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REMITTANCE INFLOWS AND POVERTY IN PAKISTAN :By Using ARDL Model

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ABSTRACT

The study puposes to explore the association between the poverty and remittances in Pakistan. Data for the time series is gathered between 1980 and 2021. This research employed two substitutes for poverty. The poverty proxy for Model 1 is household consumption (HHC). In model 2, household consumption is regarded as poverty due to low income, while the infant mortality rate is regarded as poverty due to health issues. The unit root findings show that co-integration and (ARDL) regression analysis may be concluded by applying the ARDL bond testing. Models 1 and 2's variables show a long-run link according to the findings of the co-integration test since their respective F-statistics are greater than the crucial value. The results of model 1 (long- and short-term) show that remittances (REM) have a negative influence on poverty (HHC). According to earlier research, remittances have a detrimental impact on poverty. The results of model 2 (long-run) show that poverty (IMR) is negatively impacted by remittance. Short-term outcomes, however, show that remittance impact is positively correlated with poverty (IMR). The inverse link between remittances and poverty suggests that remittance growth can lower Pakistan's poverty rate. The findings indicated that remittance inflows have a significant impact on decreasing poverty in Pakistan.

Keywords: Poverty, Remittance, Inflation, Infant Mortality Rate, Consumption

INTRODUCTION

The quest to address poverty has increasingly captivated researchers' attention, prompting a search for pivotal economic factors, which can serve as a remedy for poverty alleviation in Pakistan. One such focal point of exploration has been the correlation between remittances and poverty. The global landscape has witnessed a remarkable surge in inflows of remittances, particularly in middle and low income countries. Migration Policy Institute (2019) stated that the monetary of global transfers from migrants escalated to a staggering $689 billion in 2018, with 77% of this sum directed towards low and middle-income countries. Moreover, projections suggest a continual increase in monetary transfers, with an anticipated growth of $21 billion in 2019, potentially reaching a remarkable $550 billion in the coming years (Migration Policy Institute, 2019). According to Ratha et al. (2018) for Pakistan, remittances have emerged as a significant foreign income source, standing alongside (FDI) and official development assistance (ODA). This influx of remittances into the country has not only contributed to the economy but has also played a pivotal role in addressing poverty by providing essential financial support to families, particularly in rural and economically marginalized areas.

The consistent growth in remittance inflows has underscored the importance of understanding and harnessing this economic force to combat poverty effectively. Researchers and policymakers in

Pakistan are increasingly focused on leveraging this influx strategically, recognizing its potential to uplift communities and alleviate poverty by fostering economic stability and empowering individuals and households. As the country endeavors to address poverty through various economic means, the role of remittances stands out as a promising avenue, prompting a deeper exploration into how these financial inflows can be channeled and utilized optimally to create sustainable impacts on poverty reduction initiatives.

The multifaceted influences of remittances extend beyond individual households. They contribute significantly to overall GDP growth can create improved fiscal space for governments, and enhance access to foreign exchange reserves. These collective outcomes serve as indicators of reduced poverty levels and a more robust economic framework, emphasizing the crucial role remittances play in uplifting communities and advancing national development agendas. In Pakistan's case, the substantial inflow of remittances has been instrumental in supporting families, especially in rural and financially underserved regions. This influx has bolstered consumption patterns, improved living standards, and enabled individuals to access better education and healthcare facilities, consequently contributing to broader societal welfare.

Previous studies contributed to identified the REM effect on poverty identified varied findings. Some research suggests that remittances positively influence the growth of economy (Makun 2018). While, Adam and Klobodu (2016) argued that the impact og REM on poverty is insignificant. Among studies exploring reduction in poverty due to remittances (Vacaflores 2018). However, conflicting findings exist, with certain studies implying that middle and low income nations might not significantly decrease poverty via the inflows of remittances. A few studies have delved deeper into the association between REM and poverty (Yasman et al., 2015), yielding inconclusive results. Considering these discrepancies, generalizing outcomes across different countries becomes inappropriate. Hence, this study purposes to explore the association between remittances and POV in Pakistan by using the data of time-series from the period of 1980 to 2018.

Researchers have been striving to establish the optimal measures of POV, with support for a measure of multidimensional. However, no clear understanding has been achieved. This analysis uses two proxies of poverty: HHC and IMR. Consumption of house hold reflects poverty due to low or no income, whereas, IMR reflects poverty due to high diseases rates. Insufficient time-series data prevented the adoption of alternative multidimensional poverty indicators, such the human development index. Other measurements of income poverty include gap and headcount of poverty.

Eradication of poverty in all kinds continues to be the most problematic concerns of the humanity. However, the poor people ratio fell by more than half from 1990s, approximately from 1.9 billion. Now, it has become 836 million in 2015. More of the people far too many continue to struggle for initial necessities (basic needs). It has been estimated that over 800 million people live on less than $1.25 a day, and that many do not have sanitation, clean drinking water and food. China and India have benefited from rapid economic growth, but the benefits have not been distributed equally. There is a greater likelihood of women being poor than men due to unequal access to education, jobs, and property.

All people worldwide are to be free from severe poverty by 2030, which is defined as a daily income of less than $1.25. Defining poverty as the situation in which children, women, and men of all ages live in all aspects, and reducing the percentage of people that live in poverty by half by 2030. Based on the lower middle-income poverty rate of $3.20 per day, the World Bank estimates Pakistan's poverty rate in fiscal year 2020-21 to be 39.3%. A government report revealed that 22% of the population lived below the line of national poverty ($10) in September 2021. In 2007-08, independent authorities reported a significant drop in poverty rates, when 17.2% of the nation's population was estimated to live in poverty. By the 1990s, inadequate government policies and widespread corruption reversed the country's poverty in 1970s and 1980s. The "poverty bomb" is a term used to describe this effect. A poverty reduction strategy paper for the country was prepared by the International Monetary Fund in 2001. It was estimated that 55 million Pakistanis lived below the poverty line, based on a study provided by the Ministry of Planning and Development to Pakistan's

National Assembly. It ranks 161 out of 192 countries in 2022, based on Pakistan's Human Development Index (HDI). There are only two countries in Asia with lower HDIs than Pakistan, and those are Yemen and Afghanistan.

Poverty in Pakistan has been a significant socio-economic challenge. It is necessary to give the attention on the situation of socio-economic challenges. In Pakistan, poverty is often measured by factors such as income levels, access to basic services, and living standards. Several factors contribute to poverty in the country. High levels of unemployment, underemployment, and low wages contribute to economic hardships for many individuals and families. Limited access to quality education can perpetuate cycles of poverty, as individuals may struggle to acquire the skills needed for better job opportunities. Inadequate healthcare services and infrastructure can lead to health-related challenges, affecting both individual well-being and economic productivity. Income inequality and disparities in resource distribution can exacerbate poverty in certain regions or among specific demographic groups. Issues such as gender inequality, discrimination, and social instability can also contribute to the persistence of poverty. Efforts to alleviate poverty in Pakistan often involve a combination of economic policies, social interventions, and development programs. International organizations, NGOs, and the Pakistani government work on various initiatives to address these challenges, including promoting education, improving healthcare infrastructure, and implementing poverty alleviation programs.

However, Remittances, which are funds sent by migrants working abroad to their families in their home country, can play a significant role in reducing poverty. Here are several ways in which remittance inflows contribute to poverty reduction: Remittances provide direct financial support to recipient households, helping them meet their basic needs such as food, shelter, and clothing. Families often allocate remittances to healthcare and education expenses, improving access to medical services and educational opportunities. Remittances can be used to start or expand small businesses, allowing families to diversify their sources of income and move beyond reliance on traditional sectors. Funds from remittances may be invested in income-generating activities, contributing to economic development at the community level. Remittances can complement existing poverty alleviation programs initiated by governments or non-governmental organizations (NGOs), enhancing their impact. Remittances act as a financial safety net, helping families cope with economic shocks, such as sudden job losses or unexpected expenses, which might otherwise push them into poverty. Remittance funds can be directed towards investing in education and skill development, contributing to the improvement of human capital within the recipient community. Remittances may be used to improve living conditions, including housing and infrastructure development, leading to an overall improvement in the quality of life. Remittance recipients often engage with formal financial institutions, fostering financial inclusion and providing opportunities for savings and investments. In some cases, remittance funds may be pooled for community development projects, such as building schools, hospitals, or other essential infrastructure. Therefore, the research objectives of this study are to examine whether REM inflows reduce POV in Pakistan.

The remaining paper is divided into the five parts that are follows: section 2 contains literature review and background of the theory. Section 3 contains moel and method that applied in this research to analyze the data. Sections 4 contains the results discussion and analyses of the data. In the last, section 5 contains the discussion and conclusion.

LITERATURE REVIEW

Theoritical Background

Dependency Theory, which was proposed by Singer and Prebisch in 1949 stated that the underdeveloped countries depend on the developed countries. The theory explained poor countries depend on rich countries. Such as, poverty and remittances share a complex relationship. Remittances, typically sent by migrants to their home countries, can act as a double-edged sword. While they provide much-needed financial support to families in poverty, they can also create a dependency on external sources of income. This dependence may hinder the development of local industries and self-sufficiency, perpetuating a cycle of poverty. The theory suggests that rather than relying solely on remittances, it is essential for

countries to develop sustainable economic strategies to break the cycle of dependency.

Economic Diversification theory posits that REM contributes positively to POV alleviation by fostering economic diversification. As migrants send money back home, recipients may invest in various economic activities, leading to the growth of local industries. This economic diversification can create employment opportunities and improve income levels, ultimately reducing poverty. However, the success of this hypothesis depends on the effective utilization of remittances for productive purposes rather than mere consumption.

Remittances are not only financial transfers but can also contribute to the development of social capital within communities. The Social Capital Theory suggests that the networks and relationships formed through migration and remittance flows can lead to the creation of social support systems. This, in turn, can empower individuals to collectively address poverty-related challenges. Communities with strong social capital may utilize remittances for community development projects, education, and healthcare, thereby contributing to poverty reduction.

In some cases, poverty may drive individuals to migrate as a coping strategy. The Migration as a Coping Strategy theory suggests that remittances serve as a safety net for families facing economic hardships. Migrants may send money back home to alleviate immediate financial pressures, such as access to healthcare or education. While this may provide temporary relief, the theory also highlights the need for comprehensive poverty reduction strategies to address the root causes of migration.

Human capital development theory proposed by Gary Becker and Theodore Schultz in 1950 argues that REM plays a crucial role in enhancing the skills and education levels of individuals in impoverished communities. As families receive financial support, they may invest in education and training, leading to an enhancement of human capital. This, in turn, can break the cycle of intergenerational poverty by providing individuals with the tools to secure better employment opportunities and contribute to the overall development of their communities.

These theories highlight the multidimensional nature of the relationship between POV and REM, emphasizing the importance of considering various factors such as economic structures, social dynamics, and individual choices in understanding this complex relationship.

PREVIOUS STUDIES

Remittances refer to the transfer of money, typically in the form of financial contributions, sent by individuals working or residing in foreign countries to their families, friends, or communities in their home countries. These monetary transfers are often a crucial source of financial support for recipients in the home country. Remittances can be sent through various channels, including formal financial institutions, money transfer services, or informal methods, such as hand-delivery. The primary drivers of remittances are often individuals seeking employment opportunities abroad, commonly referred to as migrants or expatriates. These migrants send their earning portions back to nations to support their families or to contribute to community development. Remittances play a significant role in the global economy, with millions of people relying on these financial inflows as a lifeline for meeting necessties such as food, shelter, healthcare and EDU. The funds sent through remittances can have far-reaching impacts on both individual households and broader economic structures. On the microeconomic level, remittances contribute to poverty alleviation by providing a stable source of income to recipients. This financial support often enables families to access essential services, invest in education, or start small businesses, fostering economic resilience.

At the macroeconomic level, remittances can influence a country's balance of payments and foreign exchange reserves. Countries heavily reliant on remittances may experience fluctuations in their economic stability based on the ebb and flow of funds from migrants. Additionally, remittances can serve as a crucial source of foreign exchange, contributing to national economic growth. While remittances are generally viewed as a positive force for poverty reduction, there are also potential challenges. Dependency on remittances can create economic vulnerabilities, as local economies may become overly reliant on external financial inflows. Effective utilization of remittances for productive purposes, such as investments in education and infrastructure, is crucial to ensuring sustainable development.

The influences of REM on POV is a multifaceted and complex phenomenon, with both positive and potential challenges associated with it. Understanding this impact requires consideration of various factors, including the scale of remittance inflows, the utilization of funds, and the broader economic and social context. Here are some key aspects of how remittances can influence poverty. Remittances can directly contribute to poverty reduction by providing recipient households with a stable source of income. Families often use remittance funds to cover basic needs healthcare, shelter, and food. This immediate financial support helps improve living standards and can lift households out of extreme poverty. Remittances frequently play a crucial role in enhancing access to education and healthcare. Families may allocate a portion of remittance funds to ensure that children receive quality education and that healthcare expenses are covered. This investment in human capital can break the cycle of poverty by empowering individuals to acquire skills and pursue better opportunities.

Remittances are often utilized for entrepreneurial activities and the establishment of small businesses. This can stimulate local economic growth by creating employment opportunities and fostering entrepreneurship. When used effectively, remittances contribute to the development of microenterprises, which can be a sustainable mechanism for poverty reduction. In some cases, remittance funds are pooled at the community level to support development projects. This might include infrastructure improvements, such as the construction of schools, roads, or healthcare facilities. Community-driven initiatives can have a broader impact on poverty by addressing systemic challenges and enhancing the overall quality of life.

Despite the positive aspects, overreliance on remittances can pose challenges. Dependency on external financial inflows may create a sense of economic vulnerability, as local economies become heavily reliant on funds from abroad. However, the risk related makes issues such as "Dutch Disease," where an influx of currency of fooreign leads to appreciation of local currency, negatively impacting other sectors of the economy. Remittances can contribute to macroeconomic stability by bolstering a country's foreign exchange reserves. This, in turn, can positively impact the country's balance of payments. However, it is crucial for governments to manage this influx effectively to prevent economic imbalances. Previous studies identified the impact of REM inflows on POV.

Azam, Haseeb, and Samsudin (2016) determine how certain other factors including overseas remittances affect population growth. This research is empirical. The variables in this study are income, debt, inflation of human capital, foreign aid, and foreign remittances. Determining how these factors affect population increase is the primary goal of this study. Researchers look at 39 nations that fall into the lower middle, higher medium, and high income categories in terms of population growth. The analysis is based on data that was gathered between 1990 and 2014. Data is gathered from 15 high income and 13 lower-middle-income nations. There are just these nations' worth of data available. This study uses the FMOLS Panel fully modified OLS statistical test. The findings suggest that there is a favourable correlation between overseas remittances and slower population growth. Aid and debt have a positive relationship with population growth, which means that as foreign aid and debt levels rise, so will the county's population growth. Population growth is negatively impacted by income; as income rises, population growth will decline. This study suggests that policymakers use measures to enhance the inflow of international remittances while decreasing the amount of foreign debt and aid in the nation encourage the foreign remittances inflow.

Apergis, Dincer, and Payne (2010) investigate population growth and economic disparity. This study's primary goal is to determine the short and long term association between population increase and disparity of income. Additionally, they determined if there is a unidirectional or bidirectional interaction between the two, assuming one exists. In order to conduct analysis, a sample of 50 states in the United States, spanning from 1980 to 2004, is considered. The people whose daily income is less than $1 is the source of the data. Real per capita of personal income, corruption, EDU, unemployment rate, income disparity and population growth are the variables considered in this research. The data analysis is done using the panel causality test. The findings indicate that there is a link of bidirectional between population growth and income disparity in

the short & long terms. In the near term, employment and income disparity have a favourable effect on population growth, whereas real per capita personal income, education, and corruption have a negative effect. This study suggests that officials use measures to increase employment and income rates, which will slow the nation growth of population.

Rahman and Moni (2019) used the Household Income Expenditure Survey (HIES) 2010 sample data dataset that gathered 12,239 households data from Bangladesh Bureau of Statistics (BBS), to examine how earnings, work experience of abroad, human capital status and household size positively influences the REM earning in Bangladesh. They employed Propensity Score, International Remittance, Consumption, and Population Growth. Using closest neighbour matching and the Kernel estimator, the average treatment influences on the group of treatment has determined based on applied and matching scores of propensity from the probit regression estimation. Receiving remittances has an inverse effect on a household's likelihood of being poor, as both methods demonstrate. The study's findings indicate that remittance earners' monthly income of per capita is much greater than families of non-recipient. REM earnings contribute to households' rising levels of income. Few instances where people have to spent the funds for something other than beneficial endeavours. According to the report, there is higher potential for exportable labour in rural regions. It is important to set up appropriate policies to provide an enabling environment in both the home and destination nations, particularly to support women's migration.

Misati, Kamau, and Nassir (2019) examined the connection between remittances and financial progress. The study gathered quarterly data from 2006 to 2016 from the Bureau of Statistics and Central bank of Kenya. A total of five financial development indicators are used nthat including the no. of bank accounts, the no. of agents of mobile, the value transaction of mobile, and GDP shares. This data was chosen using standard variables found in the literature and its availability in frequency estimation. They utilised co-integration tests, etc. and used real GDP, inflation, interest rates, and trade openness. The study's findings indicate that, in long-run equations, an ARDL shows a significant, positive association between REM and financial progress. The findings also support the potential benefit of utilising cutting-edge technology to enable international mobile transfers. The use of mobile technology for international remittance transfers lowers expenses because walk-in clients don't require staff or physical branches. The report suggests that, while taking inspiration from other nations' earlier initiatives, the government think about extending the use of diaspora credit, savings and bonds cooperative organisations.

Musakwa et al. (2019) investigated the growing pressure on governments to achieve Sustainable Development Goals (SDGs) by relying on home and external resources has raised questions regarding the association between POV and specific financial conditions in the countries that are in developing stage. This study examines how remittances affect poverty in Pakistan, using data from 1980 to 2017. The investigation uses two poverty mediators, newborn death rate and consumption, to capture poverty's multifaceted nature and enhance the effectiveness of the outcomes. The study used (ARDL) technique, results showed that REM inflows reduce POV in Pakistan in both the terms (short and long), with the newborn death rate serving as an intermediate. When poverty is measured by family unit consumption, remittances have little impact on poverty in the short or long term. The investigation suggests that REM inflows play a significant role in the reduction of poverty. Pakistan benefit greatly from this flood by establishing approaches, which support REM inflow societies and learning from previous attempts in other countries.

METHODOLOGY

Quantitative research is defined as the investigation of a phenomena using measurable and mathematical methodologies to acquire numerical data. This study is based on the analysis of numerical data obtained from pre-established sources such as Index Mundi, the World Bank, and others. In this study, we use a quantitative research approach to analyse numerical data. This study's data is simple to interpret using various applications. Research is beneficial for big amounts of data and offers the simplest method of data collection via reliable websites. When an issue or phenomena has not previously been clearly and thoroughly examined, further inquiry is required. That is referred to as explanatory or informal

research. The cause and effect connection of variables can be identified by explanatory research. The objective of this study is to provide explanatory research, which contributes to a better knowledge of the issue under investigation. This research is useful for identifying covariance between variables. A correlational research design is one that is utilised to identify the sort of correlations between distinct variables with one another. In this study, we employ a correlational research approach. This is a useful strategy for determining the link between variables. It helps the researcher determine the intensity and direction of the link. The model definition is based on Adam and Page (2005).

Data

The time series data was acquired from 1980 to 2021 from worldbank.com and theglobaleconomy.com.

Model Development

The general model is as follows.

$$POV_{mt} = \alpha_0 + \alpha_1 REM + \alpha_2 EDU + \alpha_3 TO + \alpha_4 GDPC + \alpha_5 INF + \varepsilon_t \quad (1)$$

POV stands for poverty, REM for remittances, TO for trade openness, INF for inflation, EDU for education, and GDPC for gross domestic product per capita. GDP refers the total value of services and goods within the borders of country over a specific time period. Poverty refers the rate of poverty that is the population proportion living below the line of poverty or a specific threshold income. Remittances refer that are money transfer by foreign workers to their nations. EDU refers the expenditure education refers the amount of money that spent on the education by housholds, governments and other entities. TO refers the measurement of the openness degree of an economy of the trade of international. GDPC refers the GDP divided by the total contry's population. INF refers the percentage in the general price leven of services and goods increases over a specific time. ϵ refers the error terms that capture the difference between the dependent variable observed values and the values predicted by the equation of regression. The description of the ARDL general empirical model is as follows:

$$\Delta POV_{mt} = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta Pov_{mt} + \sum_{i=0}^{n} \alpha_{2i} \Delta REM_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta EDU_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta TO_{t-i} + \sum_{i=0}^{n} \alpha_{5i} \Delta GDPC_{t-i} + \sum_{i=0}^{n} \alpha_{6i} \Delta INF_{t-i} + \vartheta_1 Pov_{mt} + \vartheta_2 REM_{t-i} + \vartheta_3 EDU_{t-i} + \vartheta_4 TO_{t-i} + \vartheta_5 GDPC_{t-i} + \vartheta_6 INF_{t-i} + \mu_t$$

Where α_0 is constant, $\alpha_{1i} - \alpha_{6i}$ are short-run coefficients, $\vartheta_1 - \vartheta_6$ are long-term coefficients and μ_t is the error term. The ARDL error correction model is as follows;

$$\Delta POV_{mt} = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta Pov_{mt} + \sum_{i=0}^{n} \alpha_{2i} \Delta REM_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta EDU_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta TO_{t-i} + \sum_{i=0}^{n} \alpha_{5i} \Delta GDPC_{t-i} + \sum_{i=0}^{n} \alpha_{6i} \Delta INF_{t-i} + \gamma_{1i} ECM_{t-1} + \mu_t$$

In this equation, α is constant, i for short-run, ECM is the error corrections model, and μ_t is the error term. In the current investigation, we used public data from the reputable website index Mundi. The goal of this study is to investigate the influence of remittance inflows on poverty. The information was taken from the Index Mundi website, which is a reliable source of data.

Method

The study identified the influence of REM inflows on poverty in Pakistan using empirical tests. Table 1 summarises descriptive data for each variable after performing unit root tests. Following co-integration, tests of residual diagnostic include normality, serial correlation, heteroscedasticity, and stability tests are conducted. This study used the Dickey-Fuller generalised least squares test (DF-GLS) and the Philips-Perron (PP) test of unit root UR to evaluate variable attributes across time. The UR tested at both the trend level and without it, as well as at the first

difference between the two. A co-integration test is used to assess the long-term connection between variables. Data are analysed using (ARDL) findings for Models 1 and 2 to assess the influence of REM on POV. The findings of long-run of both models are labelled Panel A, whereas the short-run results of both models are named Panel B. Model 1 uses (HHC) to measure poverty, whereas model 2 uses (IMR) as a proxy.

Results and Analysis

RESULTS

Table 1.1 summarises the descriptive statistics of each variable. The average of Rem is 5.140%, IMR is 90.10% and (HHC) is 1.43. The standard deviation for the (IMR) is 20.24 percent. The standard deviation of HHC and REM are less volatile than IMR because IMR is highly volatile during the sample period.

Table 1

Descriptive Statistics

	HHC	TO	REM	EDU	GDPC	INF	IMR
Mean	1.43719	8.8969	5.1405	26.758	2.1758	8.084976	90.1051
Median	0.65115	7.1378	5.0143	25.289	2.1511	7.692156	89.7000
Max	9.90610	36.976	10.247	42.781	6.6951	20.28612	123.600
Minimum	-4.1138	3.4500	1.4536	16.992	-1.8437	2.529328	57.2000
Std. Dev.	3.50473	6.4316	2.2388	7.4817	1.8932	3.865384	20.2402
Skewness	0.70557	2.5808	0.1809	0.5870	0.0300	0.745689	0.02763
Kurtosis	2.66980	10.732	2.1865	2.1768	2.6952	3.689434	1.76063
Obs	39	39	39	39	39	39	39

Note: Gross Domestic Product Per Capita (GDPC), Education (EDU), Infant Mortality Rate (IMR), Inflation (INF), Trade Openness (TO), Remittances (REM), House Hold Consumption (HHC)

Unit Root Test

It used to validate if the variables are integrated with order 0 [1 (0)] or 1 [1(1)]. Table 2 shows the results of the (PP) and (DF-GLS) tests. The findings show that at-level variables such as (GDPC), (REM) and (IMR) are non-stationary, but (INF), (EDU), (TO), and (HHC) are stable. The results of the first difference show that each variable's time series attributes are stationary. The findings of unit roots suggest the suitability of using ARDL bond testing to conclude on co-integration and (ARDL) test of regression. The ADF test critical values are at the 1%, 5% and 10% levels of significance are -2.58, -2.89 and -3.45. These values are used to assess the unit root test results significance.

Table 2

Unit Root Test;

PP and DF-GLS tests								
Dickey-Fuller Generalised Least Square Test					Phillips-Perron Test			
Variable	Levels		1st Difference		Levels		1st Difference	
	1	2	1	2	1	2	1	2
HHC	-5.932	-6.525	-10.60	-11.24	-5.902	-6.373	-30.39	-31.11
IMR	-1.512	-1.894	-3.446	-3.569	-1.029	-1.427	-3.542	-3.341
REM	-2.125	-2.327	-10.01	-10.20	-7.880	-8.808	-26.77	-26.45
TO	-4.179	-4.571	-6.644	-7.013	-4.568	-4.499	-16.18	-20.78
EDU	-4.867	-4.932	-8.816	-8.825	-4.868	-4.824	-14.74	-14.52
GDPC	-2.434	-3.309	-6.298	-7.55	-4.030	-3.815	-10.83	-14.71
INF	-2.548	-2.713	-7.493	-7.502	-2.911	-2.873	-7.366	-7.260

Note: Gross Domestic Product Per Capita (GDPC), Education (EDU), Infant Mortality Rate (IMR), Inflation (INF), Trade Openness (TO), Remittances (REM), House Hold Consumption (HHC)

Co-integration

The results of models 1 and 2 are summarised in Table 3. Model 1 F-Statictics is 4.722, whereas model 2 is 8.207 that are higher than the critical value or lower and upper bound (Pesaran et al., 2001), showing that a long-run link exists between the variables. The results of cointegration show that there is long run relationship between the HHC, IMR, REM, TO, EDU, GDPC, and INF. The results indicated that the changes in REM, TO, EDU, GDPC, and INF strongly change the effect of HHC and IMR. To analyse the influence of remittances on poverty, models 1 and 2 are run with a favourable lag time. Table 4 shows the both short and long run outcomes for both models.

Table 3

Co-integration

Model	Dependent	Independent Variables	F-Static	Cointeg. status
1	HHC	INF, GDPC, EDU, TO & REM	4.72262	cointegrated
2	IMR	INF, GDPC, EDU, TO & REM	8.20798	Cointegrated
Signi.	I0 Bound	1(1) Bound		
10%	2.26	3.35		
5%	2.62	3.79		
2.50%	2.96	4.18		
1%	3.41	4.68		

Note: Gross Domestic Product Per Capita (GDPC), Education (EDU), Infant Mortality Rate (IMR), Inflation (INF), Trade Opennes (TO), Remittances (REM), House Hold Consumption (HHC)

Empirical Results of Model 1 and Model 2.

Model 1

The results indicated the strong association between REM and POV. The DW value is 2.2 that revealed that there are no issues of autocorrelation. On other hand, the R Square value is 93%, which revealed that the variation of 92% in HHC is explained by IVs including GDPC, EDU, INF and TO.

In A Panel, data of long run indicate that REM negatively influences the (HHC). According to past studies, remittances have a detrimental impact on poverty (Vacaflores, 2018). Other factors, such as inflation, GDPC, EDU, and TO have a strong impact on (HHC), proxy of poverty. The findings indicate that raising the values of those factors will increase poverty. Panel-B (short-run) results show that (REM) have a negative influence on poverty (HHC) (Vacaflores, 2018). Likewise, additional variables include inflation Growth in GDP per capita (GDPC) and (EDU) positively influence (HHC), but (TO) has a negative impact on poverty (HHC).

Table 4 illustrates the ARDL test findings for Models, which are used to evaluate the impact of remittances on POV. Panel A shows the long-run outcomes of both models, whereas Panel B shows the short-run findings of both models. Model 1 employs (HHC) as a proxy for poverty, whereas Model 2 uses (IMR) as a poverty proxy.

Table 4

ARDL Results Model 1 and Model 2

Model	Model 1 (dependent var. is Pov1)		Model 2 (dependent var. is Pov2)	
	ARDL (3, 4, 2, 4, 4, 2)		ARDL (3, 0, 4, 0, 3, 4)	
Regressor	Coefficient	Prob.	Coefficient	Prob.
Panel A: long-run results				
INF	0.07428	0.04990	-2.03204	0.04160
GDPC	1.81372	0.00000	-1.07119	0.88710
EDU	0.19697	0.00000	-4.16105	0.00010
REM	-0.39837	0.00000	-6.49708	0.02640
TO	0.19731	0.00190	2.13167	0.44810
C	-7.30117	0.00000	9.06862	0.00250
Panel B: short-run results				
INF	0.40769	0.00120	0.00873	0.00590
INF(1)	0.15622	0.14670	-	-
INF(2)	-0.11725	0.24180	-	-
GDPC	1.75543	0.00060	0.00115	0.93920
GDPC(1)	-1.31464	0.08800	-0.00662	0.45540
EDU	-0.70896	0.00070	0.00103	0.91520
EDU(1)	0.58118	0.09380	0.03089	0.00360
EDU(2)	-0.99055	0.00570	0.01788	0.00040
EDU(3)	-0.19597	0.34410	0.05223	0.00160
REM	-0.54063	0.22520	0.02632	0.15590
REM(1)	1.28530	0.01990	0.03570	0.02860
REM(2)	-1.00911	0.05040	-0.00222	0.50890
REM(3)	-0.65210	0.11310	0.00107	0.67130
TO	0.04882	0.54480	0.00014	0.95880
TO(1)	-0.25471	0.00440	0.00687	0.00690
ECM (-1)	-3.11237	0.00000	0.00430	0.01480
	Model 1	Model 2		
R-squared	0.93521	0.92018		
Adjusted R-squared	0.82556	0.91548		
F-statistic	8.52900	492.000		
Prob(F-statistic)	0.00013	0.00000		
Durbin-Watson stat	2.21469	2.14214		

Note: Gross Domestic Product Per Capita (GDPC), Education (EDU), Infant Mortality Rate (IMR), Inflation (INF), Trade Openness (TO), Remittances (REM), House Hold Consumption (HHC)

Model 2

In A Panel, data of long run indicate that remittances negatively influences the (IMR), proxy of poverty. According to past studies, remittances have a detrimental impact on poverty (Tsaurai, 2018).

Furthermore, other factors such as EDU, GDPC, and INF negatively influences on (IMR). The findings show that raising the values of those factors will reduce poverty. While trade openness improves (IMR).

In B Panel, data of short run shows the results show that the remittance (REM) influences positively on (IMR), whereas other factors such as (TO), (EDU) and (INF) have positive affect on poverty. The r-Squared value of 0.92 implies that independent variables (GDPC, EDU, INF, TO and REM) account for 92% of the variance in poverty (IMR). The DW value is 2.14, suggesting that no autocorrelation exists. Overall, the results show substantial relationship between remittances and (IMR), supporting earlier research (Musakwa and Odhiambo, 2019).

Diagnostic Results for Models 1 and 2

Table 5 summarizes the diagnostic test results for both Models, which comprise the normality, serial correlation, and heteroscedasticity analyses. Normality test results demonstrate that both models have probability values higher than 0.05, suggesting that their data is regularly distributed. In the serial correlation test, Models 1 and 2 have a probability greater than 0.05, indicating that there is no residual connection. The results of test of heteroscedasticity show both models have a greater probability than 0.05, which revealing that the data is not heteroscedastic. The results show that the residual variance is constant. A stability test determines if the data is stable or not. Figure 1 represent the Impulse CUSUM and CUSUMQ values. The results of all graphs are consistent since the blue line is contained within the red line. The results indicate that the settings are desirable (stable).

Table 5

Diagnostic Results for Models 1 and 2

LM test statistics	Results (probability)	
	Model 1	Model 2
Serial Correlational	0.3279	0.5211
Normality CHSQ	0.5456	0.9662
Heteroscedasticity CHSQ	0.6092	0.5075

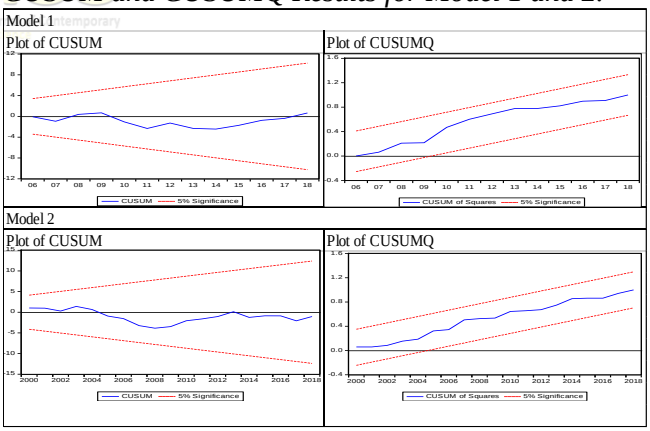
Conclusion and Recommendation

DISCUSSION

The descriptive statistics table shows that (IMR) has a high standard deviation, indicating considerable volatility throughout the sample period. (HHC) and (REM) have lower standard deviation than IMR, indicating less volatility over the sample period. After applying the unit root test, the first difference findings indicated that each variable in the time series is stationary. The unit root findings support using ARDL bond testing for co-integration and regression analysis. Both models had larger F-statistics values than the critical value or lower and upper bound (Pesaran et al., 2001), showing a long-term association between variables of both models. In model 1 (long-run and short-run), results represent as the (REM) negatively influences (HHC). In previous studies, remittance has a negative influence on poverty. (Vacaflores, 2018). Model 1 (long-run and short-run) shows that remittances (REM) negatively influence on poverty (HHC). Previous research found that remittances have a detrimental impact on poverty (Tsaurai, 2018).

Fig 1:

CUSUM and CUSUMQ Results for Model 1 and 2.



The straight lines show critical bounds at a 5% level of significance

In model 2 (long-run), results represent as the impact of remittance (REM) is negative on poverty)IMR(. The results support previous studies' results)Adam and Page, 2005; Anyanwu and Erhijakpan, 2010; Gupta et al., 2009; Nahar and Arshad, 2017; Tsaurai, 2018; Vacaflores, 2018(. However, short-run results represent as the impact of remittance)REM(is positive on poverty (IMR). The negative relationship

between remittances and poverty implies as increases in remittances can decrease the poverty level in Pakistan .The results suggest as the increased inflows of remittance play a vital role in reducing the poverty in the country)Ratha, 2007(. Increases in real estate investment can improve the fiscal position of any country through additional benefits such as the Balance of Payment (BOP) and benefits for small business development)De Vries, 2011(. According to recent studies)Garcia et al., 2020; Patel& Lee, 2019(,remittances play a significant role in poverty alleviation in developing countries.

According to Kapur (2004), adding remittances, such as a fixed household income, has a negative impact. Models 1 and 2 show that remittances have a favorable influence on poverty in both the long and short term. However, in the near run, model 2 demonstrates that remittances have a minor influence on model 1. According to Azam et al. (2016), there is no correlation between remittances and poverty in high-income nations worldwide.

CONCLUSION

This study analyzes the impact of remittances on poverty in Pakistan. This research uses 39 years of yearly time series data from 1980 to 2019 for Pakistan. Makun KK (2018) used ARDL bounds testing to evaluate how remittances affect poverty across many dimensions. To ensure the validity of the findings, this study employed two poverty proxies. Model 1 uses (HHC) as a proxy for poverty. Model 2 uses the (IMR) as a proxy for poverty. Household consumption is considered income poverty, whereas the newborn mortality rate is considered health poverty.

This study used descriptive statistics, unit root test, co-integration, ARDL test (long and short run), residual diagnostics (normality, serial correlation, heteroscedasticity), and stability test to analyze the impact of remittances on poverty. The unit root test findings indicate that each variable in the time series is stationary. The unit root findings support the use of ARDL bond. Co-integration test findings show a long-term link between variables in models 1 and 2, since both models have F-statistics values above the critical value.

For cointegration and regression analysis. Co-integration test results indicate a long-run relationship between variables in models 1 and 2, with F-statistics values greater than the critical value.Model 1 shows that remittances (REM) have a negative influence on poverty (HHC), both in the long and short term. Previous research have found a negative correlation between remittances and poverty Vacaflores, 2018). Model 2 (long-run) shows that remittances (REM) have a negative influence on poverty (IMR). Short-run data show that remittances have a favorable influence on poverty (IMR).

Remittances have a negative correlation with poverty, implying that increasing them can reduce poverty in Pakistan. Ratha (2007) found that increasing remittance inflows contribute significantly to poverty reduction in the country. Increased real estate investment may boost a country's fiscal situation by improving the Balance of Payment (BOP) and supporting small company development (De Vries, 2011). According to Kapur (2004), adding remittances to a fixed household income has a negative impact.The study confirms recent findings (Musakwa and Odhiambo, 2019) showing remittances are strongly linked to poverty (IMR).

The addition of remittances such as a fixed household income has a contrary nature (Kapur, 2004). Overall results provide evidence that there is a strong link between remittance and poverty (IMR) which supports the previous studies (Tsaurai, 2018; Vacaflores, 2018; Mercy. T. Musakwa and N.M. Odhiambo, 2019). Azam, Haseeb, and Samsudin (2016) suggested there is a favourable correlation between overseas remittances and slower population growth. Aid and debt have a positive relationship with population growth, which means that as foreign aid and debt levels rise, so will the county's population growth. Apergis, Dincer, and Payne (2010) found there is a bidirectional link between population growth and income disparity in the short and long terms. In the near term, employment and income disparity have a favourable effect on population growth, whereas real per capita personal income, education, and corruption have a negative effect. Rahman and Moni (2019) found remittance earners' monthly per capita income is much greater than non-recipient families'. Remittance earnings contribute to households' rising income levels. There are few rare instances where individuals have spent the funds for something other than beneficial

endeavours. Misati, Kamau, and Nassir (2019) argued that taking inspiration from other nations' earlier initiatives, the government think about extending the use of diaspora bonds and diaspora savings and credit cooperative organisations. Musakwa et al. (2019) argued that remittance inflows play a significant role in poverty reduction.

IMPLICATION

This study aims to inform policymakers about the influence of remittances on poverty and promote national stability. Policymakers should prioritise remittance inflows to address poverty, which is characterised by low income, poor health, and unemployment. This research identifies critical elements that might reduce poverty in the country and informs crucial policies and actions for economic progress. This research will assist Pakistan's government in identifying and addressing the root causes of poverty. This research is valuable for economists and scholars interested in Pakistan's economy.

Future Recommendation

This literature explores how remittances affect poverty in Pakistan. This study advises that future studies cover a wider range of nations, including Asian countries, due to their high poverty rates. This research may be conducted in other nations as well. Limited resources prevent us from doing large-scale research. The data available from 1980 to 2019 is restricted. This year, the range will be expanded to include more years. This study investigates the influence of only these variables: inflation, income, and GDP. Other variables, such as poverty, household consumption spending, infant mortality rate, and remittances, can also impact population growth. This research aims to explore the link between remittances and poverty. Many Pakistani's residents are currently unemployed. Unemployment in Pakistan can be used as a proxy for poverty due to its ongoing increase.

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