarely invested. There are also, other studies confirmed remittances predominantly fund consumption. Mosisa (2012) and Sahu and Biswaroop (2008) found that remittances were mainly used for daily needs. However, Nath (2015) noted that while most remittances in India covered consumption, some families leveraged them to improve economic and educational standing. Sharma (2011) found that Sri Lankan migrant households had higher consumption expenditures. Studies from Ethiopia by Andersson (2012) and Girmachew (2014) revealed mixed effects. Positive impacts included improved access to education and healthcare, while negative effects involved reduced motivation to work or study.

Overall, the literature suggests that remittance determinants depend on migrant skill levels, economic conditions, and household demographics. However, empirical studies indicate that remittance behavior is complex, shaped by interrelated factors rather than mutually exclusive theoretical models. Given the contradictory findings on remittance impacts on household savings and investment in developing countries, further research is necessary.

3   MARERIALS AND METHODS

3.1   Description of the Study Area

Tigray Region, officially known as the Tigray National Regional State, is the northernmost region of Ethiopia, situated between 12°–15°N latitude and 36°30'–40°30'E longitude. According to the 2018 National Statistics Report Central Statistical Agency (CSA) (2018) Tigray covers a land area of 50,079 km², with Mekelle as its capital city. The figure below illustrates the location of the Tigray Regional State on the official map.
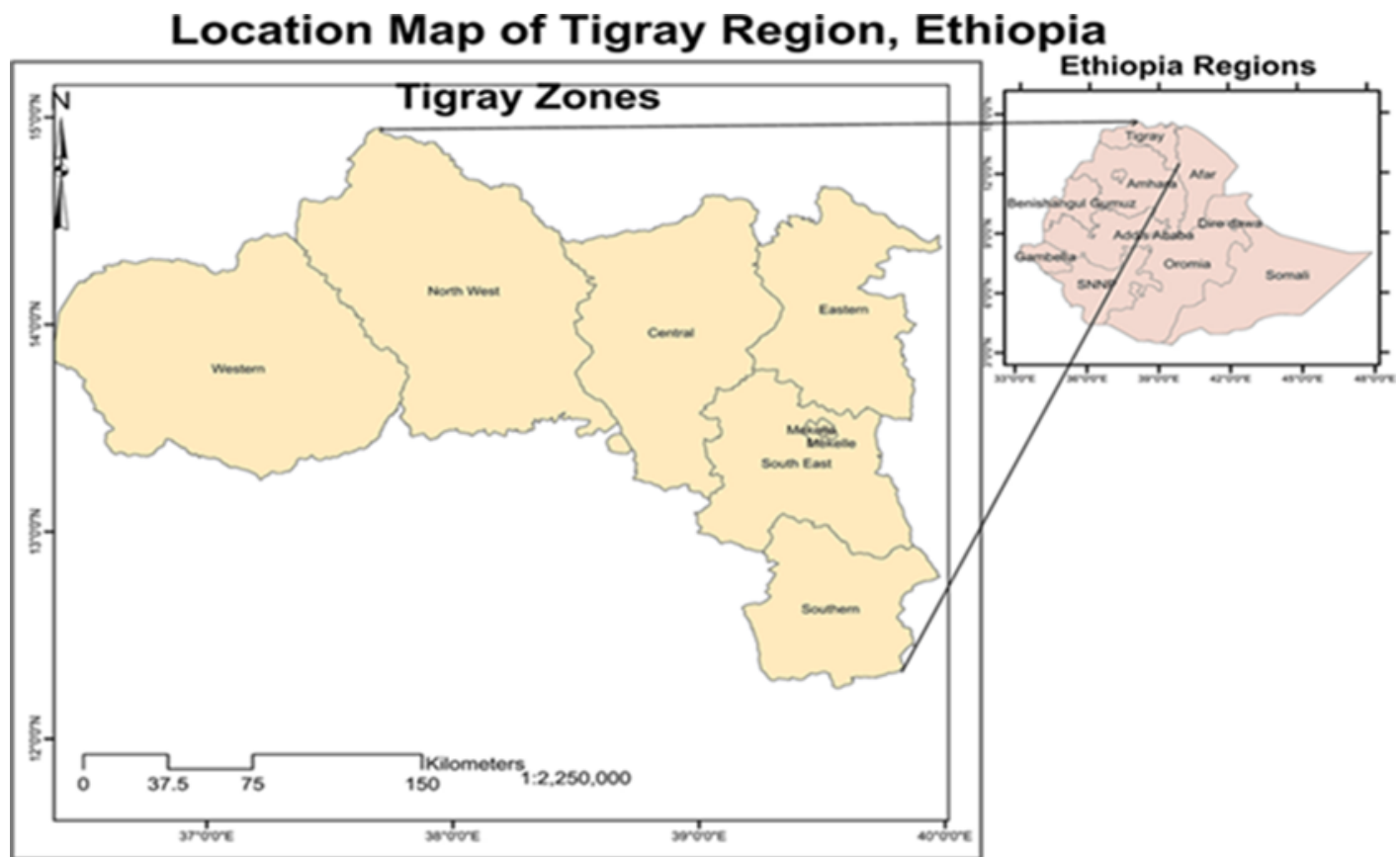
Figure 1: Location Map of Tigray Regional State of Ethiopia

Source: Research Gate. Available from: https://www.researchgate.net /figure/ Location-map-of-Tigray-Northern-Ethiopia2023 fig1 370558913 [accessed 14 Jan 2025]

The projected population of Tigray for the year 2023 was 5,838,000 (Central Statistical Agency (CSA), 2022). According to the same source, 3,963,008 people (67.8%) live in rural areas, a significant decline from the 80.5% in the 2007 census, highlighting the region's rapid urbanization.

3.2   Sampling Procedures and Data Collection

The unit of analysis in this study is rural households. Therefore, the general population for the study consists of all rural households residing in rural Tigray. According to Central Statistical Agency (CSA) (2022), population projections indicate that the total household population in Tigray could be 943,573 in the year 2023.

The 60 rural Woredas in the Tigray Regional State were stratified into three groups based on their agricultural potential and trends in rural out-migration. One Woreda was selected from each stratum. A total of three Woredas (Kilte-Awlaelo, Kola-Tembien, and Tahtay-Maichew) were randomly selected as primary sampling units.

In the second step, using the same technique, two Tabias from each Woreda were randomly selected, resulting in a total of six Tabias.

To determine the required sample size, the researcher used the formula developed by Cochran (1977), which resulted in a sample size of 521 households. This sample was classified into two groups: the migrant-sending (treatment) group, comprising 242 households (46%), and the non-migrant-sending (control) group, comprising 279 households (54%). The sample size was distributed across each Woreda

and Tabia proportionally, based on the household population of both groups.

Finally, sample units (respondents) were selected using secondary data, with fresh household lists obtained from Tabia Administration Offices serving as the sampling frame. First, the household lists were sorted and arranged by Kushet (EAs). Then, using a stratified sampling technique, households within each EAs were grouped into two categories: those that had participated in rural out-migration and those that had not. The sample units were selected from both groups using a systematic random sampling technique based on the predetermined proportion. Regarding data collection techniques, a questionnaire was used as the primary data collection tool.

3.3 The Econometric Logit model

The econometrics model specified to analyze the collected data of the determinants of for remittance receiving of the sending households was the following Econometric Multiple Linear Regression (MLR) Model.

The model incorporates a set of characteristics of migrants and their households as well as location characteristics to see whether they increase the explanatory power of the model. Characteristics of migrants and their families as well as location characteristics are added as determinants of remittance behavior.

$$R = Y_0 + Y_1 M_N + Y_2 \text{HHSZ} + Y_3 \text{MS}_h + Y_4 \text{AGEH} + Y_5 \text{SEXH} + Y_6 \text{MRSTH} + Y_7 \text{NDPNT} + Y_8 \text{ASHLD} + \varepsilon_R$$

$$(1)$$

Where R is remittance income received by migrant sending households (in ETB), M_N is number of migrants, member and/or head of households. HHSZ, is household size, MS_h, is migration status of the head, AGEH, is the age of household head, SEXH is sex of the household head, ASHLD is the asset hold by the household in Ethiopian Birr, MRSTH is marital status of the household head, NDPNT is number of dependent members in the household, Y_0 is a constant; $Y_1, Y_2, Y_3, \ldots Y_8$ are coefficients, and ε_R is error term.

4 RESULTS AND DISCUSSION

Remittances play a crucial role in the economic stability of migrant-sending households. The New Economics of Labor Migration (NELM) theory suggests that migration is often a household strategy aimed at risk diversification and income maximization. This study examines remittance-receiving patterns, purposes, and impacts on household and agricultural activities among 242 respondents.

4.1 Descriptive Results and Discussions of the Study

Table 2 presents the findings on remittance-receiving status, highlighting the significant role of remittances as a household risk diversification strategy, as posited by the New Economics of Labor Migration (NELM) theory. Among the 242 respondents, 71.5% reported receiving remittances, while 28.5% reported they did not.

Regarding the mode of receipt, 95.4% of respondents received remittances through formal banking channels, while 4.6% received it through informal methods. This strong preference for formal channels underscores the institutional integration of remittances within financial systems, potentially enhancing financial inclusion and stability for recipient households. In addition, nearly all remittance senders (99.4%) were former household members, further supporting the NELM perspective that migration

Table 1: Variable Definition and Expected Effects

Variables	Description of variables	Measurement	Expected Effect
Dependent variable: Remittance Income (R)			
Remittance Income (R)	The remittance received by the household from their migrant member(s) in Ethiopian Birr in a given time.	Continuous	
Independent variables			
Number of migrants (MN)	Number of migrants including the head of HH, if migrant	Continuous	+
Household size (HHSZ)	Number of household members	Continuous	$\pm$
Migration status of HH head (MSH)	Migration status of the household head, (1= if migrant; 0= otherwise)	Dummy	$\pm$
Age of the household head (AGEH)	Age of the household head in years	Continuous	$\pm$
Sex of the household head (SEXH)	Dummy variable 0 if female, 1 if male	Dummy	$\pm$
Marital status of the household head (MRSTH)	Marital status of the household head (Single, Married, Divorced, or widowed)	Categorical	$\pm$
Number of dependent people in the household (NDPNT)	Dependents below 10 and above 70 years old and disabled or unhealthy (cannot work actively)	Continuous	+
Asset Holding of the HH (ASHLD)	Estimated monetary value of asset holdings of the household livestock, other equipment and cash (in Birr)	Continuous	$\pm$

Source: Survey data for this research, March 2024

decisions are often made collectively within households to ensure income smoothing and financial support for those remaining behind.

The frequency of remittance transfer varied, with 33.1% receiving remittance annually, 28.1% receiving it sporadically (once in many years), and a smaller proportion benefiting from multiple remittances per year. This variation aligns with the NELM argument that remittance flows are influenced by household needs, economic conditions, and the migrant's financial capacity rather than being entirely market-driven. In terms of utilization, the predominant use of remittances was for family support (73.6%), followed by loan repayment (6.2%) and house construction (1.65%). This pattern mirrors global trends identified by the World Bank (2016), which emphasized that remittances primarily function as a mechanism for household sustenance. From a NELM perspective, this confirms that remittances are not merely private transfers but serve as an informal social insurance mechanism, helping recipient households manage economic vulnerabilities and improve overall well-being.

Table 3 categorizes remittance amounts based on migrant type, highlighting significant differences in remittance behavior. Consistent with NELM, which views migration as a household strategy to overcome market failures and income risks, the highest mean annual remittance was sent by international temporary migrants (11,217.05 ETB), while internal temporary migrants sent the least (2,049.62 ETB). The substantial variability in international remittances suggests disparities in earning capacities abroad, reflecting migrants' attempts to support household investment and consumption smoothing.

Table 4 analyzes household characteristics in relation to remittance receipt through Chi-square tests. The findings align with NELM theory, which emphasizes migration as a household strategy to manage risks and overcome financial constraints. The woreda significantly influenced remittance flows (P-value = 0.000), with the highest proportion in Tahtay Maichew (97.6%) and the lowest in Kola Tembien (47.5%). This suggests that remittance receipt is shaped by localized economic conditions and household strategies rather than individual demographic factors.

Table 2: Remittance Receiving Status

Variable	Responses	% Respondents
Have you ever got remittance from migrants? (N=242)	Yes	71.5
	No	28.5
Manner of receiving remittance (N=173)	Regular (through banks)	95.4
	Irregular (Out of banks)	4.6
Relationship with remittance sending migrant (N=173)	Former member of the household	99.4
	Other	0.6
	Not known (conditional)	27.6
How frequent did you receive remittance? (N=242)	Once in a year every year	33.1
	Once in many years (above one year)	28.1
	Three times and more in a year	5.0
	Twice in a year	6.2
For what purpose did the migrant send the remittance? (N=242)	Supporting family	73.6
	Paying loan of the household	6.2
	Build house	1.65
	Other	32.23

Source: Survey data for this research, March 2024

Table 3: Amount of remittance received

	N	Min	Max	Mean	Std. Dev
How much money did you received per a year? (in ETB)	242	0	450,000	21,725.27	36,324.970
Annual remittance (in ETB) from internal temporary migrants	242	0	50,000	2,049.62	5,553.724
Annual remittance (in ETB) from internal permanent migrants	242	0	50,000	3,702.48	8,611.143
Annual remittance (in ETB) from international temporary migrants	242	0	450,000	11,217.05	33,913.565
Annual remittance (in ETB) from international permanent migrants	242	0	300,000	5,929.79	26,454.823

Source: Survey data for this study, March 2024

Gender, marital status, literacy, and occupation did not show significant effects (P-values > 0.05), re-inforcing the idea that remittance patterns are driven by structural and regional dynamics rather than personal attributes.

Table 5 presents a comparison between households with and without migrants, highlighting key demographic and economic differences. Migrant households tend to have older household heads (mean age: 60.11 vs. 56.87) and smaller family sizes (4.45 vs. 5.61).

According to NELM theory, migration is often a household strategy to diversify income sources and manage financial risks rather than solely an individual decision. The lower annual income of migrant households (63,426 ETB vs. 92,579 ETB) suggests that, despite remittance inflows, these households face economic constraints. This supports the argument by Germenji, Beka, and Sarris (2001) and Mannan and Farhana (2014) that remittances are frequently directed toward older household members due to altruistic motives. Under NELM, remittances serve as a form of informal insurance, compensating for income instability rather than significantly elevating household wealth. This underscores the idea that migration decisions are shaped by collective household strategies aimed at long-term economic security rather than immediate financial gain.

From the perspective of NELM theory, the allocation of remittances, as outlined in Table 6, reflects both household consumption priorities and strategic economic behavior. The predominant use of re-mittances for household consumption (69.8%) suggests that migration serves as a risk-coping mecha-nism, ensuring basic subsistence for families in the absence of sufficient local income. The significant

Table 4: Remittance Receiving Status, by Woreda and Household Characteristics

	Have you ever got remittance from migrants?		
	No	Yes	Chi-square
Wereda			
Kilte-awlaelo	25 (32.1%)	53 (67.9%)	P-value = 0.000
Kola Tembien	42 (52.5%)	38 (47.5%)	
Tahtay Maichew	2 (2.4%)	82 (97.6%)	
Sex			
Female	19 (31.7%)	41 (68.3%)	P-value = 0.533
Male	50 (27.5%)	132 (72.5%)	
Marital status			
Currently unmarried	18 (30.5%)	41 (69.5%)	P-value = 0.696
Currently married	51 (27.9%)	132 (72.1%)	
Literacy			
Cannot read and write	45 (26.2%)	127 (73.8%)	P-value = 0.204
Can read and write	24 (34.3%)	46 (65.7%)	
Farming as occupation			
No	3 (23.1%)	10 (76.9%)	P-value = 0.655
Yes	66 (28.8%)	163 (71.2%)	

Source: Survey data for this study; March 2024

expenditure on fertilizer (59.9%) indicates that remittances also play a role in enhancing agricultural productivity, aligning with NELM's assertion that migration is a household strategy for overcoming market constraints, particularly in rural economies with limited access to credit.

However, the lower proportions allocated to hiring labor (10.3%), loan repayments (7.4%), and livestock purchases (4.6%) suggest that remittances contribute less to broader capital accumulation and long-term investment. This finding aligns with studies by Mosisa (2012) and the Ethiopian Rural Household Survey (2009), which highlights the predominance of consumption-oriented spending among remittance-receiving households. Nevertheless, Adams (1991) observed that in some contexts, remittances are directed toward productive investments such as land and housing which may depend on factors like migration duration, household wealth, and the availability of alternative income sources.

The descriptive statistics in Table-7 show substantial variation in agricultural expenses among the surveyed households. Fertilizer expenses have the highest sum (1,630,000) and mean (6,735.54), indicating its importance in agricultural production. Land rent and labor hiring also show variability suggesting that some households rely on rented land and hired labor rather than solely on family labor. Animal feed expenses are minimal compared to other inputs which might indicate that livestock farming is a secondary activity, or that feed is largely sourced naturally. Other farm inputs have relatively high standard deviation showing inconsistencies in input use, possibly due to different financial capabilities among the households. From a NELM perspective, migration and remittance flows could influence these expenditures. Households receiving remittances may invest more in farm inputs, reducing liquidity constraints and enhancing agricultural productivity.

Table- 8 highlights the role of remittances in supporting agricultural activities. Agricultural expenditure (Mean = 10,145.87) is nearly double the agricultural income (Mean = 5,225.62), suggesting that farming alone is insufficient for household sustenance. Remittance income (Mean = 4,920.25) is close to the agricultural income, implying that migration serves as an economic buffer.

The share of remittance in agricultural expenditure (Mean = 0.442) indicates that nearly 44% of farm-related spending comes from remittances, reinforcing the NELM argument that remittances substitute for missing financial markets. Conversely, the share of agricultural income (Mean = 0.558) suggests that while farming still contributes more to household income, migration plays a crucial role in sustaining

Table 5: Comparison of Remittance Receiving and Non-Receiving Households

Indicator	Group	N	Mean	Mean Difference	Paired Test
Household Age	Yes	173	60.11	3.240	T(240) = 1.708***
	No	69	56.87		
Family size	Yes	173	4.45	1.58	T(240) = -4.343***
	No	69	5.61		
Farm size	Yes	173	2.364	0.3062	T(240) = 1.797***
	No	69	2.056		
Distance to nearest market (km)	Yes	173	6.13	0.220	T(240) = 0.596
	No	69	5.91		
Number of migrants	Yes	173	1.41	0.179	T(240) = 1.772***
	No	69	1.23		
Economically active family members (15–64)	Yes	173	2.91	0.324	T(240) = -1.507
	No	69	3.23		
Number of dependents (0–14 & >64)	Yes	173	1.54	0.833	T(240) = -4.337***
	No	69	2.38		
Farm equipment value (Birr)	Yes	173	3,460.52	5,601.98	T(240) = -1.894***
	No	69	9,062.50		
Livestock value (TLU)	Yes	173	4.20	0.355	T(240) = 0.962
	No	69	3.82		
Annual income (Birr, 2023/24)	Yes	173	63,426	29,153.64	T(240) = -2.006***
	No	69	92,579		

Source: Survey data for this research; March 2024.
*** Significant at 1% level.

Table 6: Usage of Remittance

Variable	Responses	% Respondents
For what purpose did you use the money you get through remittance?	To buy oxen and/or other livestock	4.6
	To purchase fertilizer	59.9
	For consumption	69.8
	To repay loan	7.4
	Building house	1.65
	Hiring labor	10.3
	To purchase [incomplete]*	2.5
	Other	30.6

Source: Survey data for this research; March 2024.
*Note: "To purchase" response appears incomplete. Please verify the original data source.

Table 7: Agricultural Expenditure

Item	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Fertilizer	242	0	70,000	1,630,000	6,735.54	6,058.181
Hybrid seeds	242	0	9,000	123,450	510.12	1,125.188
Chemical	242	0	6,500	172,450	712.60	913.293
Land rent	242	0	35,000	267,500	1,105.37	4,982.777
Animal feed	242	0.0	3,000.0	3,000.0	12.40	192.847
Labor hiring	242	0	27,000	167,400	691.74	2,633.367
Other farm input	242	0	20,000	91,500	378.10	2,419.367

Source: Survey data for this research; March 2024.

Table 8: Share of Remittance in Agricultural Expenditure

Variable	N	Mean	Std. Deviation
Agricultural expenditure	242	10,145.87	12,022.64
Agricultural income	242	5,225.62	10,298.99
Remittance income	242	4,920.25	8,446.85
Share of remittance	227	0.4420	0.39406
Share of agricultural income	227	0.5580	0.39406

Source: Survey data for this research; March 2024.

agricultural investment. In general, the descriptive statistics here also align with NELM's predictions: remittances play a significant role in financing agricultural production, reducing credit constraints, and stabilizing household income.

To summarize, the descriptive results of this study showed that; among the 242 respondents, 71.5% received remittances, mostly via formal banking (95.4%). Former household members were primary senders, mainly for family support (73.6%). International migrants sent the highest annually (11,217.05 ETB), while internal migrants sent the least (2,049.62 ETB). Remittance receipt varied by location, highest in Tahtay Maichew (97.6%) and lowest in Kola Tembien (47.5%), but was unaffected by gender or literacy. Migrant households had older heads, smaller families, and lower incomes. Remittances covered 44.2% of agricultural costs, mostly for consumption (69.8%) and fertilizers (59.9%), aiding productivity but not long-term investment, aligning with migration theories.

4.2   Modeling the Determinants of Receiving Remittance Factors

The empirical study on remittances includes a model goodness-of-fit test, which is essential for assessing how well the chosen model explains the observed data. Table 9 presents a summary of the model's fit using statistical indicators such as the -2 Log Likelihood, Cox & Snell R Square, and Nagelkerke R Square. These measures help determine the explanatory power and reliability of the model in predicting remittance-related outcomes.

Table 9: Determinants of Receiving Remittance (Logit Model) – Test for Goodness of Fit

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	238.926[a]	0.188	0.269

Source: Survey data for this research; March 2024.
[a] Estimation terminated at convergence.

As can be observed in Table 9 above, first, the -2 Log Likelihood (238.926) value represents the overall fit of the model. A lower -2 Log Likelihood suggests a better-fitting model, but interpretation depends on comparing different models or baseline values. Second, the Cox & Snell R Square (0.188) is a pseudo R-square measure indicating the proportion of variance explained by the model. While it provides insight, it is not directly comparable to the traditional R-square in linear regression. Third, the Nagelkerke R Square (0.269) adjusted version of Cox & Snell's measure provides a more interpretable estimate, indicating that the model explains approximately 26.9% of the variance in remittance-related outcomes.

Overall, the model explains a moderate proportion of the variation in remittance patterns, suggesting that while other factors may contribute, the selected variables have some predictive power.

The Logistic Regression Analysis Result

A logistic regression analysis, which examines how certain variables influence a dependent variable, is likely to be related to migration decisions or outcomes. The following Table-10 appears to present the results of the logistic regression analysis.

Table 10: The Logistic Regression Analysis Result

Variable	B	S.E.	Wald	Exp(B)	95% C.I. for Exp(B)		P-value
					Lower	Upper	
Number of migrants sent by the household	0.473	0.268	3.121	1.604	0.950	2.710	0.043
Relatives in destination	-2.314	0.575	16.183	0.099	0.032	0.305	0.000
Marital status of the sending household	-0.810	0.403	4.043	0.445	0.202	0.980	0.044
Household size	-0.443	0.095	21.819	0.642	0.533	0.773	0.000
Constant	4.670	0.888	27.683	106.735	–	–	0.000

Source: Survey data for this research; March 2024.
Note: 95% Confidence Interval (C.I.) for Exp(B) is not shown for the constant term as it is not typically interpreted.

The findings of each independent variable in the above table can be analyzed as follows:

Number of migrants sent by the household: shows that the Coefficient (B): 0.473, Odds Ratio (Exp (B)): 1.604, Confidence Interval (95% C.I.): [0.950, 2.710], and P-value: 0.043 are statistically significant. This result which can be interpreted as a one-unit increase in the number of migrants sent by the household is associated with a 1.604 times higher likelihood of the event occurring, assuming other variables are held constant. This positive and significant effect suggests that households with more migrants are more likely to engage in migration as a livelihood strategy. This aligns with NELM, as migration is a collective decision rather than an individual one. Prior studies conducted out of Ethiopia, such as Chami et al. (2005), Elbadawi and de Rezende Rocha (1992), Lianos (1997), and Swamy (1981) found that the number of migrants in the foreign country and the remittance income of the households in the origin are positive and statistically significant. A study in Ethiopia by Teferee (2016) also revealed that positive relation between number of migrant from household and remittances; that means, as the number of migrants from household increases, the amount of remittances received the household increases. However, there are also contrary results to the result found in this study in previous researches (Agarwal & Horowitz, 2002; Funkhouser, 1995) that found that as the number of migrants in a family increases, the remittances from a given migrant decreases.

Relatives in destination: shows that the Coefficient (B) -2.314, Odds Ratio (Exp (B)): 0.099, Confidence Interval (95% C.I.): [0.032, 0.305], and P-value: 0.000 are highly significant. Hence, this result can be interpreted as having relatives in the destination reduces the likelihood of the event, with the odds being about 0.099 times compared to households without relatives in the destination. The negative effect indicates that households with relatives in the destination are less likely to send migrants. This contradicts conventional migration theories that assume social networks facilitate migration. However, under NELM, this may suggest that families with established migrants already have sufficient remittances, reducing the need for additional migration. Some previous studies found a contrary result Adams and Cuecuecha (2013) and Massey et al. (1993) that found that having relatives at the destination increases migration, contradicting the survey finding where relatives reduce migration probability. However, the researcher tried to investigate, in the FGDs whether migrant relatives in the destination have any positive influential role for out-migration and sending of remittances. In this case the FGD participants replied that relatives in the destination area of their migrant members provide alternative economic support and that reduces the need to migrate.

Marital status of the sending household: the logistic regression analysis result regarding marital status of the sending households revealed that Coefficient (B): -0.810, Odds Ratio (Exp (B)): 0.445, Confidence Interval (95% C.I.): [0.202, 0.980], and P-value: 0.044 are significant. Thus, this result indicates that married households are less likely to experience the event compared to unmarried households, with odds reduced to 44.5% possibly due to family responsibilities limiting mobility. This aligns with the idea

that migration decisions consider household structures. However, some prior studiessuch as Vanwey (2004) found contrary to this result, revealed that married migrants whose spouses are left behind in the source country should also be more likely to send remittances and send greater sums of remittances due to altruistic feelings.

Household size: the analysis result reported that the Coefficient (B): -0.443, Odds Ratio (Exp (B)): 0.642, Confidence Interval (95% C.I.): [0.533, 0.773], and P-value: 0.000 are highly significant. This result can be interpreted as larger household sizes are associated with a reduced likelihood of the event, with a 35.8% decrease in odds for each additional household member. Thus, larger households are less likely to send migrants. This might indicate that having more family members reduces economic pressures, making migration less necessary. However, in some contexts, larger households send more migrants due to financial strain. This result is consistent to previous study by Stark and Bloom (1985) that found household size and marital status affected migration decisions.

Table 11: Multiple Linear Regression Model Result

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Tolerance	VIF
	B	Std. Error	Beta			Lower Bound	Upper Bound		
(Constant)	-48070.995	53199.659		-0.904	0.386	-165162.656	69020.665		
House Hold Sex	-3079.781	29721.356	-0.041	-0.104	0.919	-68496.044	62336.483	0.079	12.734
House Hold Age	104.068	451.517	0.044	0.230	0.822	-889.714	1097.850	0.341	2.933
HH Marital Status	15237.987	9034.101	0.524	1.687	0.120	-4645.936	35121.909	0.126	7.953
HH Literacy Status	28880.144	12821.690	0.350	2.252	0.046	659.794	57100.493	0.502	1.991
Average Landholding in Tsimdi	6674.178	5024.890	0.261	1.328	0.211	-4385.532	17733.887	0.315	3.177
HH Members Migrated (6+ mo)	8372.827	6351.714	0.177	1.318	0.214	-5607.200	22352.855	0.672	1.489
Number of Dependents in HH	23337.973	5404.644	0.835	4.318	0.001	11442.431	35233.515	0.325	3.078
Estimated Monetary Value of Asset	0.017	0.012	0.252	1.467	0.170	-0.009	0.044	0.412	2.427

The multiple linear regression results indicate that the significant predictors of remittance income are household literacy status and the number of dependents in the household.

Household head literacy status has a positive and significant impact on remittance income, with an unstandardized coefficient of 28880.144 and a p-value of 0.046, suggesting that literate household heads receive significantly higher remittances, supporting the idea that migration earnings contribute to education investment. This result is aligned to the studies Amuedo-Dorantes and Pozo (2006), De Haas (2010), and Naufal (2007) found that education level of the household heads significantly improve household wealth, supporting the finding that literacy positively affects remittances received.

The number of dependents in the household is also a significant predictor, with an unstandardized coefficient of 23337.973 and a p-value of 0.001, indicating that each additional dependent increases remittance income. This strong and significant positive effect suggests that migration is a response to dependency burdens, supporting NELM's argument that households send migrants to support non-working members. The result of this study is consistent with previous study by Nepal and Henning (2013) and Taylor (1999) showed that remittances play a crucial role in stabilizing household economies, which aligns with the positive effect of dependents on wealth in the survey data.

Monetary value of assets shows (B = 0.017, p = 0.170, not significant). This result indicates that asset ownership does not significantly influence income levels, indicating that migration might be more critical for household income stability than initial wealth. Previous study by Stark and Bloom (1985) found that migration is a household strategy to diversify income sources and reduce income volatility. On the contrary of this result, Adams and Cuecuecha (2013) found that remittances improve household wealth significantly, but in this survey, migration's impact on wealth was weak and statistically insignificant. The data collected from FGDs indicate that the survey data includes households that send migrant members in recent; hence, haven't yet started sending significant remittances.

To sum up, the survey data partially supports NELM theory, confirming that migration is a household decision influenced by economic risks and dependency structures. Over all, the study highlights that migration is influenced by various household characteristics, including the number of migrants, presence of relatives at the destination, household size, and marital status. Moreover, remittance income is primarily driven by household literacy and the number of dependents, reinforcing the role of migration

in economic stability. However, asset ownership does not significantly impact remittance earnings.

5 CONCLUSION AND POLICY IMPLICATIONS

5.1 Conclusion

This study underscores the critical role of remittances in supporting rural households in Tigray, Ethiopia serving as a buffer against economic and agricultural challenges. The findings reveal that remittance-receiving households are primarily dependent on migrant family members for financial support, predominantly funding basic needs and agricultural inputs, with limited allocation towards long-term investments. Channel of remittance is basically formal banking. Geographic disparities highlight varying migration opportunities. The logistic regression analysis highlights that remittance inflows are influenced by the number of migrants, household size, household head literacy status and dependency ratios, reinforcing the view that migration decisions are often collective strategies for economic security. However, despite its economic benefits, reliance on remittance risks perpetuating economic dependency, hindering broader development objectives. While remittance alleviates immediate financial constraints, its inconsistent utilization for investment reflects a need for better strategies to financial independence, and harnessing its full potential for economic transformation of rural households.

5.2 Policy Implications

The main policy implications that can be extracted from the study result and the conclusions are as follows: First, financial literacy and investment programs should be introduced into the society. Community-based training initiatives to encourage remittance-receiving households to channel funds into productive investments like livestock and non-farm enterprises are vital. Such measures enable remittance-receiving household to address migration drivers, and ultimately, improve local employment opportunities and economic conditions in rural areas to reduce excessive dependence on remittances as the primary income source. Second, improving access to financial services in rural society should be strengthened. Such measures enable formal banking infrastructure and incentivize savings and investment products tailored to rural households to maximize the developmental impact of remittance. Third, agricultural support schemes should be encouraged. Enhancement of affordable agricultural inputs, and innovative technologies enable households to utilize remittance funds more effectively for productivity gains. Forth, migration and remittance policies must focus on promoting safe and formal migration channels while ensuring remittance inflows are facilitated through secure and low-cost mechanisms to maximize their utility. Fifth, there is a need for periodic monitoring and evaluation frameworks in order to establish mechanisms to assess the impact of remittance flows on household welfare and regional development, inform policy adjustments, and ensure sustainable benefits. Sixth and final, implementing support systems for non-receiving households to bridge economic inequalities exacerbated by uneven remittance flows. By implementing these policy measures, the developmental impact of remittance can be optimized, ensuring sustainable economic growth and improved livelihoods for rural households in Tigray.

Ethical Review Approval

6 CONFLICT OF INTEREST STATEMENT

No conflict of interest was reported.

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