Forman Journal of Economic Studies
Vol. 18(2), 2022 (July–December), pp. 71-86 DOI: 10.32368/FJES.20221809

Remittances and their Impact on Poverty: An Empirical Study of Developing Countries Using ARDL

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Abstract

The primary goal of this research is to investigate the link between remittances and poverty using a panel data set of developing countries from 1990 to 2020. Empirical findings of ARDL model suggests that an increase in remittances reduce poverty, which suggests that remittances can enhance the living standard of the poor. In developing countries the migration of labour is a good sign of poverty reduction. Financial development is significant and positively related to poverty reduction so there is a need of policies that promote ease for migrants and pro poor financial development is required. This work will contribute to examining dynamics between remittances and poverty using the data of selected developing countries.

Keywords: Remittances, Poverty, ARDL.

JEL Classification: F24, F22, I30

1. Introduction

Poverty is one of the burning issues of the world in general and of developing world in particular. Being one of the most important socio-economic issue, poverty reduction strategies have attracted the interest of researchers to investigate the role of most relevant economic variables that can be used to reduce poverty. It will be an easy task for the policy makers to prepare appropriate policy for poverty reduction if the relationship among variables that can be effective in eradication of poverty and poverty is appropriately estimated. The total number of people from the whole world living below 1.90$ a day are 696 million, World Health Organization(2019).The monetary transfers in lieu of remittances are an important source of foreign income. Present study focuses on investigating whether remittances along with financial development and human development can be helpful in poverty reduction of developing countries or not. To end poverty in all forms by 2030 is the first goal in United Nation's Sustainable Development Goals (SDGs). So, specifically targeting poverty in developing countries will be helpful

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for the policy makers to cope up with this issue and to find out the main factors that are working behind it. Almost 10% of world population lives on less than $1.90 a day. (Lakner, C et al.2020)

Poverty is one of the most important socio-economic issues to be addressed by the policy makers as it is directly affecting the economic welfare of population. (Ravallion and Chen, 2013). There are many factors investigated in literature that play an important role in alleviating poverty. Economic growth is considered as an important factor for removing poverty as it increases productive employment opportunities to help the poor. (Bhagwati and Panagariya, 2013). The available theoretical and empirical literature shows mix trends of relationship between remittances and poverty. Adams and Page (2003) investigated how remittances can reduce poverty and reported that increased remittances lead to reduction in poverty level in the third world countries. Imai et al. (2014) used the data of 24 Asian and Pacific Countries, and estimated a positive and significant relationship between remittances and poverty. Issue of poverty alleviation has gained importance as "ending poverty in all its forms everywhere" is included in SDGs. Flow of international remittances is gaining attention in the developing countries firstly because of the rise in inflows and secondly because of their impact on socio economic life of people who are receiving these inflows.

In the 21st century, international migration played a critical role in enhancing economic links between developed and developing nations. The remittance money sent by migrant workers has considerably improved the living standards of people in Asia, Africa, the Middle East, and Latin America. (Semyonov, M., and Gorodzeisky, A. 2008; Taylor, 1999).

The remittances inflow in developing countries increased in 1990s and the average annual growth rate was approximately 17.1 percent. Income generated through remittances was more than official development assistance and private capital earnings during the same period. In 2004 the foreign capital inflow through foreign direct investment was equal to foreign income inflow through remittances. Foreign aid serves the purpose of financing the public projects and aid can never be replaced with remittances. Furthermore, all poor people are not recipients of remittances and poverty is removed with government intended policies. (Jongwanich and Kohpaiboon, 2019).

Credit worthiness and access to international capital market of a country is enhanced with larger remittance inflows. Credit rating rate of a country is also positively associated with remittance inflows. Remittances positively affect economic growth, if remittances are used in investment due to backward and forward linkages, all sectors of the economy are ultimately expanded. (Stark and Levhari, 1982; Ahlburg, 1991).

Remittances decrease poverty through expanded earnings and take into account higher interests in actual resources. It is also helpful in improving the education and empowerment level of the people. The remittance money sent back to home country results in accumulation of capital, it enhances the easy approach to finance. How much remittances contribute to capital accumulation depends on the marginal propensity to consume of the recipient. As per the World Bank Report 2006, poverty estimated through Head count ratio for Nepal declined from 42 % in 1995-96 to 31 % in 2003-04.

The international monetary crises reduced remittances of developing nations. Asian Development Bank (2011) in its report demonstrated that as a result of financial crises, there was a severe downturn in the amount of remittances received by the countries of Asia and unemployment was the main reason reported. Investigation of the family wise data showed that during crises overall 7% migrants from Bangladesh and 2% from Indonesia returned back to their home nation. There was an overall decrease in income because of the crises. During the crises, economies were in downturn, mostly people lost their jobs and got unemployed. Income level of 97 % families from Bangladesh, 82 % families from Indonesia and 64 % families from Philippines were recorded to be less as compared to the levels before the worldwide financial crises.

Some countries have not faced fall in remittance inflows, reasons are listed as: (i) long-lasting oversees migrants didn't revel in from the outcomes of the financial crises, (ii) numerous migrants have been settled in developing nations which have been no longer significantly stimulated by way of the financial crises, and (iii) migrants have been excited about the ones positions or industries which were fairly affected by the financial emergency (Silva et al. 2009). During 2010-11, an increase in remittance inflows is recorded in Asian countries this increase also proceeded to rise in 2012-14. (Roman. M 2013).

The main objective of present work is to check how the international remittances play role in removing poverty of developing countries This study incorporates the data of Pakistan, Bangladesh, India, Bolivia, Chile, Colombia, Thailand, Ukraine, Indonesia, Kazakhstan, Malaysia, Peeru, Sri Lanka and Paraguay for time period 1990-2020. There are a few studies that looked at the influence of remittances on poverty reduction using country-specific data, but none is available that specifically assessed the link between remittances and poverty in developing nations. The proposed research will assist policymakers in suggesting methods to eliminate poverty with a new dimension, namely, the extent to which remittances aid in the reduction of poverty in developing nations. Poverty alleviation is a major policy concern, and until the underlying issues are examined, policy questions will stay unresolved.

2. Literature Review

Poverty being the major socio-economic issue of the developing countries is mostly addressed in literature. Increase in purchasing capacity can lead to reduction in poverty. Remittances are one major source of financing in developing countries. With the help of money which is received by heirs at home country, people can consume more of good quality goods and services. Remittances have a significant influence on the living conditions of people in developing Asian, African, Latin American, and Middle Eastern nations. Remittances help to alleviate poverty by increasing income (Imai et al. 2014)

Other factors like distance of country from the home country and the percentage of migrated population also effects the magnitude of relationship between remittances and poverty. Richard and Page (2005) examined that percentage of migrated people from total population and the distance of home country from the labour receiving country also effects the impact of remittances on poverty. If 10 percent population of country has migrated it will lead to 1.9 % reduction in population living in poverty. Fajnzylber and Lopez (2006) show that countries where remittance receiving population is from bottom income deciles, the impact of remittances in reducing poverty is larger. As per analysis of Jongwanich (2009) remittances have positive impact on poverty reduction as it directly increases the income level, smoothens the consumption patterns and also by easing the capital constraints of poor people.

Share of remittances as percentage of GDP also matters as Banga and Sahu (2010) investigated how remittances change the poverty situation for 77 poor nations and proved that the remittances notably reduce poverty, however outcomes had been more reliable for nations wherein percentage of remittances become greater than 5% of GDP. Lokshin et al. (2010) show that one fifth of the poverty discount in Nepal that passed off among 1995 and 2004 is because of labour migration and remittances.

Ratha (2013) investigated that inflow of remittances increases the income of poor and helps in lowering the level of poverty. Remittances are more useful in case of poverty reduction as compared to the overall growth. Makram and Zayati (2015) argued that remittances help to reduce poverty so severe measures should be taken by using evolved countries to provide facilities to the overseas immigrants to their foreign countries such measures will assist to put off inequalities within growing international locations to some extent.

The influence of remittances on poverty is also affected by the classification of the nation under consideration. Azam et al. (2016) examined the influence of remittances on poverty reduction in 39 countries, the data set has countries having low income, middle income and high income. Only the countries which are classified as higher middle income, have seen a considerable reduction in poverty as a result of remittances, according to the findings. Pekovic (2017) empirically investigated that in case of selected transitional economies whenever remittances increase by 10% poverty head count will decline by 4.7 %. Similarly, Khan et al. (2022) have examined how much poverty is reduced as a result of change in foreign aid and remittances. They have employed balanced panel data set of 25 Middle East and North African (MENA) countries. Countries with high income were found more capable to reduce poverty in comparison with low income counterparts. Their findings were that on average poverty is reduced by 8.3 % when share of remittances in GDP increase by 10 %.

Shirazi et al. (2018) investigated the impact of remittances on poverty and economic growth in African OIC member countries, concluding that remittances may have a beneficial effect on poverty. They also explained how economic development in a country leads to an increase in remittances, which increases the impact of remittances in poverty reduction efforts. Using primary data, Kumar, B. (2019) imagined the impact of remittances on poverty alleviation measures in Bangladesh. The consequences explain why the population that receives remittances is substantially less impoverished than the population that does not get remittances. The Foster-Greer-Thorbecke index was used to determine the amount of poverty in households.

Herzfeld et al. (2020) projected the short and long-term effects of remittances on poverty, and their findings suggest that remittances have more powerful poverty-reduction effects in the short and long run. Remittances also have a major and positive impact on poverty reduction. Remittances to low and middle-income countries (LMICs) are expected to drop by 7% in 2020, to $508 billion, and then by 7.5% in 2021, to $470 billion.

Azizi. S (2021) worked on 103 developing countries and estimated existence of an inverse relationship of remittances with poverty and income inequality. His main findings were that an increase in remittances, the income received by lowest decile of population increases and the income share received by the upper decile of population declines.

According to the literature analysis, prior studies have looked at the influence of remittances on poverty using various control variables. None of the studies looked at how remittances affect poverty in emerging nations in terms of human and financial growth.

3. Theoretical Foundations and Variable Construction

3.1 Theoretical Framework

Remittances are considered important for improving the living standard of people. Remittances are channelized to help in eradication of poverty through increased level of income and a smooth pattern of consumption. The capital constraints faced by poor are also reduced by remittances inflow (Jongwanich and Park 2009). Regardless of the receiving country's economic situation, the flow of remittances stays very consistent. Remittances are supposed to alleviate poverty because they are often received directly by the poor. Impact of remittances can be captured from individual as well as aggregate perspective. Lucas (2005) estimated a negative relationship between remittances and poverty. Regarding remittances there are two types of studies available in literature. First type of studies focuses on the macroeconomic impact of remittances and includes works done by Leon and Piracha, 2004 and Schiopu and Siegfried, 2006, afterwards Silasi and Simina, 2008 contributed significantly to the literature. The second type of studies consider the microeconomic determinants of remittances, the second type includes works by Roman, 2013; Rapoport and Docquier, 2005 and De Sousa and Duval, 2010.

Theoretical literature provides firm basis for financial development to be useful for poverty reduction. As poor are provided with credit and financial services, income is raised through productive investment and also through interest earned on savings. (Schumpeter, 1934) Financial development enhances economic growth if the gains of economic growth are correctly channelized to poor it can also reduce poverty. Omer. M.A and Inaba, K (2020) explain that financial development significantly contributes to reducing poverty of developing countries.

Human capital secures great importance in endogenous growth and neoclassical growth literature. These models incorporated human capital as a separate input in the production function and difference in economic growth is also attributed to be explained by human capital (Mankiw et al. 1992).

According to theoretical literatures, human capital has a positive impact in reduction of the poverty. Human capital development stimulates economic benefits such as income distribution equality, increased productivity, and decrease the unemployment rate. One of the key causes contributing to the backwardness of most endowed economies has been identified as low human capital investment (Moav and Neeman, 2008).

Human capital increases output and income per worker so poverty can be alleviated with higher levels of human capital. Human capital and poverty have a strong dynamic relationship. Human capital provides economic benefits like equal distribution of income, increased level of productivity, and a lower rate of unemployment.

3.2 Variable Construction and Data Sources

Our main emphasize is to estimate the impact of remittances on poverty. The key variables of present study are poverty (HCR), remittances (R), financial development (FD), Human development index (HDI) and inflation (INF). Since we have to deal with panel data, the set of data consists of data of 14 countries for time period 1990-2020. The core idea of the research is to analyse the role of remittances in reducing poverty of selected developing countries. The specific countries that are included in the study are Pakistan, Bangladesh, India, Bolivia, Chile, Colombia, Thailand, Ukraine, Indonesia, Kazakhstan, Malaysia, Peeru, Sri Lanka and Paraguay. These countries are selected because no study is available in the literature with the dataset of present study. Furthermore, data of all the variables of the study for all of these countries is easily accessible. Null hypothesis is that remittances do not effect poverty tested against the alternative that remittances have effect on poverty.

Insight of the model used in this work is taken from the growth-poverty model proposed by Ravillion and Chen (1997), Ravallion (2001), and other empirical models used for estimating the effects of remittances on poverty presented by Adam and Page (2008) the empirical model is as

$$HCR_{it} = \quad \beta_0 + \ \beta_1 RMT_{it} \ + \quad \beta_2 FD_{it} + \quad \beta_3 HDI_{it} + + \ \beta_{40} INF_{it} \ + \mu_{it} \quad (1)$$

Poverty Head Count Ratio is that percentage of the total population which has less than \$1.90 a day in 2011 international world prices to meet its basic needs and it is taken as dependent variable. This poverty line can cope up with comparability challenges and is also best representative of revisions made by World Bank since 1990. Personal remittances are the foreign income transfers in the form of cash and also in kind received by the residents of a country. The model estimates the effect of remittances on poverty, considering remittances as main independent variable while financial development, human development index and inflation as control variables. Financial development index ranks the countries in an order which is based on the extent of their accessibility towards the financial institutions and markets and secondly how much these financial institutions and markets are efficient. $\mu_{it}$is the error term in the model. The source of the data is WDI for all variables except the data of FD that is taken from IMF.

4. The Econometric Methodology

4.1 Stationary of the Data and Unit Root

It is obligatory to check first the stationary of data of selected variables included in the study. It is checked with Augmented Dickey Fuller ADF test that if the variable under consideration is I (0), I (1) or both.

4.2 Autoregressive Distributive Lag (ARDL) Model

Following the panel data for analysis ARDL approach is used that is introduced by Pesaran and Shin (2001) as it has many advantages over other techniques. For example, it is most recent approach use for panel data; it deals with both small and large sample size. The best advantages of ARDL is that endogeneity creates less problem in this techniques. ARDL model has inbuilt characteristics to generate the sufficient lags for the variables of the model. ARDL is also capable of dealing with serial correlation of residuals. If some of the variables are endogenous the estimates of coefficients are not unbiased. The ARDL panel provides data for both the short and long term. The following is the ARDL standard.

$$\Delta HCR_{it} = \alpha_0 + \sum_{i=1}^{k} \delta_i \Delta HCR_{it-1} + + \sum_{i=1}^{k} \phi_i \Delta RMT_{it-1} + \sum_{i=1}^{k} c_i \Delta FD_{it-1} + \sum_{i=1}^{k} \gamma_i \Delta HDI_{it-1} + \quad (2)$$

$$\sum_{i=1}^{k} \emptyset_i \Delta INF_{it-1} + \lambda_1 HCR_{it-1} + \lambda_2 RMT_{it-1} + \lambda_3 FD_{it-1} + \lambda_4 HDI_{it-1} + \lambda_5 INF_{it-1} + + \mu_{it-1} \quad (3)$$

Where α_0 is recognised as drift parameter, the terms with summation sign capture the short run dynamics and second portion of the equation with λ_i are taking into account the long run relationships $\mu it$is thewhite noise error term.

The ECM specification of the model is as under

$$\Delta HCR_{it} = \alpha_0 + \sum_{i=1}^{k} \delta_i \Delta HCR_{it-1} + + \sum_{i=1}^{k} \phi_i \Delta RMT_{it-1} + \sum_{i=1}^{k} c_i \Delta FD_{it-1} + \sum_{i=1}^{k} \gamma_i \Delta HDI_{it-1} + \sum_{i=1}^{k} \emptyset_i \Delta INF_{it-1} + \eta ECM_{t-1} + \mu_{it-1} \quad (4)$$

The Error Correction Mechanism depicts how the model will approach long-term equilibrium. If a short-term shock occurs, the adjustment speed will be determined by the ECM term's coefficient.

5. Results Discussion

5.1 Analysis of Unit Root

Table 5.1: Results of Unit Root Test

Variables	Level	First difference	Order of integration
Poverty (HCR)	-1.62 (0.05)	-13.508 (0.000)	I(0)
Remittances	-1.90 (0.02)	-13.58 (0.000)	I(0)
Inflation	-9.77 (0.000)	-20.04 (0.000)	I(0)
Financial Development	1.692 (0.95)	-17.04 (0.000)	I(1)
HDI	2.97 (0.998)	-13.523 (0.000)	I(1)

Source: Author’s estimation

Unit root is checked by applying Pesaran (2007) unit root test. Results of Pesaran (2007) unit root test for variables included in the present work are stated in Table 5.1. According to the results Poverty head count ratio, Remittances, and inflation are found stationary at level, while human development index and financial development are found stationary at first difference. As the variables' integration orders are jumbled, I (0) and I (1). As a result, Panel ARDL may be used to examine the long-term connection between the variables under consideration.

5.2 Analysis of Panel Cointegration Tests

After testing the unit root, the next step is to determine whether or not there is cointegration among the model's variables. The Pedroni panel cointegration test (Pedroni, 1999) was employed in this study since it is more useful for estimating the long term cointegration connection between the variables. The null hypothesis for the test is that there is no cointegration. Pedroni proposes a total of seven test statistics, which are grouped into two primary techniques as follows:

(i) Within dimensions
(ii) Between dimensions

Table 5.2: Results of Pedroni panel cointegration Test

	With In Dimensions		Between Dimensions	
	Panel	P-value	Group	p-value
v- Statistic	1.627	0.051*	-	-
ρ – Statistic	0.254	0.601	2.083	0.981
PP- Statistic	-3.255	0.000*	-2.011	0.022**
Group Statistic	-5.368	0.000*	-4.446	0.000***

Note: ***, **, *denotes significant at 1, 5 and 10% respectively.
Source: Author’s estimation

Results of Pedroni panel cointegration test are reported in Table 5.2. Three test statistics from within dimension approach reject the null hypothesis of no cointegration, these are namely v-statistic, ρ- statistic and PP-statistic. From between dimensions approach the PP-statistic and Group – statistic reject the null hypothesis. So it is concluded that for this particular research work four out of seven test statistics confirm the existence of long run relationship among the selected variables under consideration. Thus estimated results of Pedroni panel cointegration test confirm that there exists long run equilibrium relationship in the variables of the model.

5.3 Analysis of Panel ARDL Results

Table 5.3: ARDL Estimates

	Coefficients	Standard error	t-statistic	p-value
Long run equation				
RMT	-0.576	0.0825	-6.978	0.000
HDI	-30.352	1.002	-30.263	0.000
FD	10.729	0.359	29.805	0.000
INF	0.117	0.033	3.477	0.000
Short run equation				
COINTEQ01	-0.173	0.042	-4.049	0.000
D(HCR(-1))	0.158	0.090	1.752	0.080
D(RMT)	1.401	0.728	1.924	0.055
D(RMT(-1))	0.470	0.871	0.539	0.590
D(RMT(-2))	0.339	0.692	0.489	0.624
D(HDI)	70.006	33.899	2.065	0.039
D(HDI(-1))	37.979	28.601	1.327	0.185
D(HDI(-2))	0.541	36.469	0.01 4	0.988
D(FD)	0.817	6.457	0.126	0.899
D(FD(-1))	-5.475	8.024	-0.682	0.495
D(FD(-2))	-2.635	4.829	-0.545	0.585
D(INF)	-0.039	0.038	-1.020	0.308
C	3.081	0.988	3.117	0.002

Source: Author's estimation

Results of ARDL regression are reported in Table 5.3. According to estimates of ARDL model remittances and poverty are inversely related over the long run. Remittances have significant negative impact on poverty. Hence, increase in remittances reduces poverty. The negative impact of remittances on poverty is consistent with studies available in literature. (Adams and Page 2008; Ratha, 2013). Human development index also inversely and significantly effects poverty headcount ratio. Higher the rank of human development lower will be poverty Inflation is positively and significantly affecting poverty in the sample of selected developing countries. Inflation directly affects the purchasing power a rise in prices increases the poverty head count ratio. Financial development has positive and significant impact on poverty reduction. All these findings are consistent with the available earlier literature (López-Cordova 2006; Kausar et al., 2019; Odhiambo et al., 2019). Financial development is positively and significantly affecting poverty head count ratio of the selected developing countries. Financial development has positive and significant impact on poverty reduction. An increase in the ranking towards financial institutions and financial markets is contributing towards rise in poverty. The empirical studies show mix trend of financial development towards poverty eradication. It depends on so many factors like country specifications proxies used for poverty and financial development etc.

The results of the research reject the null hypothesis of the study and accept the alternative hypothesis. Cointegration analysis is used to check the existence of long run equilibrium relationship and also to check that the series will converge towards equilibrium over time or not. Cointegration analysis provides statistical foundations and economic basis for the error correction model. If error correction model shows that the co-integration exists among the variables, then ECM checks if in short there is any disequilibrium in the model or not? Co- integration results are used for long run relationship and for the short run ECM is applied. Coefficient of Error Correction term is negative and significant which confirms and validates that the model is in equilibrium in both short and long run.

The reported negative and significant COINTEQ01 shows that model will converge towards the long run equilibrium. Each year the variables of the model will converge to long run from short run at a speed of 17 percent. As per the results we can reject the null of no cointegration and then alternative hypothesis of the study is accepted, and model shows convergence towards long run equilibrium path.

6. Conclusion and Policy Recommendations

The study analysed the impact of remittances on poverty in selected 14 developing countries. Remittances are pro poor in nature. If they are properly channelized, they can eradicate poverty. As the United Nation's Sustainable Development Goal No.01 is to end poverty from the entire world, there is dire need of empirical work to identify the factors that can be helpful in reducing poverty. Remittances are helpful in directly increasing the purchasing power. However, remittances not only increase consumption but also improve research and education and provision of health facilities and thus ultimately decrease poverty.

More work and effort are required to remove financial deficiencies. More appropriate policies should be adopted to enhance the access of poor people to the financial institutions and markets. It should not be the case that only rich upper class should reap the fruits of financial development. As the results indicate increase in the rank of financial development is increasing poverty it indicates that pro-poor financial development is required, that should be capable of reducing poverty. The small and medium enterprise should be provided with developed facilities of financial sector.

Policymakers should take strong steps so that remittances may be utilized in development of human and physical capital so that full fruits of its contribution to reduction in poverty could be reaped. Developing countries specifically have limited funds, the remittance inflow can be used to eradicate poverty and promote economic growth.

Government should introduce long term and short-term policies to eradicate the poverty like institutional poverty should be removed, employment generating policies should be adopted by government, education should be promoted, there should be ease for international migrations. The major goal should aim to eradicate the poverty and to improve the living condition of the vulnerable societies.

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