Original Article

Exploring the Dynamics of Remittances and their Socioeconomic Impacts on Pakistan

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ABSTRACT

Aim of the Study: The prime objective of this study is to examine the association between remittances and the socio-economic development of Pakistan spanning the period from 1991 to 2022.

Methodology: The examination applies a robust estimation strategy, including the unit root test of Augmented Dickey-Fuller, the Autoregressive Distributed Lag bound testing approach, and the Error Correction Model. To ensure the validity and reliability of the estimated results, diagnostic tests, including the White test for heteroscedasticity and the LM test for autocorrelation, are applied.

Findings: The findings of the study unveil compelling evidence of the statistically significant and positive impact of remittances on socio-economic development in Pakistan. Furthermore, foreign investments emerge as a significant contributor to development while inflation exhibits a significant albeit negative association with socioeconomic progress. On the contrary, foreign aid is found to have a negative but insignificant impact on the socio-economic development of Pakistan.

Conclusion: In response to the findings, this study recommends optimizing foreign investment policies to harness their positive impact. Simultaneously, a careful reevaluation of the role of foreign aid in the socio-economic development paradigm is directed.

Keywords: Dynamics of Remittances, Socioeconomic Impacts, Pakistan.

1. INTRODUCTION

Remittances play a significant role in shaping the socioeconomic landscape of nations. Acknowledged as a powerful driver of economic activity, these monetary inflows hold particular importance in underdeveloped countries, contributing significantly to poverty alleviation and per capita income. Remittances, denoting financial transfers made by employees or migrants to support their families, encompass various types. Inward remittances signify funds sent by individuals working abroad to their families, while outward remittances denote earnings repatriated to the home country by foreign workers.





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Inland remittances represent earnings within the domestic sphere transferred between locations. Notably, remittances from workers in foreign countries are termed foreign remittances (Raza et al., 2021).

These financial inflows play a pivotal role in enhancing the socioeconomic fabric, with families employing remittances for debt repayment, acquiring real assets, and investing in education. Beyond personal use, remittances contribute to social events and general consumption (Naeem & Arzu, 2017; Aziz et al., 2023). Particularly, remittances hold particular importance in underdeveloped nations, serving as a potent tool for poverty reduction and contributing positively to per capita income. Notably, remittances often surpass other inflows such as Foreign Direct Investment (FDI) and Official Development Assistance (ODA) in their impact on economic growth and human development (Ustubici & Irdam, 2012).

In low-income developing nations, remittances assume a critical role due to factors like limited investments in education, political instability, and economic challenges, becoming a lifeline for populations with limited employment prospects (Ebeke, 2012; Raza et al., 2024). As these considered as largest source of foreign revenue for host countries, remittances substantially contribute to economic growth (Ebeke, 2012). Over the past four decades, total worker remittances have exhibited significant growth, reaching 420 billion US dollars in 2014, and are anticipated to rise to 457.2–471.4 billion US dollars for developing countries in 2017–2018 (World Bank, 2014; World Bank, 2018).

The association between remittances and economic growth is notably favorable in the short term, fostering socioeconomic development and poverty reduction (Rao & Hassan, 2011; Gianetti et al., 2009; Orrenius et al., 2014). Remittances contribute to improved living standards, enhanced nutrition, and access to basic healthcare, elevating families out of poverty (King et al., 2009; Airola, 2007). Interestingly, families receiving remittances experience a decline in prosperity compared to their non-recipient counterparts (Taylor et al., 1996). Furthermore, the nexus between education and remittances manifests positively, with the children of remittance-sending laborers enjoying improved educational opportunities (Barguellil et al., 2013; Salas, 2014).

This study aims to quantitatively explore the relationship between remittances and the socioeconomic development of Pakistan. Recognizing the broader macroeconomic landscape, foreign investment, inflation, and foreign aid are considered vital control variables. The subsequent sections of the paper are organized into a comprehensive literature review, a detailed methodology, a presentation and discussion of results, and a conclusive summary to synthesize the overarching findings of the study.

2. RELATED LITERATURE

Existing literature on the association between remittances and economic growth has valuable insights. In this regard, the studies revealed a positive and significant influence of remittances on housed income and consumption expenditures, thereby boosting overall economic expansion (Adam, 1991; Tylor, 1999). Likewise, Mintah and Nikoi (2015) favored the positive and significant impact of remittances on economic growth using time series data of Ghana during 1992-2012. These narratives are strongly supported by Wadood and Hossain (2015), which utilized the time series data for Bangladesh from 1972-2013. Moreover, their findings affirm a lasting correlation between remittances and economic growth, highlighting the contributory role of remittances in fostering economic development.

Further, Zafar et al., (2016) applied the conventional ordinary least square (OLS) approach using time series data of Pakistan from 1985 to 2014. The study unveils that remittances have a favorable impact on the economic growth of the country. The findings of Cuci (2016) also match the stances of the aforementioned studies and argue that remittances promote economic growth in Kosovo during 2004-2013. This economic expansion further stimulates consumption and investment which results in higher living standards in the country.

Furthermore, numerous studies focused on the relationship between remittances in the short term along with long term. In this regard, Tolcha and Rao (2016) examined the short-term effects of remittances on

the economic growth of Ethiopia during 1981-2012. The study applied the autoregressive distributed lag (ARDL) bound testing approach and found that remittances were invaluable to economic progress in the short term. However, in the long term, the study contradicts the narratives of the earlier studies and suggests the negative influence of remittances on economic growth. Likewise, the cointegration and error correction model was used by Abdelhadi and Bashayreh (2017) for Jordon from 1972 to 2016. The study discovered a significant positive link between remittances and the economic prosperity of the country in both the short term and long term. A little bit contrary, Tabit and Moussir (2017) apply the vector autoregression (VAR) and error correction model for Morocco using time series from 1975 to 2014. The research confirmed that migrant remittances and economic growth are associated in the short term.

Similarly, Raza et al. (2020) explore the nexus between foreign remittances and economic growth in Pakistan. The study revealed that remittance not only improves economic growth but also improves the welfare of society. The authors applied the ARDL technique to the time series data from 1998 to 2018 and concluded that foreign investment and remittances play a very active role in improving economic activities. These results are also confirmed by a recent study, which suggested a positive and significant relationship between remittances and economic growth in Pakistan (Ali et al., 2022). The study used the ARDL technique on the time series from 1990 to 2019 and recommended that more skilled labor must be deployed to developed countries that will generate and send more remittances to the host country.

In the case of panel analysis, Sutradhar et al. (2020) investigate the relationship between remittances and economic growth in Asian countries including Pakistan. The study used data from 1977 to 2016 and used a random effect model. The authors conclude that remittances play a very negative role in economic growth.

3. DATA AND METHODS

In the pursuit of systematically examining the significant relationship between remittances and the socioeconomic development of Pakistan, this study employs a robust quantitative approach. The data, utilized, spans from 1992 to 2022, retrieved from World Development Indicators (WDI, 2023). This time frame condenses crucial periods of economic evolution, allowing a clear exploration of the impact of remittances on various aspects of development in Pakistan.

The analysis of the determinants of socioeconomic development in Pakistan centers on a growth equation, focusing primarily on remittances as a pivotal determinant, with foreign direct investment (FDI), foreign assistance, and inflation serving as control variables (Abdelhadi & Bashayreh, 2017; Harrod-Domar, 1946; Kwon et al., 2009; Raza et al., 2022; Rovidad., 2020). This model draws inspiration from past theoretical and empirical evidence, recognizing the potential influence of these variables on the broader economic landscape. Remittances play a vital role as a fundamental source of capital accumulation in developing countries, establishing a significant relationship with socioeconomic development. Rooted in classical economic theory, the inclusion of capital in economic growth models, pioneered by (Harrod-Domar, 1946), highlights its role in fostering a nation's development.

Building upon this foundation, this study aims to explore the nuanced dynamics of remittances and their effects on Pakistan's socioeconomic development. That said, this study aims to position itself as an alternative to the concept of microloans in driving socio-economic development as stated by Rovidad., (2020); however, it does not negate their potential contribution. Kwon's contributions to the literature have augmented the role of investment, emphasizing its significance in to the capital for growth (Kwon, 2009). This aligns with the understanding that a country's economic growth can be bolstered not only by capital but also by targeted investments in welfare initiatives that positively impact life expectancy (Raza et al., 2022). The theoretical framework of this study is rooted in established economic theories, emphasizing the transformative role of remittances in enhancing human capital and contributing to improved education and skills development (Taylor, 1999). The Dependency Theory posits that remittances can act as a stabilizing force, mitigating the effects of external shocks and providing a reliable

source of income for recipient households (Stark, 1991). Grounded in the articulated arguments, this study employs the following comprehensive model to achieve its primary objective.

$$SD_t = \alpha_0 + \alpha_1 RT_t + \alpha_2 FDI_t + \alpha_3 AD_t + \alpha_4 IFL_t + \varepsilon_t(1)$$

Where α_0 is the intercept coefficient, and $\alpha_1 \dots \alpha_4$ are the parallel coefficients of explanatory variables. The ε_t is the random disturbance term.

To estimate the growth equation, as specified in this study in equation (1), this study utilizes the Autoregressive Distributed Lag (ARDL) bound testing approach, pioneered by Pesaran (1997), Pesaran and Shin (1999), and Pesaran et al., (2000; 2001), representing a significant advancement in cointegration techniques. Notably, this method is adopted analyzing variables with mixed orders of integration, accommodating both I(0) and I(1) variables. Additionally, it demonstrates robustness in addressing endogeneity concerns among the independent variables (Pesaran et al., 2001). To adhere to the method's stringent requirements, this study meticulously assesses the unit roots of the variables using the augmented Dickey-Fuller (ADF) test. Widely accepted for testing stationarity, the ADF test is configured with ap-order autoregressive process, ensuring the methodological rigor of this analysis.

$$\Delta y_{t} = \alpha + \gamma \Delta y_{t-1} + \sum_{i=1}^{p} \beta_{i} \Delta y_{t-i} + \varepsilon_{t}(2)$$

Where Δy_t is the difference of corresponding variable under investigation.

After a thorough examination of the unit root test outcomes, as elaborated in the subsequent section, this study opts for the Auto Regressive Distributed Lag (ARDL) Bound Testing Approach as the preferred method to delve into the intricate relationship between foreign assistance and economic growth in Pakistan. Aligning with Equation (1), there fined iteration of the ARDL model is expounded upon in the subsequent expression, offering at a lured framework for this in-depth analysis.

$$\Delta SD_t = \alpha_0 + \sum_{i=1}^p \gamma_i \Delta SD_{t-i} + \sum_{i=1}^p \delta_i \Delta RT_{t-i} + \sum_{i=1}^p \theta_i \Delta FDI_{t-i} + \sum_{i=1}^p \pi_i \Delta AD_{t-i} + \sum_{i=1}^p \varphi_i \Delta IFL_{t-i} + \beta_1 RT_t$$
$$+ \beta_2 FDI_t + \beta_3 AD_t + \beta_4 IFL_t + \varepsilon_t (3)$$

Where α_0 signifies the constant term, and γ , δ , θ , π and φ represent the coefficients attached with the lags of the corresponding variables. Additionally, all β_s signifies the long run coefficients of the explanatory variables. Consequently, the linked equation for the estimation of Error Correction Model (ECM) is articulated as follow.

$$\Delta SD_{t} = \alpha_{0} + \sum_{i=1}^{p} \gamma_{i} \Delta SD_{t-i} + \sum_{i=1}^{p} \delta_{i} \Delta RT_{t-i} + \sum_{i=1}^{p} \theta_{i} \Delta FDI_{t-i} + \sum_{i=1}^{p} \pi_{i} \Delta AD_{t-i} + \sum_{i=1}^{p} \varphi_{i} \Delta IFL_{t-i} + \sum_{i=1}^{p} \omega_{i} \Delta FDI_{t-i} + \sum_{i=1}^{p} \omega_{i} \Delta IFL_{t-i}$$

Substituting the long-term coefficients with the short-term dynamics encapsulated in the Error Correction Model (ECM) term, this study anticipates a statistically significant and negative ECM sign. This signifies a short-term convergence to the equilibrium path in the subsequent year. The ECM serves as a short-term technique, facilitating significant analysis of short-run data dynamics.

To uphold the accuracy and robustness of results in this estimation process, additional diagnostic tests are implemented. This study employs the serial correlation LM test to scrutinize auto-correlation patterns and the White test to assess heteroscedasticity (Wooldridge, 2010). These diagnostic measures serve as crucial safeguards, offering insights into potential econometric issues that could influence the liability of this estimations. The serial correlation LM test contributes to the identification of any systematic patterns in

the residuals, ensuring the independence of observations overtime. Simultaneously, the White test systematically assesses the presence of heteroscedasticity, avital consideration for unbiased and efficient parameter estimates.

4. RESULTS AND DISCUSSIONS

The findings and discussions section explores the detailed analysis of key variables outlined in Table 1, serving as an executive summary. These descriptive statistics offer a significant understanding of the data, facilitating an exploration of the interplay between remittances, foreign assistance, foreign direct investment, inflation, and overall socioeconomic development in Pakistan. This section aims to explore patterns, trends, and relationships for insightful conclusions and meaningful discussions.

In the table below, Socioeconomic Development has a mean of 5.531 and a low standard deviation of 0.251, indicating limited variability. Positive skewness, 0.212, and kurtosis, 1.423, suggest a slight rightward skew and moderate tail risk. Remittances have an average value of 19.141, a moderate standard deviation of 0.932, and positive skewness and kurtosis, indicating a rightward tail with higher outliers. FDI displays a mean of 1.211, a notable standard deviation of 0.917, and positive skewness and kurtosis, indicating a pronounced right tail. Foreign Assistance has an average value of 3.971, a low standard deviation of 0.311, and positive skewness and kurtosis, suggesting a slightly right-skewed tail. Inflation has a mean of 13.942, a moderate standard deviation of 0.412, and low skewness and kurtosis, demonstrating a relatively symmetrical distribution with moderate tail risk.

 Table 1 : Descriptive Statistics Summary

Variable	Obs	Mean	Std.Dev.	Min	Max	Skewness	Kurtosis
SD	32	5.531	0.251	5.982	6.828	0.212	1.423
RT	32	19.141	0.932	14.000	17.000	1.232	2.942
FDI	32	1.211	0.917	0.291	4.081	1.723	2.253
AD	32	3.971	0.311	2.531	6.931	0.322	1.698
IFL	32	13.942	0.412	12.991	14.981	0.121	1.894

Source: Authors computations

Correspondingly, table 2 exhibits the correlation summary of all included variables in the analysis of the study. Socioeconomic Development demonstrates a moderate positive correlation with Remittances, a weak positive correlation with Foreign Direct Investment, a strong negative correlation with Foreign Assistance, and a strong positive correlation with Inflation. Remittances display weak negative correlations with FDI, AD, and IFL. Foreign Direct Investment exhibits a moderate positive correlation with AD and a strong positive correlation with IFL. Foreign Assistance shows a moderate negative correlation with IFL.

Variables	SD	RT	FDI	AD	IFL
SD	1				
RT	0.361	1			
FDI	0.243	-0.144	1		
AD	-0.441	-0.028	0.325	1	
IFL	0.651	0.047	0.846	-0.313	1

Table 2: Correlation Matrix Summary

Source: Authors computations

The outcomes of the Augmented Dickey-Fuller (ADF) tests, outlined in Table 3, provide critical insights into the stationarity characteristics of the variables in focus. In the original state with a constant term, all variables exhibit non-stationarity, as indicated by higher p-values. However, a consistent trend emerges upon taking the first differences, showing casing stationarity across all variables with notably lower p-values. Interestingly, a parallel shift from non-stationary to stationary is observed for all variables when

considering both constant and trend terms. This consistent transformation in variable behavior concerning the order of integration underscores the imperative of incorporating the ARDL technique in our analytical approach to effectively navigate the complexities inherent in this dataset.

T 7 • 11 X 7	Co	onstant	Constant + Trend		
Variable Name	I(0) I(1)		I(0)	I (1)	
SD	0 1832(0 810)	2 2771***(0 015)	-2.6523	-5.5432**	
50	-0.1852(0.810)	-3.2771***(0.013)	(0.371)	(0.0152)	
рт	0.576(0.219)	-4.6272***	26051(0.228)	-5.6822***	
KI	-0.370(0.218)	(0.021)	-2.0931(0.328)	(0.028)	
FDI	1 (021(0 012)	-4.1215**	2 05 41 (0 41 4)	-4.8978***	
FDI	-1.6031(0.212)	(0.028)	-3.0541(0.414)	(0.032)	
	1 1225(0 (21)	-3.9871***	2 4171(0 152)	-5.6721**	
AD	-1.1225(0.051)	(0.016)	-2.41/1(0.152)	(0.013)	
	0 4526(0 521)	-3.1725***	-2.2481	-5.9524***	
IFL	-0.4536(0.521)	(0.019)	(0.069)	(0.035)	

Table 3: Unit Root test

Source: Authors computations

The application of the ARDL bound technique, as delineated in Table 4, necessitates a particular determination of the lag duration as a crucial prerequisite. The selection of an inappropriate lag length holds the potential to introduce bias into the results, leading to erroneous policy implications. In addressing this concern, our study systematically explored various lag length considerations to ensure the robustness of outcomes. Eventually, the determination of the lag length is grounded in the Akaike Information Criterion (AIC), alongside the Forecast Prediction Error (FPE) and Hannan-Quinn (HQ) criteria. The AIC criterion, striking a balance between model fit and complexity, distinctly favored a lag length of two. Despite variations in the lag length preferences across different criteria, the AIC's emphasis on efficiency and parsimony solidifies the selection of a lag of two as the aptest choice for the modeling.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-153.1291	NA	69.85922	17.7923	17.17841	17.45835
1	-181.5215	136.6171*	0.401931	11.89814	13.90201*	14.05681
2	12.6172	29.5922	0.301891*	11.95234*	14.54216	14.59256*

Source: Authors computations

The outcomes derived from the ARDL bound testing approach, depicted in Table 5, are articulated through a bifurcated presentation. The upper segment encapsulates the long-run coefficients associated with the explanatory variables, offering an in-depth analysis of their sustained impacts. Concurrently, the lower segment provides a comprehensive elucidation of the short-run coefficients, intricately detailing the dynamics of these variables alongside the error correction term.

Long Run Estimates						
Variable	Coefficient	Std.Error	t-Statistic	P-value		
С	1.1102	0.9981	1.11231	0.183		
RT	0.0982**	0.01819	5.42541	0.014		
FDI	0.0155**	0.0061	2.54091	0.043		
AD	-0.0162	0.0091	-1.78022	0.231		
IFL	-0.0961**	0.0318	-3.01253	0.034		
		F-Stat(198.968)				
R-Square(0.85285) AdjR-Square(0.79721)		Prob(F-Stat)(0.0000)	DWStat(1.131)			
Short Run Estimates						
Variable	Coefficient	Std.Error	t-Statistic	P-value		
С	-0.1423	0.09612	-1.480441	0.187		
D(RT)	0.0832**	0.01601	5.1976	0.015		
D(FDI)	0.0562**	0.009612	5.846858	0.018		
D(AD)	0.0723**	0.009994	7.23250	0.015		
D(IFL)	0.0621	0.095121	0.65286	0.213		
ECM(-1)	-0.5481**	0.19601	-2.79628	0.015		
		F-Stat(3.975)				
R-square(0.45910)	R-square(0.45910) AdjR-Square(0.34971)		DWStat(1.212)			
Comment And Incomment	4 - 4					

Table 5: Long and short-run ARDL model results

Source: Authors computations

The findings of this study, as illustrated in Table 5, reveal noteworthy insights into the impact of various factors on the socioeconomic development of Pakistan. The constant term, as indicated in the results, exhibits a negative and statistically insignificant association. Focusing on remittances, a crucial driver of economic development in developing nations, this study underscores their pivotal and beneficial role in fostering economic progress. This aligns with the analysis by Dastidar (2017), emphasizing the potential benefits of accessible remittances for the economies of developing nations. Remittances, known for enhancing welfare and income, contribute significantly to improving living standards and reducing poverty in recipient families (Raza et al., 2021; Raza et al., 2023).

Foreign investment, marked by statistical significance and a positive coefficient, emerges as a linchpin in elevating living standards. This aligns with the broader literature that underscores the pivotal role of foreign investment, especially in countries with lower per capita incomes, in fostering economic growth (Raza et al., 2020). The influence of foreign investment extends beyond mere economic indicators, playing a pivotal role in augmenting per capita income and enhancing overall quality of life. In stark contrast, foreign aid, often entangled with bureaucratic inefficiencies and corruption, demonstrates ineffectiveness in contributing to the economic growth of developing nations. The long-term analysis underscores its statistically insignificant and negative impact, echoing concerns raised by scholars regarding aid's susceptibility to administrative pitfalls. This accentuates esteemed for a critical reassessment of aid strategies, urging policymakers to address inherent challenges to optimize its potential positive impacts. Shifting the focus to inflation, a critical determinant of economic activity, our study confirms its significant, albeit adverse, role in the socioeconomic development of Pakistan. Effective governmental control over inflation is crucial for fostering economic activities, whereas unmitigated high inflation poses a formidable impediment to economic growth. These insights underscore the imperative for policymakers to institute measures aimed at curbing inflationary pressures, ensuring a conducive economic environment.

In summation, the long-term analysis delineates the pivotal roles of remittances and foreign investment, emphasizing their positive contributions to Pakistan's economic development. Simultaneously, foreign aid and inflation emerge as impediments, demanding careful consideration in policy formulations. The shortterm results further accentuate the complexity, with remittances, foreign investment, and inflation displaying statistically significant and positive effects, while foreign aid maintains its traditionally perceived negative impact on socioeconomic development.

Breusch-Godfrey Serial Correlation LMTest				
F-statistic(0.61892)	Prob.F(5,18)(0.6983)			
Obs*R-squared(14.6880)	Prob.Chi-Square(5)(0.4974)			
Heteroskedasticity Test: Whitetest				
F-statistic(0.59731)	Prob.F(18,7)(0.6824)			
Obs*R-squared(14.6880)	Prob.Chi-Square(20)(0.462)			
Scaled explained SS (8.1992)	Prob.Chi-Square(15)(0.7139)			

Source: Authors computations

The outcomes of the diagnostic tests, as detailed in Table 6, provide valuable insights into the robustness of our model. The Breusch-Godfrey Serial Correlation LM Test and associated F-statistics reveal no significance, indicating the absence of serial correlation. This implies that the model's residuals exhibit no systematic pattern, reinforcing the reliability of the findings. Turning to the examination of heteroscedasticity using the White test, the results show insignificance, and the test fails to reject the assumption of homoscedasticity. Therefore, the estimated model demonstrates homoscedasticity, underscoring the consistency and reliability of the estimated coefficients.

5. CONCLUSION

This study endeavors to scrutinize the impact of remittances on the socioeconomic development of Pakistan, employing time series data spanning from 1991 to 2022. Recognizing the multifaceted nature of economic growth, key control variables including foreign investment, inflation, and foreign aid were incorporated. These variables, integral to the economic course of developing nations, were subjected to rigorous stationarity checks through Augmented Dickey-Fuller (ADF) tests, and the final analysis was conducted using the Auto Regressive Distributed Lag (ARDL) technique. The longitudinal examination yielded compelling insights into the determinants of Pakistan's socioeconomic development. In the long run, both remittances and foreign investment emerged as pivotal drivers, exerting a positive and statistically significant impact. Conversely, inflation and foreign aid exhibited a negative influence, with inflation proving to be particularly noteworthy due to its substantial adverse relationship with the socioeconomic development of Pakistan.

Drawing policy implications from these findings, several recommendations are posited. Firstly, a strategic deployment of skilled labor to developed and technologically advanced countries is advocated, aiming to harness the potential of this workforce for revenue generation. Secondly, relaxation of foreign investment policies is recommended, fostering an environment conducive to increased participation by foreign investors in Pakistan's economic activities. Thirdly, a critical reconsideration of foreign aid is proposed, given the perceived misuse at both administrative and grassroots levels. Finally, the implementation of a stringent monetary policy is urged to effectively curb high inflationary pressures, contributing to the overall economic stability of the country.

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Conflict of Interest

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