

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

By

Tilahun Tareke Weldu<sup>1</sup>; Kinfe Abraha Gebre-Egziabher (PhD)<sup>2</sup>; Alemseged Gerezgiher Hailu (PhD)<sup>3</sup>

### Abstract

*This study examines the determinants of remittance receipt and its utilization among rural agricultural households in Tigray, Ethiopia. Using a cross-sectional survey of 521 randomly selected households across six Tabias in three Weredas, the study employs logistic regression, Multivariate Linear Regression and descriptive statistics to analyze remittance status, determinants, patterns and usage. Findings reveal that 71.5% of households receive remittances. Key determinants include the number of dependents and household literacy status, while asset ownership shows no significant impact. The study aligns with the New Economics of Labor Migration (NELM) theory, suggesting migration as a risk diversification strategy. However, remittances are predominantly used for consumption, 69.8% of remittances spent on daily needs, only 4.6% for livestock; 10.3% for labor hiring, underscoring the need for policies to enhance their developmental impact such train households to invest remittances.*

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

1 PhD candidate, Institute of Population Studies, Mekelle University; Corresponding author: Email: tila-zye123@gmail.com

2 Institute of Population Studies, Mekelle University; Kinfe.Abrha@gmail.com

3 Institute of Population Studies, Mekelle University; alemseged.gerezgiher@mu.edu.et

## **1. Introduction**

Remittances are a vital income source for many households in developing countries. Globally, one in nine people receives remittances, which constitute about 60% of household income in some regions (United Nations, 2019). In Ethiopia, remittance inflows surged from USD 173 million in 2005 to USD 1.8 billion in 2014 but declined to USD 400–450 million annually between 2017 and 2021 (IOM, 2022). Despite their significance, research on remittances in rural Tigray remains limited. This study addresses this gap by analyzing remittance determinants and usage patterns, contributing to policy discussions on migration and development.

Theoretical perspectives such as NELM (Stark & Bloom, 1985) view remittances as part of household strategies to mitigate risks and overcome credit constraints. However, empirical evidence on their impact is mixed. While some studies highlight their role in capital accumulation (Taylor & Mora, 2006), others note their predominant use for consumption (Koc & Onan, 2004). 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 Kilde-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 of Remittances**

### **2.1 Theoretical Framework of the study**

The study integrates multiple migration theories:

**NELM Theory:** Posits migration as a collective household decision to diversify income and manage risks (Stark & Lucas, 1985). The NELM theory 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 and Gurmru 2012).

**Human Capital Theory:** Migrants invest in education and skills, influencing remittance behavior (Harris & Todaro, 1970).

**Altruism and Self-Interest Models:** 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 that Insurance Hypothesis indicates that migration hedges against risks like unemployment, agricultural failures, or food insecurity (Massey DS, Arango J, Hugo G, Kouaouci A, Pellegrino A,

Taylor JE, 1993). Stark & Lucas (1985) argue that remittances are contractual, based on tempered altruism or enlightened self-interest. Hence, remittances may reflect altruistic motives or contractual arrangements (Osili, 2007; Stark, 1995).

However, recent studies emphasize the interplay of these theories, suggesting remittance behavior is context-specific (Hagen-Zanker & Siegel, 2007).

## 2.2 Empirical Evidences

Empirical studies on remittance determinants, usage, and impact yield mixed results. Some highlight altruism as the primary motive (Osili, 2007), while others emphasize investment. Stark (1995) and Docquier & Rapaport (1998) suggest skilled migrants remit to support unskilled workers due to wage differentials. Stark & 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 (2013) identified household head's age, gender, and family structure as key determinants. Mannan & Farhana (2014) highlighted gender, labor force status, and migration destination. Piracha & Saraogi (2012) stressed the role of migrant and household characteristics, along with community variables.

Regarding remittance usage, empirical studies present varying findings. Adam 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, Turner, and Kates (1993) found limited agricultural investments from remittances. Bryan, Gharad, Shyamal Chowdhury, and A. Mushfiq Mobarak, (2014) and Lagakos, Marshall, Mobarak, Vernot, & Waugh (2020) observed declining welfare and investment among migrant-sending households. Lim & Simmons (2015) reported that remittances in certain regions primarily fund consumption rather than investment. In Turkey, Koc & Onan (2004) found that 80% of remittances were spent on daily expenses, with minimal investment. Clement (2011) noted similar patterns in Tajikistan, and Zhu, Wu, Peng, and Sheng (2014) observed that remittances in China were treated as permanent income and rarely invested. There are also, other studies confirm that remittances predominantly fund consumption. Mosisa (2012) 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 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. Methodology**

#### **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 Statistics Agency (CSA) 2018) Tigray covers a land area of 50,079 km<sup>2</sup>, with Mekelle as its capital city.

The projected population of Tigray was estimated to be 5,838,000 for the year 2023 (CSA, 2022). According to CSA (2022), Tigray's population living in rural areas is estimated to be 3,963,008 (67.8%) of the people, which is down from 80.5% in the 2007 census; which shows the rapid urbanization of the region. Tigray is one of the regions in Ethiopia highly affected by population movements. In addition, TBoLSA (2017), noted that Tigrians have traditionally migrated for work and in response to landlessness, food insecurity, and, or unemployment, within the region rural-to-urban, or to other regions and neighboring countries such as Sudan, Arab Emirates, Kuwait, Saudi Arabia, and other Middle East Asian countries. However, the most preferred destination for educated young people is the Western developed world (TBoLSA, 2017). Besides, according to the unpublished report of the Tigray Bureau of Youth Affairs (TBoYA) (2023) Tigray was in a doom time for two years of a destructive war and siege (November 2020 to November 2022). Thus, this situation is suspected of aggravating the attitude and tendency of migration including irregular and full of risk migration among Tigrayan youngsters. TBoYA (2023) added that there is no evidence whether the sending households in the region are benefited or lose from out-migration.

#### **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 the population projections for the year 2023, declared by CSA (2022), 943,573 households reside in rural Woredas of Tigray in the year 2023.

There were 60 rural Woredas in the Tigray Regional State. These Woredas 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 Kilde-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 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. Finally, sample units (respondents) were selected from both groups (control and treatment) 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. Additionally, key informant interviews, in-depth interviews, and focus group discussions (FGDs) were conducted to gain a better understanding of the drivers of rural out-migration.

### 3.3 The Econometric Model

Logistic regression (Logit model) has been used to identify status of remittance receiving, since the variables used for this objective analysis is binary, logit model is best fit. In addition, to analyze the determinant factors for remittance receiving of the origin households was used the Econometric Multiple Linear Regression (MLR) Model. The choice of MLR for this study is grounded in both theoretical and empirical considerations, aligning with the nature of the dependent variable and the research objectives. The points justify to use of MLR over alternative econometric models are, continuous dependent variable, multivariate analysis of determinants, theoretical linearity assumption, and model transparency and interpretability.

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.

$$R = Y_0 + Y_1 MN + Y_2 HHSZ + Y_3 MSh + Y_4 AGEH + Y_5 SEXH + Y_6 MRSTH + Y_7 NDPNT + Y_8 ASHLD + \epsilon R \dots \dots \dots (7.1)$$

Where R is remittance income received by migrant sending households (in ETB), MN, 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, and 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<sub>0</sub> is a constant; Y<sub>1</sub>, Y<sub>2</sub>, Y<sub>3</sub>,... Y<sub>8</sub> are coefficients.

Table 1: Variable Definition and Expected Effects

Variables		Description of variables	Measurement	Expected Effect
Dependent variable : Remittance Income (R)		The remittance received by the household from their migrant member(s) in Ethiopian Birr in a given time.	Continuous	
Independent variables	Abbreviations	Description of variables	Measurement	
Number of migrants	MN	Number of migrants including the head of HH, if migrant	Continuous	+
Household size	HHSZ	Number of household members	Continuous	±
Migration status of HH head	MSH	Migration status of the household head, (1= if migrant; 0= otherwise)	Dummy	±
Age of the household head	AGEH	Age of the household head in years	Continuous	±
Sex of the household head	SEXH	Dummy variable 0 if female,1 if male	Dummy	±
Marital status of the household head	MRSTH	Marital status of the household head. (Single, Married, Divorced, or widowed)	Categorical	±
Number independent 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	±

Source: - prepared by the researcher

#### 4. Results and Discussion

The survey data provides a comprehensive overview of remittance dynamics in the study area, covering aspects such as receiving status, amounts, usage patterns, and determinants. 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. By applying the NELM framework, we analyze the extent to which remittances supplement income, improve agricultural productivity, and influence household economic decisions.

##### 4.1 Descriptive Results and Discussions of the Study

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
How frequent did you receive remittance? (N= 242)	Not known (conditional)	27.6
	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: Own Survey March 2024

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% did not. Although this proportion is slightly lower than the previous study findings of Sithole and Dinbabo (2016), who reported a 75% remittance-receiving rate among Zimbabwean households, and Venditto (2018), who found a 98% rate in Namibia, it reinforces the view that migration serves as a strategic household decision to enhance economic security through remittance inflows.

Regarding the mode of receipt, 95.4% of respondents received remittances through formal banking channels, while 4.6% relied on 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 decisions are often made collectively within households to ensure income smoothing and financial support for those remaining behind.

The frequency of remittance transfers varied, with 33.1% receiving them annually, 28.1% receiving them 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 family support (73.6%), followed by loan repayment (6.2%) and housing 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: Amount of remittance received

	N	Min	Max	Mean	Std. Dev
How much money did you received per a year? (in ETB)	242	0	450000	21725.27	36324.970
Annual remittance (in ETB) from internal temporary migrants	242	0	50000	2049.62	5553.724
Annual remittance (in ETB) from internal permanent migrants	242	0	50000	3702.48	8611.143
Annual remittance (in ETB) from international temporary migrants	242	0	450000	11217.05	33913.565
Annual remittance (in ETB) from international permanent migrants	242	0	300000	5929.79	26454.823

Source: Own Survey March 2024

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. This aligns with Kinnan, Wang, and Wang (2018), who found that international migrants remit more due to greater income opportunities. However, as Taylor and Mora (2006) and Wouterse and Taylor (2008) suggest, remittances do not always fully compensate for the loss of household labor, emphasizing the trade-offs inherent in migration decisions under NELM.

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



		Have you ever got remittance from migrants?		Chi-square
		No	Yes	
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: Own Survey March 2024

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 wereda 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.

The qualitative data collected in the study areas also support to such understanding. According to the FGD participants and key informant Ato Mekonen Weldesimeon, the high rate in Tahtay Maichew suggests that many of the migrants from this wereda were permanent and international migrants who assumed responsibility for supporting their remaining family members by sending remittances.

Conversely, the lower rate of remittance reception in Kola Tembien was explained by FGD participants in Simret Tabia. According to them, most of the migrants from the wereda were temporary and migrated within the country. As a result, they preferred to bring back the money and materials they had accumulated rather than transferring or sending remittances.

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

Table 5: Comparison of remittance receiving and non-receiving households

	Does your household have any migrant member?	N	Mean	Mean Difference	Paired test
Household Age	Yes	173	60.11	3.240	T- (df= 240) = 1.708***
	No	69	56.87		
Family size	Yes	173	4.45	1.58	T- (df= 240) = -4.343***
	No	69	5.61		
Farm size	Yes	173	2.364	0.3062	T- (df= 240) = 1.797***
	No	69	2.056		
Distance to the nearest market	Yes	173	6.13	0.220	T- (df= 240) = 0.596
	No	69	5.91		
Number of migrants	Yes	173	1.41	0.179	T- (df= 240) = 0.1.772***
	No	69	1.23		
Number of economically active (productive) family members (15-64 years)	Yes	173	2.91	0.324	T- (df= 240) = -1.507
	No	69	3.23		
Number of dependents (0-14 and >64)	Yes	173	1.54	0.833	T- (df= 240) = -4.337***
	No	69	2.38		
Farm equipment value	Yes	173	3460.52	5601.98	T- (df= 240) = -1.894***
	No	69	9062.50		
Livestock value in TLU	Yes	173	4.20	0.355	T- (df= 240) = 0.962
	No	69	3.82		
Average annual income in Birr (2023/24)	Yes	173	63,426	29,153.64	T- (df= 240) = -2.006***
	No	69	92,579		

Source: Extracted from own survey data March 2024

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 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.

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 labour	10.3
	To purchase	2.5
	Other	30.6

Source: Own Survey March 2024

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 remittances for household consumption (69.8%) suggests that migration serves as a risk-coping mechanism, ensuring basic subsistence for families in the absence of sufficient local income. The significant 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.

Table 7: Agricultural expenditure

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Fertilizer	242	0	70000	1630000	6735.54	6058.181
Hybrid seeds	242	0	9000	123450	510.12	1125.188
Chemical	242	0	6500	172450	712.60	913.293
Land rent	242	0	35000	267500	1105.37	4982.777
Animal feed	242	.0	3000.0	3000.0	12.397	192.8473
Labor hiring	242	0	27000	167400	691.74	2633.367
Other farm input	242	0	20000	91500	378.10	2419.367

Source: Own Survey March 2024

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 a relatively high standard deviation, showing inconsistencies in input use, possibly due to different financial capabilities among 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: Share of Remittance in Agricultural Expenditure

	N	Mean	Std. Deviation
Agricultural expenditure	242	10,145.8678	12022.63872
Agricultural income	242	5225.62	10298.990
Remittance Income	242	4920.25	8446.851
Share of remittance	227	0.4420	.39406
Share of agricultural income	227	0.5580	.39406

Source: -Own Survey March 2024

This above 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 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; among 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 most 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 Fit

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	238.926a	.188	.269

Source: Own Survey March 2024

As can be observed in the 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, examining how certain variables influence a dependent variable, likely 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

Variables in the Equation	B	S.E.	Wald	Exp(B)	95% C.I. for EXP(B)		P-value
					Lower	Upper	
Number of migrants sent by the household	.473	.268	3.121	1.604	.950	2.710	0.043
Relatives in destination	-2.314	.575	16.183	.099	.032	.305	0.000
Marital status of the sending household	-.810	.403	4.043	.445	.202	.980	0.044
Household size	-.443	.095	21.819	.642	.533	.773	0.000
Constant	4.670	.888	27.683	106.735			0.000

Source: Own Survey March 2024

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 (statistically significant). This result 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 study conducted out of Ethiopia Lianos (1997), and Chami, et al., (2005) found that the number of migrants in the foreign country and the remittance income of the households in the origin is 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 (Aggarwal and Horowitz 2002) found that as the number of migrants in a family increases the remittances from a given migrant decrease.

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 (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 at 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 (Massey et al. 1993; Adams & Cuecuecha 2013) 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 as alternative and that reduces the need to migrate.

Marital status of the sending household: the logistic regression analysis result regarding to 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 (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 studies (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 (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 & 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		Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	-48070.995	53199.659		-.904	.386	-165162.656	69020.665		
House Hold Sex	-3079.781	29721.356	-.041	-.104	.919	-68496.044	62336.483	.079	12.734
House Hold Age	104.068	451.517	.044	.230	.822	-889.714	1097.850	.341	2.933
HH Marital status	15237.987	9034.101	.524	1.687	.120	-4645.936	35121.909	.126	7.953
HH Literacy status	28880.144	12821.690	.350	2.252	.046	659.794	57100.493	.502	1.991
Average landholding in Tsimdi	6674.178	5024.890	.261	1.328	.211	-4385.532	17733.887	.315	3.177
How many members of the HH have been migrated? (Includes 6 months and above)	8372.827	6351.714	.177	1.318	.214	-5607.200	22352.855	.672	1.489
Number of dependents in HH	23337.973	5404.644	.835	4.318	.001	11442.431	35233.515	.325	3.078
Estimated monetary value of asset	.017	.012	.252	1.467	.170	-.009	.044	.412	2.427

Source: Own Survey March 2024

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 & Pozo, 2006; De Haas 2010) 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 Taylor (1999) and Nepal (2013) 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 & Bloom (1985) found that migration is a household strategy to diversify income sources and reduce income volatility. On the contrary of this result, Adams & Cuenca (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.

## **Theoretical Debates on the Findings of the Study**

The findings resonate with the "new economics of labor migration" (Stark & Bloom, 1985), where remittances act as risk-sharing mechanisms. However, the low investment in productive assets challenges the "transformative potential" narrative (de Haas, 2010).

The dominance of formal channels supports financialization theories, where states and institutions shape remittance flows (Gupta, 2022).

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.

## **7.4. Conclusion and Policy Implications**

### **7.4.1 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, with predominantly fund 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 their economic benefits, reliance on remittances risks perpetuating economic dependency, hindering broader development objectives. While remittances alleviate immediate financial constraints, their inconsistent utilization for investment reflects a need for better strategies to financial independence, harness their full potential economic transformation of rural households.

In general, the survey reveals remittances as a vital but unevenly distributed resource, primarily used for consumption and agricultural inputs. While they enhance short-term welfare, their limited transformative impact calls for policies that channel remittances into productive investments.

### 7.4.2 Policy Implications

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 measure enables 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 strengthening. Such measure enables formal banking infrastructure and incentivize savings and investment products tailored for rural households to maximize the developmental impact of remittances. Third, agricultural support schemes should be encouraged. Such, 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 give 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 and final one is that there is a need of monitoring and evaluation frameworks; in order to establish mechanisms to assess the impact of remittance flows on household welfare and regional development periodically, informing policy adjustments and ensuring sustainable benefits. By implementing these mentioned policy measures, the developmental impact of remittances can be optimized, ensuring sustainable economic growth and improved livelihoods for rural households in Tigray.

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