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Rural Livelihood Diversification in Bangladesh: Effect on Household Poverty and Inequality

Shakila Salam[1]

[1] Associate Professor, Institute of Agribusiness and Development Studies, Bangladesh Agricultural University, Mymensingh, Bangladesh

Correspondence: Shakila Salam, Associate Professor, Institute of Agribusiness and Development Studies, Bangladesh Agricultural University, Mymensingh, Bangladesh. E-mail: shampa.bau@gmail.com

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Abstract

The pervasiveness of poverty continues to be a daunting challenge for Bangladesh. This study attempts to examine the effect of different livelihood diversification on rural household poverty and income inequality. A panel dataset, which is used in this study, was collected in the three different years (1988, 2000 and 2008) from 62 villages across 57 districts of Bangladesh. Besides, 153 households from three districts of Bangladesh were also randomly selected as primary data. Multidimensional poverty index (MPI) was used to measure poverty whereas Gini coefficients and decomposition of Gini coefficients were used to measure inequality and to identify marginal effects of certain livelihood income source on total inequality. The results reveal that diversifying livelihood through income source changes has an impact on the poverty level and inequality among rural households. Following these changes, the overall poverty situation has been improving and income distribution has been worsening over the years. Households drastically reduce their poverty by diversifying their livelihood from only agriculture to part-time farming. Among different non-farm income sources, only self-employment has a positive contribution in decreasing income inequality since 2000. Incomes from migration and wage-employment widen income inequality in rural Bangladesh. Therefore, policy options should strive to expand rural industry and scope of self-employment in the rural areas along with agricultural sector development.

Keywords: livelihood diversification, poverty, inequality, multidimensional poverty index (MPI), gini coefficient, Bangladesh

1. Introduction

The pervasiveness of poverty continues to be a stubborn problem in Bangladesh, where about 22 million people still living below the poverty line (World Bank, 2018). Though the country has made significant progress in decreasing poverty levels over the past two decades, it still has a sizeable proportion of its population living in poverty or extreme poverty. The situation going to worst as levels of inequality continues to rise steadily. Poverty rate has been reduced by 1.2% during 2010 to 2016 which was 1.7% during 2005 to 2010 (Alam, 2019). In the last report of HIES (HIES, 2019), the headcount poverty rates under the upper and lower poverty line have been found 24.3% and 12.9% respectively in 2016. These rates have further decreased to 21.0% and 10.4% in 2018 (Alam, 2019). However, in the meantime, the income Gini coefficient has been increased from 0.45 to 0.48, which implies deteriorating condition of income inequality in the country. Poverty in rural areas is more severe than in urban areas. According to the HIES (2019) estimation, about 18.90 percent of urban poverty rate in comparison to 26.40 percent of rural indicates the existence of a wide gap within these areas. Moreover, a strong negative correlation between land ownership and incidence of poverty was also found where landless, marginal (cultivating less than 0.20ha) and small farm households (cultivating 0.21-1ha) are the main victims of poverty. In 2016, about 34.4 percent marginal and 23.8 percent small landholders lived under the poverty line. So, small-scale landholder's survival and improvement of their economic condition play an important role for poverty reduction, living conditions and overall welfare of the society (Salam et al., 2019). Government also prioritized the poverty reduction of these extremely poor households by considering it as one of the goals to achieve within next five years (FYP, 2015). Moreover, poverty and inequality mostly relates to the income of the households, which they receive from a diverse portfolio of activities. Hence, the economic situation and the standard of living of the households cannot be fully described by only on-farm income (Castagnini et al., 2004). Therefore, rural households are diversified their livelihood from single occupation (farming) to multiple occupation. Rural non-farm sector is one of the major sources of these multiple occupation. Participation in rural non-farm activities has two different

directions, namely demand-pull and distress-push processes (Barrett et al., 2001; Reardon et al., 2007). In demand-pull process, agricultural labors participate in the most lucrative employment opportunities of the rural non-farm sector. According to distress-push process, insufficient agricultural income and other factors push agricultural labors into the low paid rural non-farm sector. According to Möllers & Buchenrieder (2005), based on theory, both of these processes have the potentiality to reduce poverty. Participation in different rural non-farm activities exerts a positive impact on rural poverty if return per labor unit from the non-farm sector is higher than those in agriculture (Chuta & Liedholm, 1979). In Bangladesh, about 40 percent of poverty reduction between 2000 and 2005 was due to rural non-farm income growth, whereas only 21 percent in the same period was accounted for by farm income growth (World Bank, 2013). However, the poverty-decreasing effect of the non-farm sector is found in many research works, but the effect of a combination of farm and non-farm sector on poverty and income-inequality is still unclear. Malek & Usami (2009b) found participation in the non-farm sector in Bangladesh has an income poverty reducing effect but not educational poverty. In China, non-farm employment was found as a solution of reducing poverty, its depth and income inequality as well (deJanvry et al., 2005). Likewise, inequality-decreasing effects of non-farm employment was also found in Pakistan, as it can provide an opportunity to the landless or marginal farmers to earn more and thus reducing the gap of the income distribution (Adams, 1995). Contrarily, Rahman (1999) found non-farm income as a major contributor to increasing of overall income-inequality. Rich literatures drawing on a number of developing countries concluded that the overall impact of non-farm earning on income distribution is mixed (Haggleblade et al., 2009; Lanjouw & Lanjouw, 2001). In the context of Bangladesh, the relevant previous studies identified rural non-farm income as a key force behind uneven income distribution (Hossain et al., 2000; Malek & Usami, 2009a). But these analyses do not consider different livelihood diversification, and even income from remittance or other transfers, which is one of the important sources of non-farm income. Besides, the effect of a combination of farm and non-farm sector on poverty especially using a modern method like MPI is still unavailable in the existing literatures. For policy purposes, it is more worthy to know which type of livelihood diversification has a greater contribution to poverty reduction. Therefore, considering these importance, the present study attempts to explore the role of livelihood diversification on poverty and income distribution in Bangladesh.

2. Materials and Methods

2.1 Data Sources

Both primary and secondary data were used in this research. As a secondary source, an eight years panel data set was used which was collected in 1987-1988 by the Institute of Development Studies (BIDS) from 62 villages across 57 districts. The data set was further revised by International Rice Research Institute (IRRI) in 2000-2001 and Bangladesh Rural Advancement Committee (BRAC) in 2008 in the same households to collect relevant information. This whole data set was collected from Research and Evaluation Division (RED) of BRAC in 2014. The total numbers of used observations in this research are 510, which were collected and balanced from three years panel data set (1988, 2000 and 2008). Though this dataset is quite out dated, during research this was the latest data set of that panel. For updating information, a cross-sectional primary data set was collected through a field survey of 153 households located in 3 districts during July to November 2014. Following panel data set, same villages and households from the corresponding districts were chosen as sample. Moreover, other required secondary information for this study was obtained through reviewing literatures such as publications, research articles, working paper etc. Besides, some important information gathered from different authentic websites (FAO, OPHI, VDSA, etc.) and experts of the relevant field through email communication.

2.2 Analytical Techniques

2.2.1 Multidimensional Poverty Index (MPI)

Traditionally, poverty can be measured by two methods: (1) direct method and (2) indirect method. A set of selected basic needs and rights, whether satisfied or not is indicated by the direct approach. On the other hand, people's income drop below the basic needs identified poverty line or not is determined by the indirect approach. Although both methods have been largely applied in different aspects, but direct method is popularly used nowadays due to some limitations of income approach. For example, as the consumption pattern is not always same, earning specified money for moving over the poverty line does not guarantee that he or she can fulfil basic needs (Sen, 1981). Moreover, considering only one factor like income or expenditure may not necessarily explain the real full situation of poverty. A lot of factors like education level, health or nutrition situation, living standard can affect simultaneously a person or household's poverty situation. Considering all of these and for implementing direct approach, Multidimensional Poverty Index (MPI) was developed by Alkire & Foster (2007). In the MPI, Adjusted Headcount Ratio (M_o) is measured instead of simple Headcount Ratio for estimating poverty. Actually, adjusted

head count ratio, M_o is an approach that combines the incidence of poverty measurement and the intensity of poverty measurement.

Table 1. Dimensions, indicators and cut-offs used in MPI calculation

Dimension	Indicator	Deprived if…
Education (0.33)	Years of schooling (0.33)	At least 1 household member aged more than 14 years has not completed 5 years of schooling
Health (0.33)	Per capita per day calorie intake (0.33)	Per capita per day food calorie intake of AEU in Kcal< 2122 (Note 1)
Living standard (0.33)	House condition (0.11)	- House has mud floor and tin or straw roof
	Electricity (0.11)	- Household has no electricity service or solar energy or battery
	Land asset (0.11)	- Household owns less than 0.20ha of land

Note: AEU = Adult Equivalent Unit; Figures in the parentheses indicate respective weights.

Source: Own compilation after modification of Alkire & Santos (2013)

Only five indicators were used in this measurement due to limitation of data. In a particular dataset, if it has less than ten indicators, same weighting principle can be applied (Alkire & Santos 2013). Thus as detailed in Table 1, natural weights, adopting equal importance of the dimensions and indicators (within dimensions) are used. That means each indicator within one dimension is equally weighted like as equal weight of dimensions. According to MPI, sample households are classified into poor and non-poor groups based on selected indicators in this study. Deprivation cut-offs are selected in this way so that it assures the sufficiency to be non-deprived in each indicator and dimension, and vice versa. Then, the sum of each deprivation multiplied by its respective weight indicates the multidimensional deprivation score, C. Finally, following Alkire & Santos (2013) MPI calculation procedure, a poverty cut-off of 33.3 percent is used to differentiate between poor and non-poor households based on multidimensional indicators. This implies that, a household having more than 33.3 percent deprivation score is a poor household, whereas holding less than or equal to 33.3 percent deprivation score is a non-poor household.

Adjusted head count ratio or MPI (M_o) represents the product of two measures: (1) the incidence of poverty or multidimensional headcount ratio (H) and (2) the intensity of poverty (A). The proportion of the poor in the total population is calculated by the multidimensional Headcount ratio, H. This percentage also indicates the incidence of multidimensional poverty. Thus, head count ratio (H) was calculated by the following ratio:

$$H = \frac{q}{n} \tag{1}$$

where, 'q' denotes multidimensional poor households and 'n' indicates the sample population. Moreover, average proportion of poor households weighted indicators is called the intensity of multidimensional poverty (A). This intensity is computed in two steps. At first, adding up all the weighted deprivation scores of the poor. Then dividing this score by the total number of poor households. Therefore, intensity of poverty (A) is computed by:

$$A = \frac{\sum_{i=1}^{q} C}{q} \tag{2}$$

where, C represents the deprivation score of poor households from i^{th} to q^{th}.

2.2.2 Gini Coefficient and Gini Decomposition

In case of the inequality measurement, this study focuses on income distribution instead of consumption. The main reason behind this is that income inequality can clearly visualize the change in overall distribution rather than consumption inequality. Gini ratio for income inequality would provide policy guidance that the ratio for consumption components would not provide (Khan, 2005). According to Möllers & Buchenrieder (2011), there

are two ways to measure a specific income source's impact on total income distribution. The first and most well-known way is to compare the values of Gini coefficient for total incomes and Gini coefficients for excluding the income sources of interest. If Gini based on excluded income's value, is greater (smaller) than the Gini based on total income, that excluded income source positively (negatively) contribute to the income inequality reduction. The decomposition of Gini coefficient is the second method to identify marginal effects of certain sources on total inequality.

Among different instrument to measure inequality, the Gini coefficient is the most popular and frequently used measure of statistical distribution. The range of the Gini coefficient lies between 0 and 1. The value of the coefficient 1 indicates maximal inequality while 0 indicates perfect equal state. Gini coefficient can be measured by a number of indexes or methods such as Robin Hood index, Hoover index, Atkinson's index, Theil index etc. In this study, Gini coefficient is measured by:

$$G = \left| 1 - \sum_{k=1}^{k=n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k) \right| \tag{3}$$

Where *G, X* and *Y* denote the Gini value, percentage of households and percentage of their corresponding income respectively. Computation of Gini index as a ratio of two areas in the Lorenz curve is easy to understand and apply. There are also some limitations of the Gini index to measure inequality as the same Gini index can hold two very different distributions of income. Though this situation is not a common case, it is difficult to understand the actual situation of inequalities between two groups.

Decomposing inequality needs overall inequality to be subdivided into its all components or sources. By assessing the contribution of each component to total inequality, policy makers can make effective policies and design tools that can reduce divergence in the distribution of their interested sectors. Therefore, decomposition of the Gini coefficient of total income can easily be used for identifying the equalizing or dis-equalizing effect of different sources of income.

If household income is categorized into k sources and $Y_1 \ldots Y_2 \ldots Y_k$ indicate those sources of income, its overall income (Y) is

$$Y = \sum_{i=1}^{k} Y_i \tag{4}$$

Following Pyatt et al. (1980) and Stark *et al*. (1986), the decomposed Gini coefficient for total income (*G)* can be represented as follows:

$$G = \sum_{k=1}^{k} R_k G_k S_k \tag{5}$$

Where,

S_k = the share of k^{th} income source in total income, which ultimately implies the importance of k^{th} income source regarding total income

G_k = the Gini coefficient of k^{th} income source, that indicates the degree of equal or unequal distribution of that income source

R_k = the correlation between k^{th} income source and the total income distribution

Following L´opez-Feldman (2006), marginal effect of income change can be estimated using this Gini decomposition technique. That means, find out how much total income inequality will change for 1 percent change in the k^{th} source of income, holding income from all other sources constant. If change of k^{th} income source is indicated by e_k, the partial derivative of the Gini-coefficient with respect to e_k is equal to:

$$\frac{\partial G}{\partial e_k} = S_k (G_k R_k - G) \tag{6}$$

where, *G* implies the Gini coefficient of total income inequality before making any change to the income. Marginal effect relative to the overall Gini is calculated by dividing equation (6) by G:

$$\frac{\partial G/\partial e_k}{G} = \frac{S_k G_k R_k}{G} - S_k \tag{7}$$

3. Results and Discussion

3.1 Multidimensional Poverty Status Over Time

A household is identified as poor if it is deprived in at least one third of the weighted multidimensional indicators that are described in Table 1. Multidimensional poverty rate (MPI) and its two components (incidence of poverty and average intensity of deprivation) are presented in Table 2. Based on the household's involvement in livelihood earning activities over the years, households are categorized into two groups: stable households and diversified households (Note 2). The result shows that overall, both incidence of poverty (H) and average intensity across the poor (A) are declining over the years. The multidimensional poverty rate decreased from 0.43 in 2000 to 0.30 in 2008. Cross-sectional data (collected in 2014) also indicate that the poverty rate follows the decreasing trend in Bangladesh, as MPI is found 0.26 in 2014 (Note 3). OPHI (2011) and OPHI (2015) reported that MPI values for Bangladesh were 0.29 in 2007 and 0.25 in 2011. This type of small difference in result is not surprising, as the sampled households are not same. Moreover, estimated intensity of poverty in 2008 implies that households are deprived in 67.92 percent of the weighted indicators, which is smaller than the deprivation value of 2000 (71.35 percent).

The next concern of this study is to look deeper into the changing pattern of poverty among different diversified groups. As in the overall poverty situation, poverty rates of stable households also decreased during the period 2000-2008. But their poverty reduction rate depends on which types of activities the households are involved in. For instance, household involvement in only agricultural activities reduces 27.54 percent poverty (MPI), whereas non-farm households reduce 32.89 percent poverty by doing only non-farm activities during 2000-2008. However, the highest reduction of poverty (43.33 percent) is observed in part-time farming households - involved in a combination of agricultural activities and some sort of non-farm activities - during this period.

The poverty rate of part-time farming households is also found to be smaller than the agricultural households in 2014 (Table 2). In the case of diversified households, households drastically reduced their poverty by shifting to part-time farming from only agricultural work during 2000-2008. Specifically, diversifying into a combination of non-farm and agricultural activities contribute to a decrease of 41.19 percent poverty value of only agriculture based households. Even a diversification to part-time farming from a pure non-farm group is found to be a more poverty reducing measure than leaving farming activities and fully joining the non-farm sector. Salam & Bauer (2018) also found that a very small percentage of households are shifted to the only agriculture group from non-farm or part-time farming groups during this time.

Comparatively, lower effect on poverty may be one of the reasons for their indolence in agricultural activities. Therefore, movements from only agriculture to part-time farming and the non-farm sector are more welfare generating strategies (by reducing poverty) for rural households in Bangladesh.

Table 2. Changes of multidimensional poverty level of different economic activity adopted households (2000-2008)

Category	2000			2008			Change of MPI (%)	2014		
	Head count ratio, H (%)	Intensity of poverty, A (%)	MPI (H x A)	Head count ratio, H (%)	Intensity of poverty, A (%)	MPI (H x A)		Head count ratio, H (%)	Intensity of poverty, A (%)	MPI (H x A)
Stable households										
- Only agriculture	76.19	71.87	0.55	59.52	66.67	0.40	-27.54	50.00	72.33	0.36
- Non-farm	54.96	70.37	0.39	38.17	68.00	0.26	-32.89	42.37	70.33	0.30
- Part-time farming	42.45	68.88	0.29	24.87	66.67	0.17	-43.33	35.76	76.67	0.27
Diversified households										
- Only agri. to non-farm	70.00	74.60	0.52	56.67	66.67	0.38	-27.67			
- Only agri. to part-time farming	58.92	68.68	0.40	35.71	66.67	0.24	-41.19			
- Non-farm to only agri.	49.50	79.48	0.39	47.61	70.00	0.33	-15.30			
- Non-farm to part-time farming	50.00	72.00	0.36	38.00	66.67	0.25	-29.64			
- Part-time farming to only agri.	57.31	69.38	0.40	51.92	70.37	0.37	-8.11			
- Part-time farming to non-farm	49.15	71.26	0.35	38.98	69.56	0.27	-22.59			
All households	59.83	71.35	0.43	44.68	67.92	0.30	-28.91	37.85	69.01	0.26

Source: Author' s calculation based on panel data (2000-2008) and field survey (2014)

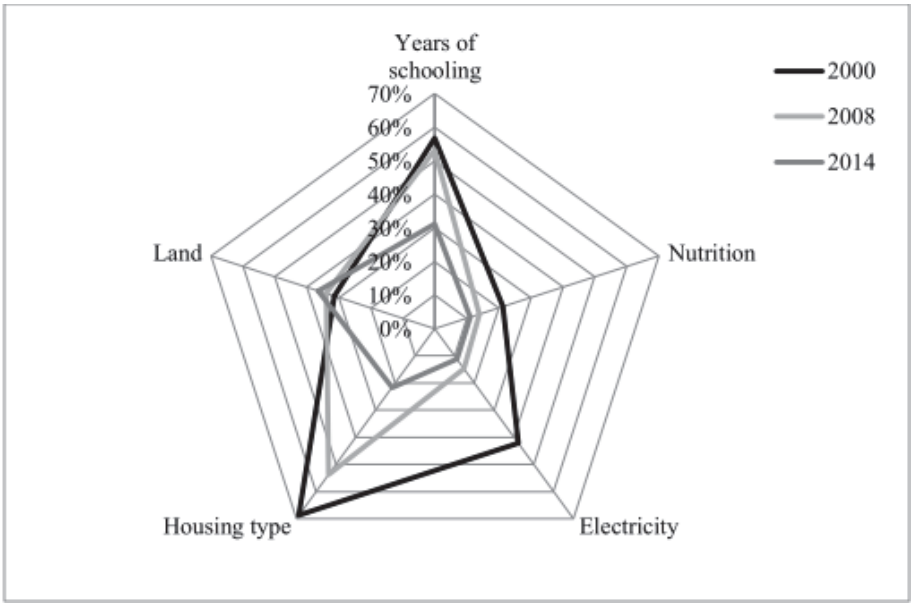

Figure 1. Percentage of the MPI Poor household in different years (2000-2008-2014)

Source: Author's own computation.

The proportions of the households that are poor and deprived in each indicator over time are presented by a pentagon shaped radar diagram (Figure 1). Deprivation of the non-poor households is not included in this calculation. Figure 1 shows that patterns of deprivation across indicators vary from time to time in rural areas. In the case of panel data interpretation, housing conditions and electricity facilities greatly improved during the period 2000 to 2008. It is found that deprivation of the poor in calorie intake and years of schooling also decreased, while land deprivation increased. As farm size decreased day by day in Bangladesh, the increasing trend of land deprivation is expected in the case of rural-poor. On the other hand, cross-sectional data shows that the incidence for each deprivation is reduced in 2014 from the previous periods except land deprivation.

3.2 Income Inequality Over Time

Using panel and cross-sectional data, Gini coefficients from 1988 to 2014 are calculated and shown in Table 3. This distribution of income is also calculated by excluding total non-farm income and different sources of non-farm incomes from total income. The value of the Gini coefficient for the selected sample increased from 0.48 in 1988 to 0.51 in 2000, which slightly decreased to 0.50 in 2008. These figures indicate the existence of large income inequality in the country. Compared to the result of previous years, the Gini coefficient value for the year 2014 (0.36) indicates that income distribution is markedly less unequal. As this value is calculated using cross-sectional data (not the previous same sampled households), it does not show the actual change of previous households but it can show a general trend of change. Though similar pattern of change is also found in inequality estimation at national level, but rural income Gini slightly increased to 0.431 in 2010 from 0.428 in 2005 (HIES, 2010).

For identifying the effect of income generation from different sources, at first total income is categorized into agricultural income and non-farm income. Gini coefficients are calculated by excluding total non-farm income, even different forms of non-farm income separately over time for understanding their impact on income inequality. In the case of total non-farm income, overall slightly smaller values of the Gini coefficients are found in 1988 and 2008. This implies that in those periods, non-farm income had more unequal distribution in rural areas. This similar finding is also found in some other developing countries like Ghana, Uganda and Jordan (Canagarajah *et al*., 2001; Senadza, 2011). However, income from self-employment activities has a positive contribution for equalizing income distribution from 2000 to 2014. This result is also affirmed by the partial coefficients analysis using decomposition of Gini coefficients.

Table 3. Gini coefficients of rural income based on income sources

Income	Gini coefficients			
	1988	2000	2008	2014
Total income	0.48	0.51	0.50	0.36
Income from total non-farm excluded	0.46	0.53	0.48	0.38
- Income from wage employment excluded	0.47	0.51	0.48	0.40
- Income from migration excluded	0.43	0.48	0.47	0.32
- Income from self-employment excluded	0.38	0.56	0.55	0.40

Source: Author's calculation based on panel data (1988-2008) and field survey (2014)

The contribution of different sources of income on inequality of rural households depends largely on which type of income source the households are involved in. Each income source's contribution to total inequality is calculated using Gini decomposition technique following the methodology explained in previous section. These contributions of different income sources for four specified years are shown in Table 4. In this study, marginal contribution of agricultural income to total income inequality is found negative for all selected years and self-employment income is found negative since 2000. That means, self-employment activities have helped to reduce income inequality gap since 2000. This negative sign implies a positive contribution to income inequality, which is also expressed by decreasing Gini coefficient value (G_k). In 2000, by holding other source's income as constant, a 1 percent increase in agricultural and self-employment income reduce about 0.11 percent and 0.03 percent of total income inequality of rural households respectively.

Table 4. Inequality decomposition by income source for rural households (1988-2014)

Year	Income source	Income share (S_k)	Gini coefficient (G_k)	Gini correlation with total income (R_k)	Relative share of income inequality	Marginal effect (% change)
1988	Agriculture	0.56	0.47	0.77	0.42	-0.14
	Wage employment	0.12	0.87	0.62	0.14	0.01
	Remittance	0.10	0.97	0.94	0.20	0.10
	Self-employment	0.21	0.70	0.70	0.24	0.03
2000	Agriculture	0.43	0.53	0.71	0.32	-0.11
	Wage employment	0.16	0.88	0.81	0.14	0.10
	Remittance	0.15	0.79	0.56	0.19	0.04
	Self-employment	0.25	0.69	0.53	0.35	-0.03
2008	Agriculture	0.40	0.55	0.72	0.36	-0.09
	Wage employment	0.15	0.86	0.68	0.13	0.02
	Remittance	0.23	0.89	0.88	0.32	0.09
	Self-employment	0.21	0.66	0.55	0.19	-0.02
2014	Agriculture	0.60	0.41	0.63	0.48	-0.13
	Wage employment	0.10	0.83	0.43	0.08	0.02
	Remittance	0.17	0.86	0.78	0.31	0.13
	Self-employment	0.13	0.67	0.31	0.14	-0.02

Source: Author's calculation based on panel data (1988-2008) and field survey (2014)

Another point is that the calculated Gini coefficients for different income sources are higher than the coefficient for total income. As all households did not earn income from each of the income sources, the value of calculated Gini coefficient is comparatively higher. During last 3 decades, minimum Gini coefficient value is found in case of agricultural income in 2014 (0.41) and maximum value is found for remittance in 1988 (0.97). Agricultural income, as might be expected, provides the highest share of total income and also highly contributes to the overall inequality during the study period. For instance, agricultural income accounted for 56 percent of total income and was responsible for 42 percent of income inequality in 1988. The share of remittances has been increasing steadily, while it is mostly unequally distributed (0.89 in 2008). Even the Gini correlation between remittance and total income is higher compared to other income sources. This implies that remittances make rich people richer. However expectedly, wage income influences income inequality positively. That means a small group of households earn higher income from this source, except all households in the rural area. This result confirms the findings of Canagarajah *et al*. (2001) and Senadza, (2011), where wage employment and self-employment were also identified as income inequality increasing and decreasing sources respectively.

As wage employments, namely high-return activities require higher education, special skills and knowledge; all rural poor people cannot participate in these activities due to these barriers. Comparatively richer households can afford to overcome these barriers and enjoy higher income from that sector. Some poor households participate in low-return wage-employment activities but this generated income is not sufficiently high to reduce overall income inequality. On the other hand, self-employment may not have strict requirements like wage-employment, which resulted more participation of poor households in these activities and ultimately reduce income inequality.

In general, it is clear from this decomposition of income sources that agriculture and self-employment contribute positively to reduce overall income inequality in rural areas. On the other hand, migration increases this income inequality gap in rural Bangladesh.

4. Conclusions and Policy Recommendation

The rural economy of Bangladesh shows indications of growing inequality between resource-poor and rich households, in spite of progress in poverty reduction. The poverty reduction rate of household depends on which types of activities households are involved in. However, the highest reduction of poverty is observed in part-time farming households (43.33 percent) and following non-farm households (32.89 percent) during 2000-2008. Households drastically reduce their poverty by diversifying their economic activity from only agricultural work to part-time farming. It is often assumed that participation in non-farm employment would worsen income and asset distribution. This existing concept is somewhat confirmed by the results of this study. Agricultural activities and only self-employment (in different form of non-farm activities) have positive contribution to income equality. Incomes from migration and wage-employment widen income inequality in rural Bangladesh.

Importance of non-farm activities like self-employment and wage based activities cannot be denied in the rural economic growth of Bangladesh. These activities not only absorb excess rural labor but also reduce poverty and improve agricultural status through earning cash income. Therefore, policy options should strive to combine development of the agricultural sector, and the expansion of industry and other sectors. Establishment of small and medium industries by both public and private entrepreneur should be promoted. On the other hand, easy accessibility of short-term and long-term cheap credit schemes will be made available which will motivate households to become involved in self-employment based activities. Besides, it is required to make rural people more eligible to participate in the non-farm sector by providing higher education in the rural areas.

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Notes

Note 1. The conversion factor was used for converting consumed food to calorie content, which was found in the study of Shaheen et al. (2013) and Nahar et al. (2013) cited in Akhter (2015). For calculating per capita calorie intake, at first all members of households of different ages were converted into adult male equivalent scales using calorie based adult equivalent ratio scales. This scale was adopted from Bermudez et al. (2012) cited in Akhter (2015).

Note 2. Those households involved in the same type of livelihood activities in 2008 as 2000 are termed as a stable households group. On the other hand, those households that shifted from one activity group to another within the 2000-2008 periods are treated as diversified households.

Note 3. About 40 percent of the sample of the field survey (2014) was drawn from the samples of the panel survey (2000-2008).

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