THE IMPACT OF MIGRATION ON POVERTY AND INEQUALITY IN MYANMAR

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Abstract - Using a household survey, MPLCS (2015), this paper attempts to compare the poverty rates and inequality levels in 2015 with counterfactual ones in the absence of migration and remittances. In order to impute a counterfactual per capita expenditure for households currently receiving remittances, this paper follows Heckman's two step model with non-selection equation. The findings show that migration with remittances decrease the poverty reduction effect by 11 percent and inequality effect by 25 percent point. These effects vary among agro-ecological zones and rural and urban. Households in Coastal Zone are more dependent on remittances from migrants.

Keywords - Poverty, Inequality, Migration, Remittances

I. INTRODUCTION

Recently migration has played an important role in world economy. As migration is considered as development process, poverty and migration have always been interrelated. This paper focuses on internal migration because mostly poor households tend to engage in this form of migration. In Myanmar, 9 million of people, equivalent to almost 20 per cent of total population were counted as internal migrants (2014 census report). The factors that drive internal migration are the large rural-urban and inter-regional disparities, rising labor demand in expanding industrial and services sectors, land scarcity and few off-farm opportunities in many rural areas (Hicks, 1932; Lewis, 1954; and Harris and Todaro, 1970; de brauw et al., 2002; Seeborg et al., 2000; Wang & Cai, 2007; Zhao, 2005; Zhu & Luo, 2008). Taylor et al. (2005) pointed the fact to be noticed that most of rural areas in the world are origin of the world's migrations and are also the places where most of the world's poverty is concentrated. Most of the studies on the impact of migration state that the impact is consistent with reducing in poverty but the impacts are different from different characteristics of recipient ones. And literature on both internal and international migration has stressed on the selectivity of migrants. The absence of randomized selection and the presence of endogeneity of migration, in the household welfare model, can produce biased estimates. Knowing the possibility that migration of past household members could be an integral part of a household's livelihood strategy, this paper attempts to model the impact of migration on household welfare, aiming at investigating the impact of internal migration on the welfare of left-behind households with an emphasis on remittances. Therefore, this paper tries to answer followings questions:

- Can migration affect wellbeing of left-behind households? If yes, is it positive or negative effect?
- Can migration reduce poverty and inequality?
- Does migration have the same impact on households among different agro-ecological zone, rural and urban and poor and non-poor households?

The rest of the chapter has five more sections. Section 2 reviews relevant literature. Methodological issues, data and empirical strategy are discussed in section 3. Estimated results are discussed in section 5. Finally this chapter is concluded in section 6.

II. LITERATURE REVIEWS

Since 1960 the research on migration has been relatively large with the works of Sjasstad (1962), Todara (1969) and Harris and Todaro (1970). According to the most remarkable one, the Todaro model, migration takes place because of existing expected earning disparity between source and destination. Operating as a cost-benefit process, this model focuses on the welfare of individual migrants who decides to migrate only for their benefits. However, this conceptualization was criticized by the authors who state that migration can be explained as a collective decision of the whole household in order to reduce risks for facing uncertainty and market failures existing especially in developing countries (Stark and Bloon, 1985; Stark, 1991). Later on, new economics of labor migration efforts to restructure the Todaro models into a form of collective household decision making.

Most studies on impacts of migration on poverty have reached a consensus, indicating that both international and internal migrations reduce poverty (Adams 2006; Adams and Cuecuecha 2010; Adams and Page 2005; Taylor, Adams and Mora 2009) and contribute to a development process by decreasing the production and investment constraints in the economy (Goldring 1990; Rozelle, Taylor and DeBrauw 1999; Stark 1991; Stark and Lucas 1988;

Stark, Taylor and Yitzhaki 1988; Taylor 1999; Taylor et al. 1996). But depending on the initial level of sources of migrants, these impacts may increase or decrease income inequality and there seems to be no strong consensus on both the direction and extent of the redistributive impact of migration related remittances (Lopez- Feldman et al. 2007; Taylor 2007; Adams 1989 &1996). Some views of migration-poverty interactions could be collected from the existing literature. Most of the existing studies are based on rural and village-level data. At the cross-national level, the finding of Adams and Page (2003) suggests that 10 percent increase in per capita remittances would lead to a 3.5 decline in the share of people living in poverty. Similarly, World Economic Outlook (2005) shows that a 2.5% point increase in the remittances to GDP ratio would lead to a 0.5% point decline in poverty. Using a large cross-country panel dataset, Acosta et al. (2008) have shown that with initial country conditions, remittances in Latin American and Caribbean (LAC) countries generally lower poverty, but the elasticity of poverty reduction with respect to remittances differs significantly by country.

In the study of rural Egypt, applying counterfactual income scenario, Adams (1989) shows that although effect of international remittances is small, this is favorable effect on poverty and an increase in remittances lead to a decline in income inequality in rural Egypt. In the case of Guatemala, comparing the poverty headcount, poverty gap and squared poverty gap of household that received remittances from international and/or internal migrants, with those of households that did not received remittances, Adams (2004) also found that both internal and international remittances reduced poverty. In a study of 2400 municipalities, applying proportion of household receiving remittances and poverty headcount measure, Lopez Cordova (2004) found that a higher prevalence of remittances was associated with lower poverty in 2000.

To my knowledge, there is no study that has explored the impacts of remittances from migration on poverty in Myanmar. This gap is often produced by the lack of comprehensive and nationally representative data on migration and remittances. This chapter attempts to find enough evidence to interpret any causal impact of migration related remittances on poverty.

III. METHODOLOGY

Although the concept that the impact of migration is consistent with reducing in poverty seems to be a conventional fact, an important issue still needs careful methodological attention in attempting to measure the extent of such impact. Generally, assessing such impact requires at least two different states for observed households. Therefore, in order to analyze the impacts of migration, longitudinal data are required to obtain consistent results. However, the availability of panel data is limited in developing countries so that the consistent estimates of such impacts in developing countries cannot be achievable. Subsequently, in order to solve the problem of scare panel data, counterfactual analysis is applied to evaluate the migration impacts by estimating the potential outcomes for household without migrants by using cross section data (Adams, 1989; Ravallion, 2005). Therefore, applying cross sectional data, this paper estimates counterfactual outcomes that would be obtained from decision of household that does not participate in migration.

3.1 Parametric Counterfactual Analysis

If the migrant had positive earnings before leaving his/her household, income of remittance-notreceiving households is likely to be lower after migration take places. Then income reported by household with migrants, but not received remittances, is not a good figure to be representative of the situation of household before having migrants. Therefore, estimating the effect of migration related to remittances on welfare and inequality would necessitate consideration of counterfactual income that the household would have had if the household had decided not to send migrants. To solve this problem, this paper impute per capita household income for remittances received migrant household in the counterfactual scenario of not receiving remittances and not having migrants. If the characteristics of households with migrant and without migrants are identical or if it is randomized selection within the population, coefficients obtained for households without migrants can transpose onto households with migrants. In order to avoid the lessening in changeability of income for migrant families when predicted values are applied, Barham and Boucher (1998) add a simulated error component to the predicted values of income.

In the absence of migrants' characteristics, it is required making assumptions about the number and the demographics of migrants. The new economics of labor migration suggests that decisions to migrate depend on not only characteristics of individual migrants but also household's characteristics (Starkand Bloom, 1985: Stark, 1988). Based on the decision of household and individual migrants, some households participate in migration while others do not. In this case, the use of ordinary least squares (OLS) with the sample of households without migrants overlooks the bias from the endogenous selection of household to be having migrants and provides overestimates for the impact of migrant remittances. To control for possibility of having migrants, a variable that represents the "propensity to migrate" is added in the context of the two-step estimation framework proposed by Heckman (1979).

3.2 Econometric Framework

In this paper migration is treated as indicator variable of binary type. Such binary treatment effect can be estimated using social experiments, regression models, matching estimators and instrumental variables (Imbens & Wooldridge, 2009). Each of these methods has pros and cons depending on the type of data available. Under the parametric estimation, firstly this paper imputes per capita household expenditure for remittances received migrant household in the counterfactual scenario of not receiving remittances and not having migrants. The estimated model is the following semilogarithmic household per capita expenditure equation:

$$logY_i = \alpha + \beta X_i + \gamma H_i + \mu_i \qquad (1)$$

where Y_i is the per capita household expenditure. The vector X_i contains all variables of household characteristics including demographic and location covariates that predict household welfare. And vector H_i is a set of characteristics of the household head and $\mu_i$is unobserved heterogeneity in expenditure pattern. Only the sub-sample of households that do not have migrants and receive remittances is consisted in estimating equation (1). And resulted estimated coefficients let to predict the counterfactual non-migration income for remittances-recipient households. Following Heckman, this paper constructs Heckman's selection equation using a probit specification.

$$M_i^* = \alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i + v_i \qquad (2)$$

$$M_i = \begin{cases} 1, & if\ M_i^* > 0 \\ 0, & otherwise \end{cases} \qquad (3)$$

$$logY_i = \alpha_2 + \beta_2 X_i + \gamma_2 H_i + \beta_\lambda \lambda_i + \varepsilon_i \qquad (4)$$

where M_i^* is a latent variable and a linear outcome of the covariates Z_i and a residual term v_i. Although the covariates Z_i may overlap with H_i, it is assumed that at least one element of Z_i is a unique and significant determinant of M_i but this element need to be independent from expenditure of household with no migrants. In practice, it is difficult to obtain the variables that are exogenous in migration and expenditure equations (Adams and Cuecuecha, 2010).

Realizing that social networks are an important force to make decision for sending migrants, this paper chooses the proportion of household with migrants in a specific geographic location as a proxy for social networks to determine M_i with no correlation to household expenditure. This implies that the higher the proportion of household with migrants, the greater will be the probability of sending migrants since better social networks provide information about job opportunities and secure employment with the lower costs of migration especially for rural people. In equation (2), only the sign of M_i^* can be observed, that is, M_i^* is equivalent to a negative or a positive value. According to sign of M_i^*, binary choice for household, that is whether receiving or not receiving remittances, can be observed as in equation (3). It means that positive value of M_i^* indicates the household that does have migrants and negative value of M_i^*, otherwise. And then, as a second step equation (4) is an expenditure equation for non-recipient households.

The Heckman selection model provides consistent, asymptotically efficient estimates for all parameters. In the first stage, probit estimates of selection equation are obtained to account for differences between the two sub-samples for household with remittances sending migrant and without migrant (not receiving remittances). Basically, the idea of this estimator to evaluate the impact of indicator for being a household with and without migrant is to control directly for the correlation of indicator dummy variable with the unobservable error term in the outcome equation. Heckman's (1979) model, this is referred as the inverse of the Mills' ratio. Using Heckman's (1979) procedure, probit estimates are obtained from following the selection equation.

$$\Pr(y_i\ obsd\ |z_i) = \Phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)$$

From these estimates, Heckman's inverse of the Mills' ratio, λ_i for each observation *i* is computed as:

$$\lambda_i = \frac{\varphi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)}{1 - \Phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)} \qquad (5)$$

$$\beta_\lambda \lambda_i = E\left(\frac{v_i}{u_i} > -\beta_1 X_i - \gamma_1 H_i - \omega Z_i\right) \qquad (6)$$

where φ is the normal density, Φ is normal distribution and $\beta_\lambda = \rho\sigma_v$ and the impact of being household with remittances sending migrants can be constructed easily. If λ_i can be controlled, the remaining unexplained component $\varepsilon_i$will be the usual desirable i.i.d. properties. If λ_i is a significant predictor of earnings, it means that the selection into the non-migration status is indeed correlated with factors that affect the household earnings, implying that OLS estimates of equation (3) would be inconsistent. Since, the purpose of this paper is to analyze an underlying regression model or to predict the per capita expenditure household that would be observed in the absence of selection, it is appropriate to apply the Heckman's two-step procedure.

3.3 Data

The empirical analysis in this paper uses data from the Myanmar Poverty and Living Conditions Survey (MPLCS), conducted by the World Bank and Myanmar's Ministry of National Planning and Economic Development in the year 2015. The MPLCS data set provides demographic composition of household members and socioeconomic characteristics containing information that is applicable to the purposes of this study. Regarding he information about migration and remittances, the MPLCS asks the questions "Are there any individuals who were part of the household during the last 10 years, but currently live abroad or elsewhere in Myanmar and are no longer part of this household?" and "Has anyone in the household has received

remittances from anyone outside of the household (either abroad or elsewhere in Myanmar) during the last 12 months?" According to the former question, household with migrant can be observed directly and the later one specified this household with migrants whether receives remittances or not. The important fact to be noted is that some household may face the case in which they may have family members living elsewhere as migrants but they do not receive remittances. Applying the information from these two questions, this paper classifies households with at least one migrant (MIG); households with at least one migrants and receiving remittances (MIGREM), households with at least one internal migrant (MIGMM) and households with at least one international migrant (MIGFG) in all agro-ecological zones. In all zones, migration can be studied significantly, as more than one third of households in each zone have at least one migrant (Figure 2.1).

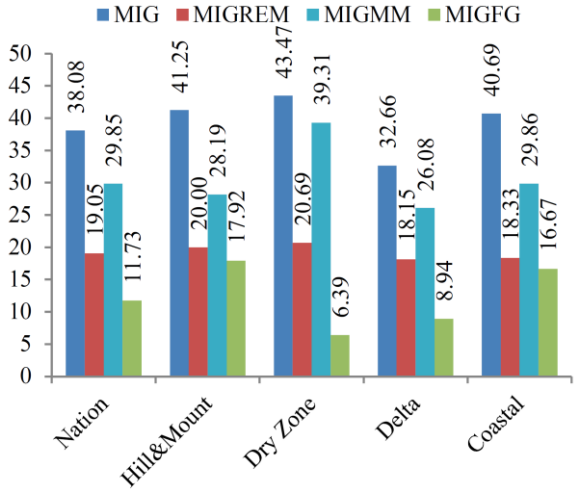


Figure 3.1. Share of Households
Source: Author's calculation using MPLCS

IV. RESULTS AND DISCUSSION

Firstly, this paper searches per capita household expenditures for remittances received migrant households in the counterfactual scenario of the case in which household does not have migrants. Following the Heckman's two-step procedure, the results of the estimation are reported in Table 4.1. Inverse mills ratio (lambda), the variable associated with the propensity not to be having remittances from migrant is positive and statistically significant at 1% level and it can be suggested that the error component in non-selection equation and the error component in expenditure equation are positively correlated. It means that households with a higher probability of not having migrant are more likely to have higher per capita income levels. Thus, OLS estimation would provide upward biased parameter estimates. It means that unobserved factors that make remittances from migrants are more likely to be associated with higher per capita expenditure. The obtained estimates form the log per capita expenditure equations can be used to interpret exactly as the observed data for all households in the sample. All estimated coefficients represent the marginal effects of the regressors in the log per capita expenditure equation. Particularly the number of persons at all age in the household reduces the log per capita expenditure while number of persons working and persons with higher educational attainment raises log per capita expenditure. And the number of persons with temporary job status reduces the capability of spending. If a household owns house or non-farm enterprises, household can spend more. The marginal impact is far weak for expenditure of households in farm enterprises reflecting that non-farm enterprise owners in Myanmar are more profitable than farm enterprise owners. Rural household can spend lesser than urban one. In terms of agro-ecological zones, household in coastal-zone spend less compared to households in other zones. Economic activities are not favorable for those who live in Coastal Zone. Although the marginal impact is far weaker for density of building and road length, nighttime light index warns to explore whether urbanization can reduce welfare of people or not.

Variable	(1)Exp		(2)No-Rem	
hd_age	-0.013	(0.010)	-0.099***	(0.014)
hd_age2	0.000	(0.000)	0.001***	(0.000)
hd_male	0.037	(0.055	0.176***	(0.061)
Max_edu	0.013***	(0.004)	-0.002	(0.005)
u15	-0.130***	(0.017)	-0.029	(0.021)
o65	-0.125**	(0.055)	-0.011	(0.062)
age15_65	-0.143***	(0.021)	0.069***	(0.027)
tpr_educ	0.074***	(0.019)	-0.021	(0.024)
tsec_educ	0.106***	(0.032)	0.066	(0.042)
hhm_work	0.089***	(0.027)	0.071**	(0.035)
temp_job	-0.092**	(0.044)	-0.019	(0.058)
nfarmown	0.081***	(0.027)	0.003	(0.037)
farmown	-0.007	(0.028)	0.033	(0.038)
ownhouse	0.161**	(0.063)	-0.155**	(0.090)
rural	-0.081	(0.055)	0.089	(0.066)
hm_zn	0.163**	(0.075)	0.225**	(0.093)
dry_zn	0.173***	(0.061)	0.186**	(0.078)
cos_zn	-0.215***	(0.069)	0.241***	(0.087)
NTL	-0.023**	(0.010)	0.029**	(0.013)
Building	0.000	(0.001)	0.003**	(0.002)
Road	28.76	(28.28)	-35.61	(36.10)
pro-mig			-1.789***	(0.151)
_cons	8.115***	(0.248)	4.170***	(0.389)
athrho			0.776***	(0.125)
lnsigma			0.120 ***	(0.023)
Obs	3648		3648	

1. Standard errors in parentheses
2. *** p<0.01, ** P<0.05, * P<0.1

Table 4.1 Per capita expenditure model using Heckman's two step model
Source: Author's calculation based on MPLCS

These estimates allow constructing and comparing observed and counterfactual household per capita expenditure in order to know the impact of migration through remittances on the welfare of household left-behind (Margolisl. D, et.al., 2013). The next section will discuss about the impact of migration on welfare of household left being. 4.1 Impact of Migration on Well-being of Remittance Received Household (Counterfactual Scenario of Non-migration) Table 4.2 shows the observed per capita expenditure of

household with remittances from migrants and its counterfactual to find the impact of migration on welfare of household left-behind. The results attempt to predict welfare-increasing effect of remittances from migration, based only on the analysis of before (obtained from counterfactual scenarios) and after (observed) remittances receiving households. Generally, migration raises the welfare of household left-behind. However, the degree of impact is different by ago-ecological zones or rural and urban areas and also between poor and non-poor. In all agoecological zones, household with remittances from migrants experiences the positive effect of migration. In terms of rural and urban, urban households are more affected positively by migration than rural households. The reason is that rural migrants would lead to loss of labor and reducing production in agriculture activities if the wages earned by migrants are lower than the earnings from their source and if household receiving remittances do not invest in improving agriculture. However, in terms of poverty status, poor suffers negative impact of migration. If migration is costly and risky, there may be obstacles to participate in migrant labor markets for poor households. Then poor are excluded from positive effect form migration.

level of interests	Average per capita household expenditure of remittances received household form migration		
	After receiving remittances form migrants (Observed)	Before sending migrants (Counterfactual scenarios)	Differences
Nation	4533.06	1784.51	2748.55
Hills & Mount	5949.31	1872.66	4076.66
Dry Zone	6070.71	2080.38	3990.33
Delta Zone	3866.33	1780.82	2085.52
Coastal Zone	2616.13	1361.93	1254.20
Urban	5036.04	2047.76	2988.28
Rural	4259.22	1641.19	2618.03
Non-poor	6218.45	1882.31	4336.14
poor	845.31	1570.52	-725.21

Table 4.2 Average impact of migration on welfare of household left-behind
Source: Author's calculations based on MPLCS

4.2 Impact of Migration on Inequality(Counterfactual Scenario of Non-migration)

Table 4.3 shows estimates of the Gini coefficient using counterfactual imputed nonremittances income for household with remittance sending migrants. In comparison of what had been attained when using observed income of household with no remittances from migrants, for the whole nation, remittances from migrants cause 40.19% decrease in inequality. Thus, remittances from migrants have positive equalizing effect. In the comparison of urban and rural, positive equalization effect in urban (45.50 percent change) is larger than that in rural (38.67 percent change). Income distribution is more uneven in Dry Zone with the highest Gini coefficient of 0.41 after receiving remittances from migrants. And also, it can be seen that the Dry Zone has the lowest equalization effect of migration (percent change of 29.38).

Region	Gini coefficient		
	No-Rem	Rem	% Change
Nation	0.61507	0.36786	-0.40192
Urban	0.61109	0.33305	-0.45499
Rural	0.61405	0.3766	-0.38669
Hills & Mountain	0.67781	0.42155	-0.37807
Dry Zon	0.57831	0.40842	-0.29377
Delta Zone	0.59171	0.30093	-0.49142
Coastal Zone	0.57151	0.31513	-0.4486

Table 4.3 Migration and Gini coefficient in counterfactual scenarios of non-migration
Source: Own calculations based on MPLCS

4.3 Impact of migration on poverty (counterfactual scenario of non-migration)

This section attempts to estimate the poverty reducing effect of remittances based on the analysis of observed per capita expenditure assuming that the effects of migration would be over-estimates. In order to analyze the poverty impact of migration, headcount poverty index, poverty gap and squared poverty gap are applied based on poverty line set by 2015 living condition in Myanmar. In 2015, an individual in Myanmar is considered to be poor if he or she lived in a household with per consumption expenditure of 1303 kyat per day or less. Using this poverty line, Table 4.6 summarizes the effects of remittances from migration on poverty levels. On average, when moving from situation of without remittances to with remittances, the poverty is estimated to fall by 34%. It can be seen that remittances from migration lead to large reduction in poverty levels from 31.03% to 20.44% in the situation of without and with remittance respectively. It can be seen that this Union level impact of migration on poverty headcount figures hide important disparities between urban and rural and among agro-ecological zones. Notably, urban poverty is estimated to fall by more than 52% while rural poverty is estimated to fall by 25%. Besides, more than one-fourth of rural households are still below poverty line after moving to the situation of having migrants while about 10 percent of urban household are poor. The level of poverty reduction caused by migration is much lower in rural compare to urban. Among the agro-ecological zones, the lowest level of poverty reduction caused by migration (6%) is found in coastal zone. After having migrant, the poverty incidence in Coastal Zone is 44% which is far higher than Union poverty incidence, 20%. Regarding poverty gap and squared poverty gap, the results suggest that, in average, remittances from migrants tend to reduce the intensity and severity of the poverty. At Union level, intensity and severity of the poverty are reduced from 11.2% to 5% and from 5.6% to 2% respectively. In the urban-rural comparison migration can reduce more poverty in urban than in rural, by 74.9% and 49.02% point respectively. Among the agro-ecological zones, migration harshly reduces poverty depth by 68.8%

point in Delta Zone. Therefore, across the Union there is a positive association between migration and intensity and severity of poverty.

Region		Poverty headcount	Poverty Gap	Squared Poverty Gap
Nation		(%)	(%)	(%)
Before rem		31.03 (0.463)	11.16 (0.21)	5.64 (0.138)
After rem		20.42 (0.403)	4.99 (0.132)	1.99 (0.073)
% Change		-0.34	-0.55	-0.65
Urban	Before	23.05 (0.421)	7.44 (0.168)	3.36 (0.101)
	After	9.38 (0.292)	1.86 (0.076)	0.60 (0.034)
	% Change	-0.59	-0.75	-0.82
Rural	Before	35.62 (0.479)	13.31 (0.227)	6.95 (0.154)
	After	26.77 (0.443)	6.78 (0.15)	2.79 (0.087)
	% Change	-0.25	-0.49	-0.59
H &M	Before	28.75 (0.453)	12.45 (0.238)	7.22 (0.173)
	After	15.14 (0.359)	4.05 (0.126)	1.76 (0.073)
	% Change	-0.47	-0.67	-0.76
Dry	Before	21.39 (0.41)	6.99 (0.168)	3.30 (0.106)
	After	12.22 (0.328)	2.72 (0.100)	1.08 (0.057)
	% Change	-0.43	-0.61	-0.67
Delta	Before	29.23 (0.455)	9.58 (0.189)	4.48 (0.116)
	After	15.52 (0.362)	2.99 (0.093)	0.95 (0.043)
	% Change	-0.47	-0.69	-0.79
Coastal	Before	46.67 (0.499)	17.33 (0.241)	8.80 (0.161)
	After	44.03 (0.497)	12.32 (0.194)	5.29 (0.116)
	% Change	-0.57	-0.29	-0.40

Table 4.4. Migration and Poverty Measures in counterfactual scenarios of non-migration
Source: Author's calculations based on MPLCS

V. CONCLUSION

This paper aims to estimate the households' welfare impact of migration through remittances in the case of Myanmar. In order to predict the per capita expenditure household, following the Heckman's two step procedure, this paper finds evidence of sample selectivity, where the probability of being a household with remittance sending migrants would be higher if welfare outcomes of household are high because decision of households to take part in migration is a function of their individual characteristics and those of their families and their communities. It can be concluded that overall the impact of migration through remittances on welfare of household leftbehind is positive. However, there is disparity of impacts of migration among agro-ecological zones and between rural and urban. And migration in Myanmar has the positive equalizing effect and positive poverty reducing effect. Similarly, the degree of positive effects varies among zones and between rural and urban.

This study also finds the evidence of negative impact of migration on welfare of poor households. It is likely that if migration is costly and risky, when poor households take part in migration, they may acquire more cost than benefit from migration while non-poor obtain positive migration impact. Some poor in Myanmar use informal loans with high interest rates to cover the cost to migrate. Mostly, in the migrant labor market, labor supply of poor are unskilled and vulnerable to lose job. In this case, households left-behind need to pay interests before receiving remittances from their migrants. And the systems used for sending remittances to households left-behind are informal, since most of poor in Myanmar do not have well education or using bank and other financial business. In order to be pro-poor migration impact on the households in origins, the obstacles to participation in migration should be loosening for the poor. Based on the findings, this paper suggests that among the agro-ecological zones, the conditions of labor market are better in Delta Zone. The reason is that although it has the lowest share of household with migrants as well as households with remittances sending migrants, the poverty reducing impact and equalizing impact are satisfactory in Delta Zone. Moreover, the results from the non-selection of migration equation states that the probability of not being households with migrants from other zones are rather less. It can be suggested that households in these zones face lack of employment opportunities and they are likely to send their labor surplus as migrants to Delta Zone where employment opportunities are better. Since, Yangon, the former capital city, is located in Delta Zone, formal employment is more developed and contribution to the reduction of poverty and equalizing effect are much more than those in other zones.

REFERENCES

[1] Acosta, P., Calderon, C., Fajnzylber, P. & H. Lopez, (2008), 'What is the impact of international remittances on poverty and inequality in Latin America', World Development vol. 36, no. 1, pp. 89– 114.

[2] Adams Jr, R. (1989). Worker Remittances and Inequality in Rural Egypt. Economic Development and Cultural Change, 38(1), 45-71.

[3] Adams, R. (2006), "International Remittances and the Household: Analysis and Review of Global Evidence." Journal of African Economies 15(AERC Supplement 2):396-425.

[4] Adams, R.and A. Cuecuecha. (2010), "Remittances, Household Expenditure and Investment in Guatemala." World Development 38(11):1626-1641.

[5] Adams, R.and J. Page. (2005), "Do International Migration and Remittances Reduce Poverty in Developing Countries." World Development 33(10):1654-1669.

[6] Adams, R.H. and J. Page. (2003). "International migration, remittances, and poverty in developing countries," World Bank Policy Research Working Paper 3179, December.

[7] Becker, G. (1993). Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education. Chicago: University of Chicago Press.

[8] Goldring, L. (1990). "Development and migration: A comparative analysis of two Mexican migrant circuits." Washington, D.C.: Commission for the Study of International Migration and Cooperative Economic Development.

[9] Jolliffe, D. (2002). Whose Education matters in the Determination of Household Income? Evidence from a Developing Country. Economic Development and Cultural Change, 50(2), 287-312

[10] Lopez-Feldman, A., Mora, J., & Taylor, J. (2007). Does Natural Resource Extraction Mitigate Poverty and Inequality? Evidence from Rural Mexicoand a LacandonaRain Forest Community. Environment and Development Economics, 2, 251-269.

[11] Margolis, D., Miotti, L., Mouhoub, E.M., Oudient, J. (2013). To Have and Have Not: Migration, Remittances, Poverty and Inequality in Algeria. IZA Discussion Paper No. 7747.

[12] Rozelle, S., J.E. Taylor, and A. DeBrauw. (1999). "Migration, remittances, and agricultural productivity in China." American Economic Review 89(2):287-291.
[13] Sahn, D., & Stifel, D. (2003). Exploring Alternative Measures of Welfare in the Absence of Expenditure Data. Review of Income and Wealth, 49(4), 463-489.
[14] Stark, O. (1991). The Migration of Labour. Cambridge, Massachussets: Blackwell.
[15] Stark, O. (1991). "Migration in LDCs: Risk, Remittances, and the Family." Finance and Development 28(4):39-41.
[16] Stark, O., & Bloom, D. (1985). The New Economics of Labor Migration. The American Economic Review, 75(2), 173-178.
[17] Stark, O., E.J. Taylor, and S. Yitzhaki. (1988). "Migration, Remittances and Inequality: A Sensitivity Analysis Using the Extended Gini Index." Journal of Development Economics 28:309-322.
[18] Stark, O.and R.E. Lucas. (1988). "Migration, Remittances, and the Family." *Economic Development and Cultural Change* 36(3):465-481.
[19] Taylor, J., Mora, J., Adams, R., & Lopez-Feldman, A. (2005). Remittances, inequality, and poverty: Evidence from rural Mexico. Mimeo, Davis: University of California.
[20] Taylor, J., Mora, J., Adams, R., & Lopez-Feldman, A. (2005). Remittances, inequality, and poverty: Evidence from rural Mexico. Mimeo, Davis: University of California. Remittances, Inequality and Poverty: Evidence from Rural Mexico. J. Edward Taylor. University of California, Davis. Richard Adams. The World Bank. Jorge Mora.
[21] Taylor, J.E. (1999). "The New Economics of Labour Migration and the Role of Remittances in the Migration Process." International Migration 37(1):63-88. Taylor, J.E
[22] Taylor, J.E., J. Arango, G. Hugo, A. Kouaouci, D.S. Massey , and A. Pellegrino. (1996). "International migration and national development." Population Index 62(2):181-212.
[23] Taylor, J.E., R.H. Adams, Jr., and J. Mora. (2009). "Remittances, Inequality and Poverty: Evidence from Rural Mexico." in Migration and Development Within and Across Borders: Research and Policy Perspectives on Internal and International Migration, edited by J. Dewind and J. Holdaway.
[24] Geneva, Switzerland and New York, NY: International Organization for Migration and The Social Science Research Council.
[25] World Economic Outlook (2005). Globalization and external imbalances. Washington, DC: International Monetary Fund.

Appendix

1. Variables and Description

Variable name	Description
Log(Y)	Log of per capita household expenditure
hh_migrem	Dummy variable for remittance receipt household from migrant
Household head Characteristics	
hd_age	Age of household head in years
hd_age2	squared of age of household head
hd_male	dummy variable for gender of household head: male=1
Human capital characteristics	
max_edu	maximum level of educational attainment of household member
u15	number of household member younger than 15
o65	number of household members aged older than 65
age15_65	number of household members aged at and between 15 and 65
tpr_educ	number of person with primary education
tsec_educ	number of person with secondary education
tot_work	number of household members currently works
temp_job	number of household members with temporary job status
Physical capital characteristics	
nfarmown	dummy variable for household owned non-farm business
narmown	dummy variable for owned household farm business
hh_ownland	dummy variable for owned-land household
hh_ownhouse	dummy variable for owned-house household
Exclusion restriction	
pro_mig (Network)	proportion of household with migrants in primary sampling unit
rual	dummy for household lives in rural=1
HM_zn	dummy for household lives in Hills and mountains zone
Dry_zn	dummy for household lives in Dry zone
Delta_zn	dummy for household lives in Delta zone
Coastal_zn	dummy for household lives in Coastal zone
NTL-index*	night time light index.
Building**	density of building in districts
Road**	Road length in districts, kilometer

* Obtained from Version 4 DMSP-OLS Nighttime Lights Time Series of National Oceanic and Atmosphere Administration (NOAA)
** Daytime high spatial resolution imagery (HSRI) data, obtained from Open Street Map (OSM) Data files

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