
*Fouzia Jamshaid**
*Abdul Qayyum Mohsin***
*Ikram Ali Malik****

Trend in Redistributive Effects Foreign Remittances in Pakistan in 2001-02, 2005-06 and 2010-11

ABSTRACT

A good chunk of factors affect the economic growth and distribution of income of the economy. Inflow of foreign remittance to developing economies is of prime importance. The purpose of the present study is to investigate the trend in redistributive impact of foreign remittances and compare the pre distribution of income of the households with that of post distribution over time in Pakistan. The study tested the hypotheses that the effect of foreign remittances on the distribution of income has been in favor of high income groups by comparing the HIESs 2001-02, 2005-06 and 2010-11. In order to quantify and compare the impacts, this study employed various techniques in line with the Gini coefficient, Lorenz curve, Ordinary Least Square and formal statistical

* Assistant Professor, Department of Economics, Allama Iqbal Open University, Islamabad

** Assistant professor, Department of Economics & Agricultural Economics, Arid Agricultural University, Rawalpindi

*** Chairman, Federal Board of Intermediate & Secondary Education, Islamabad

Chow test. The estimated results of the study tend to support the hypothesis that foreign remittances deteriorated the distribution of income in overall Pakistan. For improving the distribution of income, policy makers may take a systematic approach to equip the lower and lowest income groups in order to enhance migration opportunities for them. Moreover, to reduce the migrants cost and risk, the government may establish migrants' network in the host countries by providing financial assistance and guiding support to lower and lower income groups.

Key Words: Foreign Remittances, Trend in re-distribution of income, Pakistan, Gini coefficient, Lorenz Curve, Chow Test and Household Integrated Economic Survey (HIES)

Introduction

There exist a large number of studies related to impact of remittances on economic growth and determinants of growth in Pakistan. However, with reference to impact of remittances on the distribution of income, not much literature is available in case of Pakistan. In Pakistan, incomes inequalities have increased sharply in the 1990s and HIES data also show that the trend is still continuing even in this decade. Income inequalities in Pakistan largely reflect inequalities in the distribution of resources. Distribution of Income in Pakistan is skewed as the poor have almost no assets and the lower middle-class owns very few assets. There is uneven distribution of state, land, houses, plots and other resources for the common people because they are not within their means. The income inequality has increased

severely in the last 10 to 12 years in Pakistan and still have upward trend.

The literature for the impact of foreign remittances on the distribution of income of beneficiary countries is contradictory. The majority of research studies find that foreign remittances lead to increase in income disparity and strengthen existing inequalities since foreign migrants in general come from the upper ends of the income classes. Foreign remittances are found to increase income inequality, especially for the rural dwellers (Ravanilla and Robleza, 2003; Capistrano and Maria, 2007 and Adams, 2006). They believe that in the early stage of the migration, migrants approach from the more well-off families who are more capable to get risks.

Adams (1992) uses a sample of rural communities for Pakistan and establishes that there is no significant effect of remittances on income inequality. Adams (1998) again by using primary data for some rural areas of Pakistan compares the distribution of income with and without remittances and provides technique to handle the data of HIES. He focuses on asset accumulation and concludes that remittances have positive effect on the accumulation of the rural assets. Therefore his study is limited to cover the impact of remittances on the distribution of income in rural areas. Mostly the mentioned studies in the literature review in case of Pakistan explore the distribution and redistribution effects of remittances by using only one year. This study traces the changes in the trend of size distribution of income in the years 2001-02, 2005-06 and 2010-11. Present article broadens the scope of the earlier studies carried out in Pakistan and focuses on the distributive effects of remittances on the size distribution of income across various

income groups in the three selected years. To complete this task this article has been organized as follows. In part II, methodology and data are discussed. In part III the results of the study are presented in detail. The part IV concludes the paper.

Methodology and Data Set / Model and Analytical Approach

To analyze and compare the impact of remittances on the distribution of income among various income groups, it is necessary to know income of the households before remittances (pre remittances income). This study uses the household income as the income base to estimate the impact of remittances on the distribution of income in Pakistan in three selected years.

This study uses Gini coefficient for measuring distribution of income along income groups for Pakistan in three selected years. To pursue the objective this study uses the model of Reynolds and Smolensky (1977) Lambert (1989) and Ilyas (2004) with some modifications. Whereas the earlier studies constructed post-fiscal distribution of income but this study uses post-remittances distribution of income instead.

To construct pre- remittances income along the income groups the average income of households in each income groups has been calculated by using data from HIESs in 2001-02, 2005-06 and 2010-11. Post- remittance incomes for the income groups have been constructed by adding average income for each income group to remittances received by their respective income group. The procedure which has been followed in this study is as under.

- Constructing an income base or pre-remittances distribution of income.
- Adding remittances by income group to the pre-remittances distribution of income.

The procedure can be compactly given in matrix form as under.

$$\mathbf{R}_y = \mathbf{y}\mathbf{W}_h + \mathbf{r}\mathbf{W}_y$$

In expanded form,

$$|R_{y1} \dots R_{yk}| = |y_1 \dots y_k| \begin{bmatrix} w_{h1} \\ w_{h2} \\ \vdots \\ w_{hm} \end{bmatrix} + |r_1 \dots r_m| \begin{bmatrix} w_{y1} \\ w_{y2} \\ \vdots \\ w_{ym} \end{bmatrix}$$

Where

R_y = the post-remittances or final average income vector of the households, order 1 x k. An element, R_{yi} denotes the amount of income in income interval i , $i=1, \dots, k$.

y = the pre-remittances or initial average income of the households vector, order 1 x k.

r = a vector of remittances of order 1 x m.

W_y = A matrix of percentage average income or weight for remittances of order 1 x m.

W_h = A matrix of percentage households or weight for average income of order 1 x m.

From Household Integrated and Economic Surveys (HIES) 2001-02, 2005-06 and 2010-11, the distribution of average

yearly income of household by income group for Pakistan have been computed by using SPSS. Household income is a materials return in cash or in kind in exchange for goods and services etc, by household earners other than boarders, lodgers and servants. This study uses the household income as the income base or the pre- remittances distribution in Pakistan. This study takes into account the average yearly income of ten household groups for Pakistan in three selected years.

At first instance, Gini index has been calculated for these households groups excluding foreign remittances (pre-remittances income distribution). After that, the Gini ratios by including remittances (post-remittances income) have been calculated again for Pakistan in three selected years. As the numbers of households who are receiving foreign remittances are very less as compared to others that are not receiving remittances, therefore their incomes in their respective income groups are more than that of remittances receiving households. A weighting system has been used for making different distributions symmetrical.

Lorenz Curve and Gini- Coefficient Analyses

This study works out Gini coefficient and Lorenz curve analysis by using pre and post remittances distributions of income in 2001-02, 2005-06 and 2010-11. The following equation has been used to calculate Gini coefficients in each case mentioned above.

$$G = 1 - (h_{i+1} - h_i) (y_i + y_{i+1})$$

Where,

- G = Gini ratio
- Hi = Cumulative per unit number of households in the *i*th income group
- Yi = Cumulative per unit share of income of *i*th income group.

The Gini ratios have been calculated by using percentage cumulative distribution of households against the cumulative distribution of income in the pre and post-remittances era. To see the impact of remittances on distribution of income by using Lorenz curve, this research study plots both pre-remittances and post-remittances income shares against number of households belonging to each income groups to pre and post-remittances distribution of incomes.

Chow Breakpoint Test for Structural Stability

Chow test for equality of two distributions of income has also been employed in this research work for pre-and post remittances distribution for Pakistan to test the significant difference in α coefficients.

The Data Description: Household Integrated and Economic Surveys (HIESs)

This study uses data from Household Integrated Economic Survey (HIESs) for the years 2001-02, 2005-06 and 2010-11. HIES is conducted by the Federal Bureau of Statistics (FBS) on national basis in overall Pakistan and in its urban and rural areas. Primary data files have been obtained from FBS. Group-wise households and their average incomes with and without remittances have been sorted out for Pakistan in three selected years by using SPSS. The size of the samples households was 14050, in year 2001-02, 15450 in year 2005-06 and 16317 in

year 2010-11. Keeping in view the sample size and basic requirements to conduct this study the urban-rural and regional analysis have been ignored.

Results and Discussion

The results of remittances incidence in Pakistan for the 2001-02, 2005-06 and 2010-11 are presented in this section. Table 1 presents the number of households and their percentages receiving remittances in Pakistan. Table 2 presents the distribution of households' migrants among income quintiles ranked by their average household income, with and without foreign remittances respectively for the years 2001-02, 2005-06 and 2010-11. Column (1) of Table 2 ranks all migrant by income quintile on the basis of their average annual income. Column (2) presents the percentages of their average annual income (without remittances) and column (3) presents the percentages of their average annual income (with remittances). Column (4) shows the difference between column (2) and (3).

By examining column (1) of Table 2 it can be seen that the lowest income quintiles actually produce the highest share of total migrants in Pakistan in all data sets. Column 1 shows that migrants are not distributed fairly equal among the income classes. Column 2 shows that the lowest income quintile receives the lowest percentage of average income and the highest income quintile receives the highest percent of average income in all selected years. Column (3) shows the percentage share of average income going to each income quintile, including remittances. Column (4) is constructed by subtracting column (2) from column (3) and shows that the remittances have negative effect on the

distribution of income. The uneven shares of abroad migrants produced by the different income groups have negative effect on the distribution of income. To evaluate this effect it is necessary to compare the change in income distribution that occurs when remittances are once included and then excluded in the analysis. Column (4) shows that in 2001-02 large changes in the average income for different quintile groups when foreign remittances are included. A decrease in percentage average income of the lowest income group after inclusion of foreign remittances in Pakistan can be seen in the column 4.

However, in case of the highest income groups it can be seen that increases in percentage average income after inclusion of remittances, which shows that foreign remittances have negative effect on the distribution of income in Pakistan. In table 2 it can also be seen that when remittances are included, the households from lower and middle income quintiles benefit less than households of upper class for Pakistan. The share of average income with remittances going to households in second, third and fourth income quintile declines in 2001-02. In contrast, the percentage of average income with remittances going to households in the highest income quintile increases in Pakistan. When remittances are included the largest percentage increases is for the highest quintile. For other income quintile these percentages have been decreased. Similar trend can be observed for the years 2005-06 and 2010-11. It can be concluded that remittances have negative effect on the distribution of income as they are not distributed fairly equal in Pakistan in all three selected data sets.

Table 1: Household Receiving Foreign Remittances

	HIESs Data		
	2001-02	2005-06	2010-11
No of Households	14050	15450	16317
No of Households Receiving Remittances	786	852	868
Percentage of Households Receiving Remittances	5.6	5.5	5.3

Source: Calculated by Author from (HIESs) data.

Table 2: Distribution of Household's Migrants among Income Quintiles Ranked by Predicted Average Household Income, with and without Foreign Remittances. (HIES)

Rank	Household Along the Income Groups (Percent) (1)	Average Income Without Remittances (Percent) (2)	Average Income With Remittances (Percent) (3)	Percentage Change Column (3)- Column (2) (4)
Pakistan 2001-02				
Lowest 20	25.38	6.00	2.38	-3.68
Second 20	14.62	5.90	3.95	-1.95
Third 20	20.67	13.75	8.68	-5.07
Fourth 20	19.83	20.61	15.43	-5.18
Highest 20	19.50	53.74	69.57	15.83
	100.00	100.00	100.00	
Pakistan 2005-06				
Lowest 20	20.77	7.14	4.71	-2.43
Second 20	19.13	10.64	7.89	-2.75

Third 20	20.07	15.42	11.93	-3.49
Fourth 20	20.19	21.68	18.52	-3.16
Highest 20	19.84	45.12	56.96	11.84
	100.00	100.00	100.00	
Pakistan 2010-11				
Lowest 20	20.05	7.52	5.37	-2.15
Second 20	19.93	11.56	8.81	-2.75
Third 20	20.16	15.65	13.03	-2.62
Fourth 20	19.82	20.74	19.02	-1.72
Highest 20	20.05	44.53	53.77	9.24
	100.00	100.00	100.00	

Source: Calculated by Author

Pre and Post Remittances Incidence

The Gini ratios in Pakistan for pre and post-remittances incidence are given in Table 3; it can be evidenced from the given table that Gini ratios for pre-remittances distribution are smaller than the Gini ratios for post-remittances distribution in 2001-02. That is 0.41, while post-remittances Gini ratio for the same year is equal to 0.42. In percentage term, there is an increase of 2.44 percent in pre-remittances Gini ratio after the remittances incidence has been realized.

Table 3: Pre and Post Gini Coefficients in Pakistan

Years	2001-02	2005-06	2010-11
Pre-remittances Gini ratios	0.41	0.42	0.38
Post-remittances Gini ratios	0.42	0.55	0.56
Percentage variation in Gini ratios	2.44	30.95	47.37

Source: Calculated by Author

Similarly, in 2005-06 pre-remittances Gini ratio is 0.42, while post-remittances Gini ratio for the same years is 0.55. In percentage term, there is large increase of 30.95 percent in pre-remittances Gini ratio after the remittances incidence has been taken into account. Finally, in 2010-11 it can be seen that pre-remittances Gini ratio is 0.38, while, post-remittances Gini ratio for the same years is 0.56. In percentage term, there is large increase of 47.37 percent in pre-remittances Gini ratio after the remittances incidence has been observed. Hence due to the inclusion of remittances the distribution of income has become more discouraging for lower income groups in all data sets.

It can be concluded that there is disparity between distributions of income between different time periods. Through all three selected periods (2001-02, 2005-06 and 2010-11) the Gini ratios have been increased. It may also be observed that the discrepancy between initial distribution of income and post-remittances is the largest in 2010-11, larger in 2005-06 and the smallest in 2001-02. The disparity may be interpreted to mean that the distributive impacts of remittances in Pakistan are the largest in 2010-11, the smallest in 2005-06 and smaller in 2001-02.

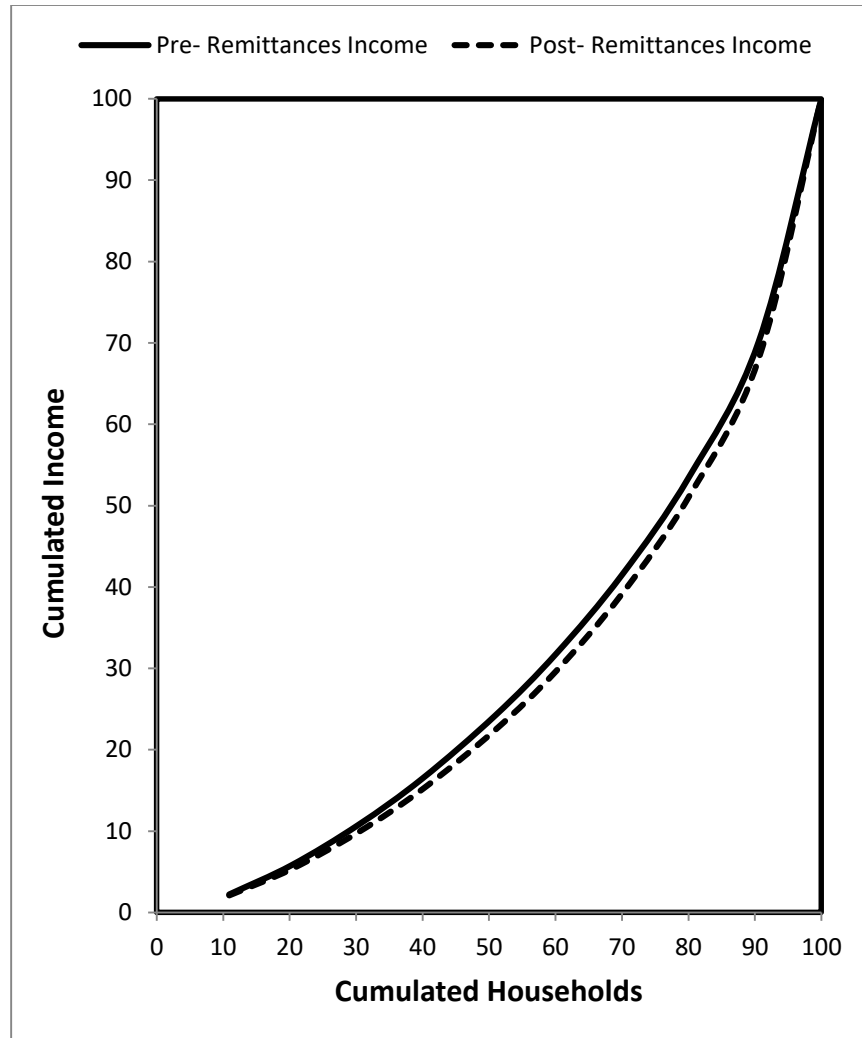
Pre and Post Lorenz Curves in Pakistan

The Pre and Post Lorenz curves are shown in the given figures 1, 2 and 3 respectively. From these figures, it can be concluded that the shapes and their positions are quite consistent with the Pre and Post Gini ratios in Pakistan in all three selected time periods.

Chow Breakpoint Test for Structural Stability

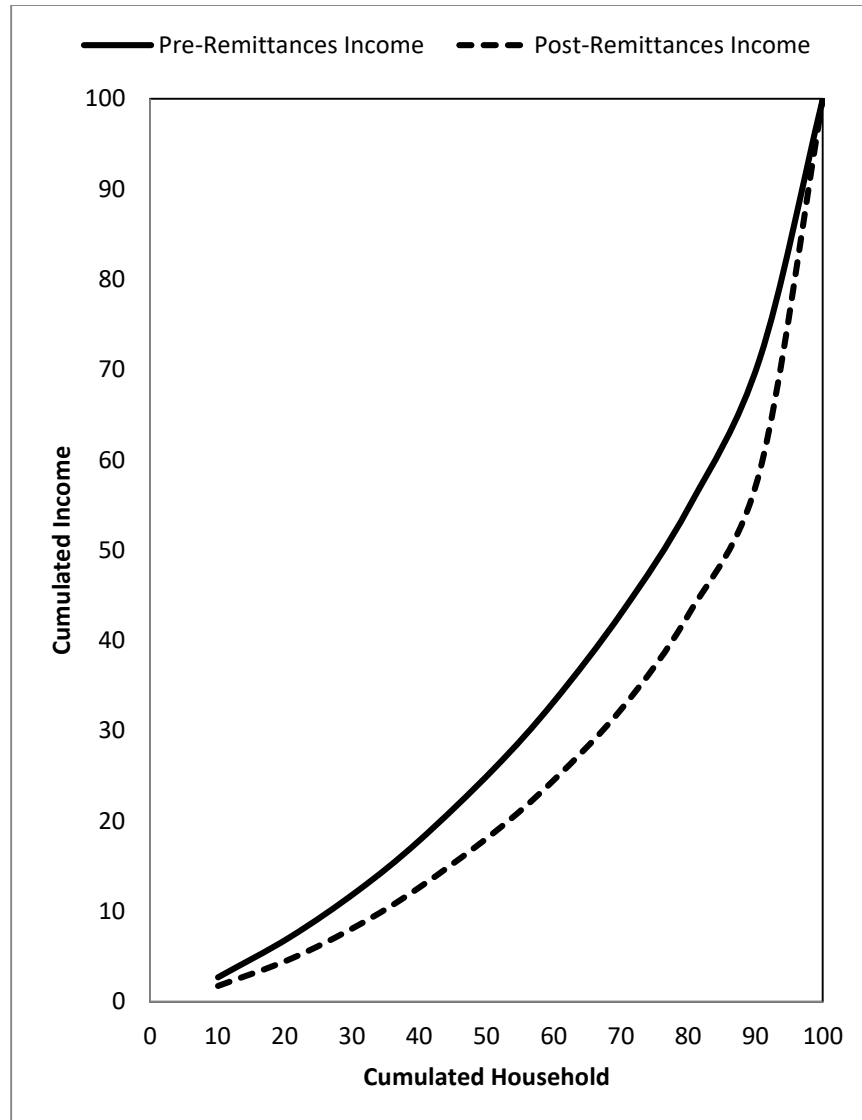
In Table 4 a test for equality of distribution of income has been conducted for significant differences in β coefficients in Pakistan for years 2001-02, 2005-06 and 2010-11. The null hypothesis of Chow test asserts that there is no significant difference between two distributions in question. In this experiment for Pakistan the regression coefficients for pre and post- remittances distribution are not statistically significantly different at 1% and 5% for level of significance. So, H_0 cannot be rejected and difference in pre and post-remittances distribution is merely due to a chance.

Figure 1: Pre- Post Remittances Lorenz Curve, 2001-02 (Pakistan)



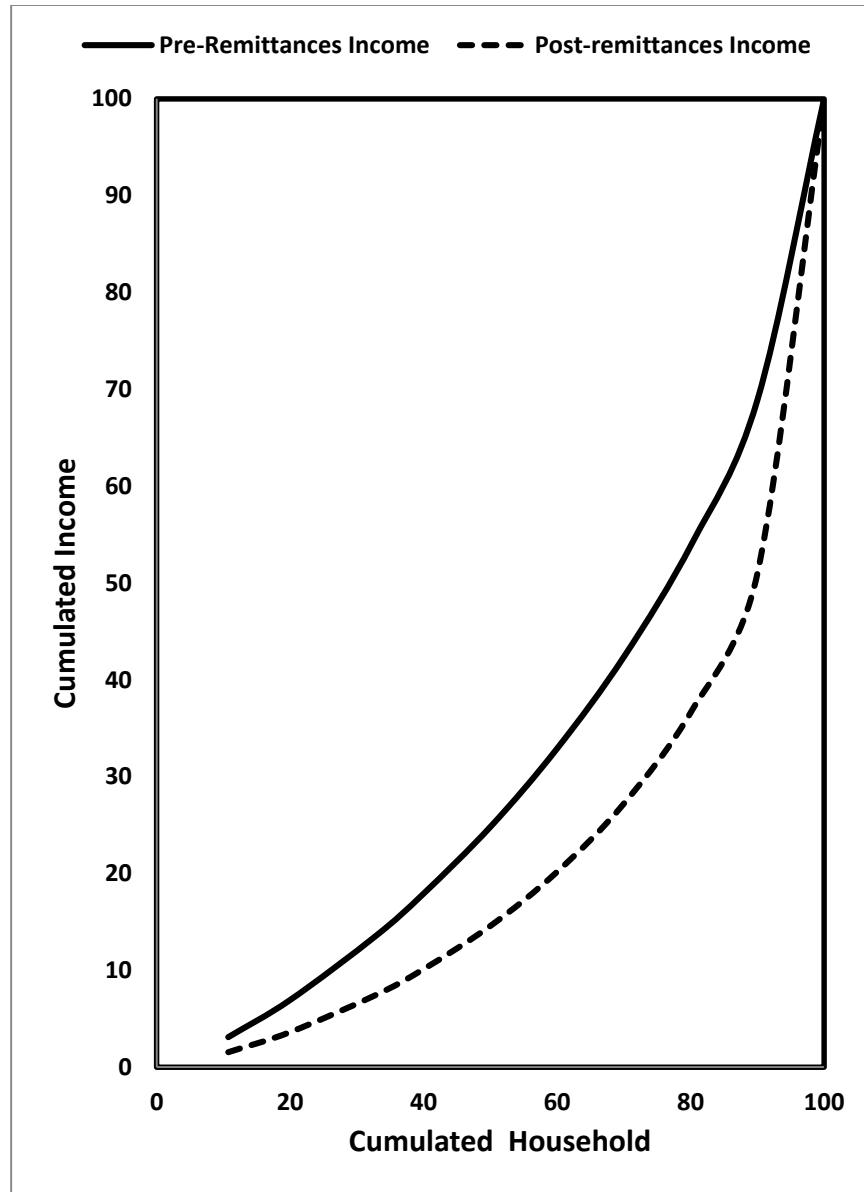
Source: Drawn by using HIES Data by the Author

Figure 2: Pre- Post Remittances Lorenz Curves, 2005-06 (Pakistan)



Source: Drawn by using HIES Data by the Author

Figure 3: Pre and Post Remittances Lorenz Curves 2010-11 (Pakistan)



Source: Drawn by using HIES Data by the Author

Table 4: Chow Breakpoint Tests for Significant Differences in β Coefficients

Distributive Experiment	F-statistic	Probability
2001-02 Pre-post-Remittances	1.24	0.31
2005-06 Pre-post-Remittances	1.05	0.36
2010-11 Pre-post-Remittances	1.12	0.34

Conclusion

This study analyses the redistributive effects of the foreign remittances among various income groups in Pakistan. Average income of households is used as base income. This study calculates and compares Gini ratios accompanied by Lorenz curves for pre- post remittances incidence by using data from HIESs for the years 2001-02, 2005-06 and 2010-11. This research study finds that foreign remittances have been worsening effect on the distribution of income in Pakistan in the selected years.

The study indicates that when foreign remittances are included in income the rise in Gini coefficients, ranges between 2.4 to 47.37 percent in Pakistan. However, increase in Gini ratios after incorporating foreign remittances in the analysis have been larger for the year, 2010-11. The study also applies Chow breakpoint test for structural stability. This test has been used to know that whether two distributions under examination are statistically significantly different from each other or not. Results of the study shows that most of the distributions are statistically significantly different from each other

The analysis of the results of the study indicates that the distribution of income is worsening, perhaps due to the distribution pattern of remittances among different income groups the lowest and lower. During data analysis, it has been observed that foreign remittances are not distributed fairly equal through the income groups. The number of the households in the lowest and lower income groups is very few as compared to middle and upper class income groups. It may be concluded that it is due to variation in the number of migrants created by different income groups and not

differences in either migrant earnings abroad or marginal propensity to remit that cause remittances having negative effect on income distribution. It may be accomplished that due to high migration cost and risks, lower income groups cannot afford to migrate as compared to high income groups. Moreover, the findings of the study indicate that foreign remittances are appeared to increase income inequality in Pakistan. The study also shows that the size or volume of foreign remittances contributes to growing more rapidly in overall income inequality in Pakistan.

The findings of the study are to focus on policy to improve the distribution of income and reduce income inequality in Pakistan. To improve the distributional effects of foreign remittances, steps need to be taken to help poorer households to have access to employment abroad. One measure as gauged from the findings of the study is to focus on the income classes from which migrants came would contribute to overall worsening the distribution of income. Moreover, policies should emphasize and access lower and the lowest income groups to enhance migration opportunities for them. Foreign remittances can improve the distribution of income if the less privileged classes are also able to migrate. So it is suggested that the system of migration needs to be continued and regularized in Pakistan to improve its distributional effects over time.

Present study may help other researchers to conduct their research in this field by using governmental huge data sources like HIESs. Moreover, by following the methodology of this study the researchers intend to do work in this area may segregate the analysis province- wise.

Literature Cited

- Adams, R. H. Jr. (1989). Workers' Remittances and Inequality. *Development and Cultural Change*, 38(1), 45-71.
- Adams, R. H. Jr. (1991). The Effects of International Remittances on Poverty, Inequality, and Development in Rural Egypt. *Research Report Washington D.C*, 86.
- Adams, R. H. Jr. (1992). The Effects of Migration and Remittances on Inequality in Rural Pakistan. *The Pakistan Development Review*, 3(4) Part II, 1189-1206.
- Adams, R. H. Jr. (1998). Remittances, Investment and Rural Asset Accumulation in Pakistan. *Economic Development and Cultural Change*, 47(1), 155-173.
- Adams, R. H. Jr. and Page J. (2005). Do International Migration and Remittances Reduce Poverty in Developing Countries? *World Development*, (33), 1645-1669.
- Adams, R. H. Jr. Cuecuecha, A. and Page, J. (2008). The Impact of Remittances on Poverty and Inequality in Ghana. *World Bank Policy Research Working Paper 4732*.
- Ahlburg, D. (1995). *Income Distribution and Poverty in Fiji*. Suva: ESHDP/UNDP. Mimeo.
- Ahlburg, D. (1996). *Remittances and the Income Distribution in Tonga*. Population Research and Policy Review, 15 (4), 391-400.
- Anyanwu, J. C. 2011. *International Remittances and Income Inequality in Africa*. Working Paper Series, N 135.

- Barham, B. and Boucher (1998). Migration, Remittances, and Inequality: Estimating the Net Effects of Migration on Income Distribution. *Journal of Development Economics*, 55 (2), 307-31.
- Capistrano, L. O. and M. L. Sta. Maria (2007). The Impact of International Labor Migration and OFW Remittances on Poverty in the Philippines. Available at: http://images.gmanews.tv/html/research_international_labot.pdf. [Accessed 9 February, 2009].
- Government of Pakistan (2011). Household Integrated Economic Survey 2010-11. Federal Bureau of Statistics Islamabad.
- Ilyas Muhammad (2004). Distributive Effects of Government Expenditures and Taxes: A Case Study of Pakistan, 1979, 1986-87, 1992-93. Ph.D Dissertation.
- Irfan, M. (2011). Remittances and Perversity Linkages in Pakistan: Evidence and Some Suggestions for further Analysis. PIDE Working Paper 2011:78.
- Kemal, A. R. (2003) Income Distribution Studies in Pakistan and the Agenda for Future Research. In Human condition Report 2003. Centre for Research on Poverty Reduction and Income Distribution (CRPRID), Islamabad.
- Lambert, Peter J. (1989). *The Distribution and Redistribution of Income: A Mathematical Analysis*; Basil Blackwell Limited 108 Cowley Road, Oxford, OX4 1JF, UK.
- Mazhar, M.and Anwar (2012). Remittances, Inequality and Poverty in Pakistan: Macro and Micro Evidences. Working Papers with No 2012-13-2 CATT-UPPA.

- McKenzie, D. & Rapoport, H. (2007). Network Effects and the Dynamics of Migration and Inequality: Theory and Evidence from Mexico. *Journal of Development Economics*, 84(1), 1-24.
- Milanovic, B. (1987). Remittances and Income Distribution. *Journal of Economic Studies*, 14 (5), 24-37.
- Miller, Herman P. (1963). Trends in the Income of Families and Persons in the United States: 1947 to 1960. Washington, D.C. Technical Paper No. 8, Bureau of Census.
- Mugal, Mazhar and Diawar, B (2010) Impact of Remittances on Inequality and Poverty: Macro and Micro_evidence from Pakistan. www.hecer.fi/conferences/NCDE_2010/papers/mughal_updateed.pdf
- Mughal, M. and Diawara, B. (2011) Explaining income inequalities in developing countries: the role of human capital, Presented at the Third International Doctoral Meeting of Montpellier, 3-5 May, 2010, Montpellier France.
- Reynolds, Morgan and Smolensky, Eugene. (1977) Public expenditure, Taxes and the Distribution of income: The United States, 1950, 1961, 1970. New York: Academic Press, Inc. 111 Fifth Avenue, New York 10003.
- Rodriguez, E. R., (1998) International Migration and Income Distribution in the Philippines economy. *Development and Cultural Change*, 46, 329-350.
- Sen, A. (1973). *On Economic Inequality*. New York; W.W. Norton.
- Simon, Kuznets (1955). Economic Growth and Income Inequality. *The American Economics Review*, 45 (1), 1-30.

Stark, O., J. Taylor, and S. Yitzhaki (1986). Remittances and Inequality. *The Economic Journal*, 96 (383), 722-40.