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COMPARATIVE ANALYSIS OF THE IMPACT OF LABOR OUT MIGRATION AND REMITTANCES ON INCOME AND RICE PRODUCTIVITY IN THE PHILIPPINES, THAILAND AND VIETNAM

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Abstract

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Out migration from rural areas is increasingly becoming a strategy to get out of poverty. While rice–based agriculture remains to be the backbone in Southeast Asia, majority of the farming households particularly those who produce rice under rainfed conditions remain poor and insecure. This paper examines the relationship between migration and other socio-economic factors on household income using data from 1,874 rice sample farming households in Vietnam (north and south), Thailand (northeast) and Philippines (Luzon island). In the Philippines, remittances contribute about 60 per cent of household income of recipient families. In Thailand and Vietnam, these constitute about 40 per cent of total household income. International migration is most prevalent in the Philippines while rural to urban migration is more prevalent in Thailand and Vietnam due to rapid urbanization and industrialization as well as improved transport and communication networks. Migration has a positive and significant relationship on household income. Remittances both from internal and international migration are predominantly used to meet daily expenses including food, farm (inputs and payment of hired laborers) and children's education. Given the stability and reliability of the flow or remittances, they play a significant role in consumption smoothing for the poor. Remittances partake the nature of insurance for use at times of need and ease credit constraints for investments in agriculture. Those who are left behind, the elderly and the women, manage to maintain rice yields at par with those households without migrants.

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Comparative Analysis of the Impact of Labor Out Migration and Remittances on Livelihood, Income and Rice Productivity in the Philippines, Thailand and Vietnam

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1. Introduction

Migration is both a cause and a consequence of some major social and economic transformation, particularly in agriculture-based economies in developing countries. It is a dynamic process and encompasses various forms of temporal and geographical mobility (Afsar 2000). Some economic trends and changes in both the international and national arena further stimulate migration and affect the lives of the people engaged in agriculture. Trade liberalization and globalization may provide more rewarding employment opportunities abroad or in cities for rural workers. On the other hand, trade liberalization may lead to an inability of inefficient small farmers to compete with large farmers and the private sector. This compels members of farm households who normally work on the farm to seek off-farm work on either a part-time or semi-permanent basis, thus reducing the participation of family labor on the farm. Migration is a safety net against income shortfall due to crop failure or low productivity created by drought or floods. Aside from deteriorating employment opportunities at home and better prospects in urban areas, the increased mobility of the population from the rural areas is due to improved communication and road networks (Deshingkar and Anderson 2004).

Little is known, however, about the effects of labor out migration and remittances on income and rice productivity. Keeping this view in mind, this study attempts to shed light on the questions: What is the incidence of labor out migration from major rice producing villages? What is the impact of out migration and remittances on the income of rice farming households and rice productivity?

2. Methodology

This study was conducted in 2005 in selected villages in Northeast Thailand, North and South Vietnam and Luzon, Philippines where rice is the staple food and the main crop grown during the wet season. Data collection was done in two phases. In Phase 1, the research teams conducted Rapid Rural Appraisals (RRAs) and focus group discussions with key informants to establish the incidence, patterns, and farmers' perceptions on the consequences of labor out migration. Based on the gathered information, the team

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selected villages in the rainfed and partially irrigated villages with high occurrence of out migration. Farming households with and without migrants were interviewed using a standard structured questionnaire. In this paper, we pooled the data from these three countries. A migrant is identified as any family member who left the household to work in another geographical area; such a move can last for a short time (more than three months during the year) and long-term (one year or more but not permanent). Daily or weekly commuting, though of increasing importance, was not included in the household surveys.

Data was analysed using various descriptive statistics. Tests for difference of means (t-tests) were used to test differences between migrant and non-migrant households. To assess the impact of migration and other socio-economic factors on household income, Ordinary Least Square (OLS) regression analysis was used, defined as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_n X_n$$

where Y = is the total household income (US$)

It was hypothesised that migration and other socio-economic factors influence household income and help in poverty alleviation. These variables are: X_1 – dummy variable for country 1 (1-Thailand, 0-otherwise), X_2 – dummy variable for country 2 (Vietnam-otherwise), X_3 – household classification (1-migrant, 0-no migrant), X_4 - type of household (1 – absolute, 0 – extended); X_5 – age of principal male/husband; X_6 – age of principal female/wife; X7 – educational attainment of principal male/husband; X_8 – education of principal female/wife; X_9 – interaction of age and education of principal male; X_{10} – interaction of age and education of principal female; X_{11} – dependency ratio; X_{12} – number of working members; X_{13} – total size of landholdings (ha); X_{14} – number of farm machinery; X_{15} – ownership of large livestock (1-yes, 0-no); X_{16} – ownership of small animals (1-yes,0-no); X_{17} – rice area (hectares); and X_{18} – rice cropping intensity (index).

3. Findings

3.1 Incidence of labor out migration

Why do people from rural areas migrate? There are many “push” and “pull” factors which lead people to leave their villages and work in other places. The “push” factors are low profitability of rice production due to high costs of inputs, small size of landholdings, unemployment, and poor infrastructure. Pull factors are social networks, better employment and better income opportunities. As shown in Table 1, the incidence of out migration is higher in the rainfed than in the irrigated rice environments. Across countries, out migration is highest in Thailand (more than 50 per cent) and about a quarter in Vietnam and the Philippines. In every farming household from the rainfed villages, there is a least one member who migrated with over 63 per cent in Thailand, against 24 per cent in Philippines and 26 per cent in Vietnam. In Thailand and Vietnam, out migration from the rural to urban areas can also be attributed to the rapid industrialization, improved road and transport facilities as well as communication networks. In the Philippines, the demand and higher remuneration for overseas contract workers as well as social networks increased out migration from rural areas.

Table 1. Incidence of migration among rice farming households

Country	Sample villages (Number)	Rainfed (Percent)	Irrigated (Percent)
Thailand	48	63	54
Vietnam	46	24	20
Philippines	42	26	22

Source: Village surveys conducted by the authors

3.2 Characteristics of sample households

Households with migrants have higher incomes than those without migrants. The average annual income of farming households is higher in the Philippines than in Thailand and Vietnam. Principal males and principal females are older (over 50 years old) among households with migrants than those without migrants. There are more working members among households with migrants. Rice cropping intensity index is highest in Vietnam due to availability of irrigation and lower in the Philippines where more farmers grow rice under rainfed conditions. However, landholdings are larger in Thailand (about 3 ha) than in Philippines (less than 1.5 ha). The size of landholdings per household is smallest in Vietnam (less than 1 ha) (Table 2).

Table 2. Characteristics of the family members from sample farming households

	Household classification		
	With migrant	No migrant	t – Value
Thailand			
Income in US dollar	2540.86	1842.15	-4.41***
Age of principal male	55.31	51.69	-3.84**
Age of principal female	51.69	48.26	-3.64**
Dependency ratio	0.34	0.52	4.77***
No. of working members	4.59	3.24	-12.20***
Total size of landholdings (ha)	2.81	2.82	0.03
No. of farm machinery	1.13	1.25	1.37
Rice area (ha)	1.64	1.70	0.68
Rice cropping intensity (index)	117.70	123.67	1.84*
Vietnam			
Income in US dollar	1399.92	1295.45	-1.44
Age of principal male	47.05	46.48	-0.68
Age of principal female	44.66	44.24	-0.52
Dependency ratio	0.39	0.54	3.74**
No. of working members	3.78	3.02	-6.79***
Total size of landholdings (ha)	0.56	0.59	0.77
No. of farm machinery	0.49	0.42	-1.41
Rice area (ha)	0.45	0.49	1.40
Rice cropping intensity (index)	191.43	216.60	4.38***

Philippines			
Income in US dollar	2856.63	1512.08	-9.72***
Age of principal male	56.72	53.60	-3.51**
Age of principal female	53.97	50.22	-4.36***
Dependency ratio	0.40	0.64	4.99**
No. of working members	3.45	2.01	-15.37**
Total size of landholdings (ha)	1.32	1.35	0.34
No. of farm machinery	0.80	0.73	-0.87
Rice area (ha)	1.25	1.31	0.87
Rice cropping intensity (index)	154.58	149.88	-1.22

*** - *Significant at 1%;* ** - *Significant at 5%;* * - *Significant at 10%*

3.3 Patterns of migration

In Thailand and the Philippines, a higher proportion of sons and daughters migrated compared to principal males or heads of households. In contrast, principal males or heads of households migrated in Vietnam, particularly in North Vietnam. In northeast Thailand, the higher proportion of migrants were sons (40% in rainfed areas and 41% in irrigated areas) followed by daughters (39% in rainfed areas and 32% in irrigated areas). In South Vietnam, a higher proportion of the migrants from the rainfed villages were sons and daughters, while principal males and sons migrated from the irrigated villages. In contrast, a higher proportion of the migrants migrated on a short-term basis whereas those from the North worked outside their villages for longer periods. In Thailand, a higher proportion of the migrants were engaged in rural to urban migration than rural-to-rural and rural-to-overseas. In the Philippines, majority of the migrants work overseas. In Vietnam, rural-to-urban migration is higher in rainfed villages while the pattern of migration in the irrigated villages are both rural-to-rural and rural-to-urban. Rural-to-urban migration is more prevalent due to rapid industrialization in Thailand and Vietnam.

3.4 Sources of livelihoods

Every year, rice farmers who grow rice under rainfed conditions are faced with uncertainty and taking risks. Rainfall distribution is highly variable and unpredictable. Drought occurs during the vegetative phase of rice growth which causes losses or low yields. This situation is exacerbated by the predominance of marginal and small size of landholdings and abject poverty. Thus farming households derive their livelihood from diverse sources of farm income (rice, non-rice, livestock, rental fees from land, animals, machine), off- farm activities (income from wage labor in other farms) and non-farm activities (employment activities within and outside their villages without change in residence). Most often in income analysis, remittances are aggregated under non-farm income. However, since this research focuses on income from out migration, remittances were separated from non-farm income. Off-farm income refers to the income obtained by male or female household members from wages paid in cash or wages in kind by working as hired laborers in different farm operations in other farms. Non-farm income refers to income received by family members by working within and outside the villages without a change in residence. Earnings from retirement pensions,

buy and sell small business and services and other earnings from household members who commute daily for non-farm jobs are classified under non-farm income.

Table 3 shows the share of the different sources of livelihood and average household income. Households with migrants have higher average annual incomes than those without migrants in Thailand and Philippines, except for Vietnam where incomes are almost the same. Remittances from migrants comprise a significant share of the total household income in the three countries. The share of remittance income is highest in the Philippines (59 per cent) mainly due to international migration. In Thailand and Vietnam, remittances are 38 per cent and 36 per cent, respectively where rural to urban migration is more prevalent brought about by rapid industrialization and transportation facilities. Remittance earnings compensate for lower income from rice in the Philippines and Thailand. Rice production provides the highest share of the total household income in Vietnam due to high rice cropping intensity brought about by irrigated facilities. For non-migrants, income from rice and non-rice crop and non-farm activities are the major sources of income. The share of income from other crops is highest in Thailand but negligible in Vietnam and the Philippines. Livestock is an important source of income particularly for households without migrants in Vietnam. These findings indicate that remittances play a significant role in poverty alleviation in rice producing households.

Table 3. Share of different sources of income (%) and household income per year

Source of income	Thailand		Vietnam		Philippines	
	With migrant (n=268)	Without migrant (n=295)	With migrant (n=304)	Without migrant (n=346)	With migrant (n=321)	Without migrant (n=349)
Source of household income (%)						
Remittances from migration	38		36		59	
Off-farm	4	8	2	4	2	2
Non-farm	21	45	10	25	20	57
Capital gains from land and non-land assets	1	1	A	A		A
Sale from livestock	8	6	13	21	2	5
Cash income from rice	12	19	37	49	17	36
Cash income from other crops	16	21	2	1	A	
Total	100	100	100	100	100	100
Annual household income (USD)	2,541	1,842	1,411	1,306	2,857	1,512

A : Less than 1%

3.5 Use of remittances

In northeast Thailand, remittances were mainly used for food and daily expenditures, farm inputs and debt repayments. On the other hand, in the Philippines, families left behind spent the remittances on food and daily expenditures, children's education and farm inputs. For migrant parents, providing an education for the children they leave behind in the Philippines is a priority, while ageing parents' health care needs are of particular concern for migrant children who send remittances, since public health in the

Philippines particularly in the rural areas, is considered to be quite poor. Even unmarried daughters send remittances for the education of the children of their close relatives. A study on Filipino migrants in Italy revealed that it is the investment of remittances in agricultural production that has offered greater food security for remittance-receiving households (INSTRAW 2008). This is due in part to the fact that remittances allow farmers to purchase the necessary inputs (fertilizers, pesticides), pay for irrigation expenses, pay for hired/ contractual laborers or purchase livestock. This permits farmers to stock the rice requirements for a year particularly those rainfed farmers who harvest only once in a year (INSTRAW 2008). In Vietnam, families in the South spent their remittances on food and farm inputs while those from the North kept the remittances as savings for future investments and less on food expenses. In general once the basic needs of the households with migrants are met, construction or renovation of a house is generally a common investment as well as purchase of consumer durable goods.

Hence, remittances help increase the purchasing power for food and daily expenditures and farm inputs as well as for hiring farm labor in poor rice farming families.

3.6 Impact of migration on household income

To assess the impact of migration and other socio-economic factors on household income we used the Ordinary Least Square (OLS) regression analysis.

Table 4 presents the empirical results of the OLS. The coefficient for migration is positive indicating that household income increases due to migration via remittances. This finding confirms our hypothesis that migration is a livelihood strategy to avoid further income erosion. The coefficient of the country (northeast Thailand) which is predominantly rainfed is positive indicating that without migration the rice farming households could have been worse off. Thus migration in the northeast Thailand helps in reducing poverty. In contrast, the coefficient of the country Vietnam is negative. In Vietnam, the remittances were not high enough to raise household incomes due to the nature and amount of remittances. In Vietnam, salaries and wages are quite low compared with other countries. Moreover, migration overseas is almost nil in Vietnam compared with Thailand and Philippines. The dummy variable for extended household is negative indicating that extended households have higher incomes. The coefficient of the variable on the interaction of age and education of principal female is positive indicating that educating women plays an important role in increasing household incomes. Education of girls is a key for economic prosperity.

In terms of household size, results show that the more working members there are in a household, the higher the income of a household. Ownership of small livestock including poultry increases household income. Fattening of piglets and raising backyard poultry are important sources of income of women in Vietnam and Philippines. Farm households with large size of landholding, rice area and higher rice cropping intensity tend to have higher incomes due to higher production and marketable surplus. All of these coefficients are statistically significant at different levels. But the R^2 value of the model is 0.259 indicating that 25.9 per cent of the variation in household income can be explained by the variables included in the model. The F-value is highly significant at

1% level which shows that the model used is quite appropriate for the analysis undertaken.

Table 4. Impact of migration and other socio-economic factors on household income

	Unstandardized Coefficients		Standardized Coefficients	t – Value
	B	Std. Error	Beta	
Constant	-203.87	290.40		-0.702
Country variables				
(X_1) Dummy variable 1 (1 – Thailand, 0 – Otherwise)	314.31	183.12	0.087	1.716*
(X_2) Dummy variable 2 (1 – Vietnam, 0 – Otherwise)	-452.63	118.29	-0.129	-3.826**
Socio-demographic variables				
(X_3) Household classification (1 – With migrant, 0 – No migrant)	560.73	73.89	0.168	7.588***
(X_4) Type of household (1 – Absolute nuclear, 0 – Extended)	-153.99	77.79	-0.045	-1.980*
(X_5) Age of male head	-4.38	8.56	-0.031	-0.511
(X_6) Age of female head	-8.07	8.51	-0.056	-0.948
(X_7) Educational attainment of principal male [a]	89.24	109.01	0.038	0.819
(X_8) Educational attainment of principal female [a]	28.64	100.01	0.012	0.286
(X_9) Age x education of principal male	0.77	0.56	0.095	1.379
($_{X10}$) Age x education of female	1.08	0.53	0.126	2.024*
(X_{11}) Dependency ratio	-101.97	66.52	-0.034	-1.533
(X_{12}) Number of working members	161.07	29.74	0.147	5.416***
(X_{13}) Total size of landholdings (hectares)	252.05	34.29	0.242	7.350***
Farm variables				
(X_{14}) Number of farm machinery	45.86	39.53	0.027	1.160
(X_{15}) Ownership of large livestock (1 – Yes, 0 – No)	-71.13	71.53	-0.020	-0.994
(X_{16}) Ownership of small livestock (1 – Yes, 0 – No)	240.90	78.87	0.069	3.054**
(X_{17}) Rice area	235.15	55.87	0.136	4.209***
(X_{18}) Rice cropping intensity	4.53	0.61	0.181	7.409***

Educational attainment of husband/wife: 1 – Primary, 2 – Secondary, 3 – Bachelor, 4 – post graduate
*Dependent Variable: Total annual income in US dollar; R^2 = 25.9%; F-value = 36.1****
** - significant at 10%; ** - significant at 5%; *** - significant at 1%*
Note on 2005 exchange rate: $1 = Baht 40.74657; $1 = Dong 15,851.76; $1 = .Php 55.0984

3.7 Impact of migration on rice productivity

Rice productivity is influenced by many factors, such as varieties used and crop and resource management practices. Crop and resource management practices depend on the appropriate amount and timing of application of inputs. These depend on the availability of cash to purchase inputs and hire additional farm labor to complete the labor requirements on time. A comparison was made between households with (duration of migration or place of destination) and without migrants in terms of rice productivity by rice cropping season. Results revealed that there are no significant differences in average rice yields by migration status and crop season except for the dry season crop in Vietnam. These findings indicate that despite reduction in the supply of family labor, the rest of the family members left behind tried to maintain rice yields at par with those of households wherein the principal males and other family member are present.

Remittances help in easing credit constraints, timely use of farm inputs and hiring of laborers when remittances come on time during the peak cropping season. These findings are similar to the study of Mochebele (2000) which concluded that the farms supplying migrant laborers attempt to use purchased inputs to compensate for reduced household labor and that yields and output levels do not differ appreciably across the two groups.

Table 5. Yield by season, by household classification and by country (tons/ha)

	With migrant	Without migrant	t-test
Wet season			
Thailand	(n=268)	(n=295)	
	2.41	2.51	-1.29
Vietnam	(n=304)	(n=346)	
	4.34	4.22	1.34
Philippines	(n=321)	(n=349)	
	3.85	3.76	0.92
Dry season			
Thailand	(n=58)	(n=80)	
	3.44	3.36	0.36
Vietnam	(n=214)	(n=267)	
	5.40	5.10	3.10***
Philippines	(n=179)	(n=183)	
	4.12	4.00	0.75

*** - *Significant at 1%*

4. Conclusions and implications

These findings established that male labor out migration is higher in Northeast Thailand than in the Philippines and Vietnam. Out migration of men particularly the young able-bodied men will continue to increase as long as there are economic incentives to move and while farm income is insufficient for the family. The share of remittance income is substantial at more than half of the total household income in the Philippines. To get out of poverty, male family members have to leave their villages after land preparation to seek non-farm employment on a short-term or long-term basis. A comparison was made between households with and without migrants in terms of rice productivity by rice cropping season. Results revealed that except during the dry season rice crop in Vietnam, there are no significant differences in rice yields among households with and without migrants. These results revealed that despite reduction in family labor supply, other family members left behind, the elderly and the women maintained rice yields on a par with those of households without migrants.

Although remittances appear to have an overall impact on household income, on the food security and family welfare (education, health) of migrants' households, there are

negative social consequences among the households and the society which need to be examined. Farming households are dependent on remittances to meet their daily food needs and expenditures and invest on farm inputs and children's education. Moreover, the increasing migration of the younger generation leaving the elderly parents behind will have implications on the future of agriculture and rice farming in particular. The resulting labor shortage can cause quality farm lands to be idle and converted to non-agriculture thus causing a threat to household and national food (rice security). Moreover, male labor out migration is now increasing the managerial roles of principal females in Vietnam and Thailand which has implications on technology design, validation and dissemination strategies.

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