



Foreign Remittances, Long Term Sustainable Economic Growth Nexus in Pakistan: An Empirical Analysis Using Bound Testing Approach

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Abstract

Remittances are considered vital for the progress of any economy. These are the finances that are sent by the immigrants and assist the nations to achieve their basic needs and to boost the living standard. This research focuses on the effectiveness of foreign remittances regarding inflation and economic growth. The data used for this study are taken for the period 1972-2018 as yearly based. To check the stationarity of the data Augmented Dickey-Fuller (ADF) test is used and the methodological framework includes the Autoregressive Distributed Lag (ARDL) model that concluded that the study concludes that foreign remittances have an optimistic and momentous relation with the economic growth of Pakistan. It was concluded in the study at hand the remittances lead to enhance economic growth through the expansion in individual consumption. Thus, it should emerge that remittances are a superior tool to address transient poverty which occurs due to the shocks whether at the domestic or general level rather than a structural scarcity

Key Words: Remittances, Sustainable, Economic Growth, ARDL

JEL Codes: F24, O47, Q01, Q56

1. Introduction

Remittances have a significant foundation for expansion in consumption level and investment in the home country. Remittances are the most secure resource of external revenues in developing countries (Yoshino, 2020). Remittances have a constructive impact on the economic growth of any nation.

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Remittances gained by the immigrant contribute to upgrading the living standard and for the fulfillment of the fundamental requirements of the families required for the basic living at their home countries and the host countries also take benefit from the migrated labor as their contribution to the overall labor activities the host economy (Airola, 2007). It is also a major and significant source of income that boosts up the economy and causes to lower the deprivations of the poor households and remove the barriers that hinders development process for the individuals and the nations as a whole (Acharya and Gonzalez, 2012). Worker remittances have a bright impact in improving economies and households through various channels. It assists to eradicate the poverty rates and reassures economic expansion.

Receiving the remittance in the Asia and Pacific area accounted for approximately 45 billion dollars and one can say 17 percent of entire global documented payment flows. These flows were 5 times that of ODI (official development assistance) in the region. Remittances have a huge share of revenues in the nations to finance the micro and the macro level developments and it is more important to enhance the contribution of remittance as an external source of revenue (World Bank, 2020).

Foreign remittances recognized ample attention during recent times. These are the source of revenue that can stabilize the economy. It can upgrade the living standard, moderate inflation, and boost the standard of living, boost aggregate demand, lower unemployment through micro business, and lowers poverty to get on the track towards economic growth (Lundius et al., 2008). It is appreciated to explain the impact of Foreign Remittances on the long-run economic growth. It has to be the focus of this research on how growth can be geared with the salaries received from the labor out of country share the same nationality. This research will elaborate on the channels through which international labor migration will have an impact on the lives of individuals from the poor-economic background and show how these external finances contribute as the major source of revenue for the low-income groups having siblings away from their homeland (Silva, 2009). These revenues corporate in the uplifting standard of living for the

people at homeland and ultimately the consumption of the individual will increase and hence the economic growth of the country.

2. Literature Review

The migrated labor to foreign countries offers financial and non-financial paybacks to the home nations and the families. They help to maintain the well-being of the families in the home country (Adams, 2005; Du et al., 2005). How it affects the well-being of households, depending on the place of worker's migration. Theoretically, referring a worker for employment at some other country intends to make the most optimum economic gain and expand foundations of revenue (Thieme and Wyss, 2005; Vargas et al., 2008). The migrated labor support for the financial assistance that can be channelized for uplifting the living standard and it has many direct and indirect impacts on the investment and the consumption and the foreign currency arrival in the homeland ultimately stabilize the macroeconomic indicators as well (Stark, 1991).

Taylor (1999) revisions clarify the new economics of labor movement plus the task of payment in the immigration procedure. The comprehensions of worldwide immigrant remittances resting on drifter distributed areas were multifaceted. Subsequently, the original prose of manual labor immigration was innovative to introduce through economics. The theory also breakdown the association amongst remittances, growth, and movement had been seen as a controversial matter among the researchers plus procedure makers. Here was a nonstop and also constructive relation linking migrant remittances and migration resting on migrant carriage areas.

Atha and Mohapatra (2007) analyze the growing Macroeconomic impact of remittances on development. Remittances were a central source of external sector growth for developing countries. Remittance services should be cheaper as well as opportune in maturity countries. In a small business venture, Remittance plays an essential role especially in those countries that had good investment opportunities. Remittances

were also helpful to increase the outlay domestically which was associated with education and health. And also, who had a high social return in most circumstances. The study also explains that remittances also promote financial development which was the cause of enhancement of growth. Thus, it was necessary to develop appropriate Macroeconomic policies to respond to reduce the poverty and enhance economic development.

Goldberg et al. (2008) suggested the collision of remittances on economic growth. This study shows that the developmental collision of remittances was apparent. Remittances are used upon commodities and the military internally. So enhancement in remittances shows that development in basic needs, health care and it was an extended-term asset which should increase the socio-economic benefits of the country. Rich countries were the largest sources of remittances in dollar terms. Finally, it should be noted that remittances were not only transformed in utilization patterns but also inside government policies of recipient countries. The study proposes to discover the effect of remittances on real GDP in Pakistan. Real GDP per capita growth was positively correlated to remittances. The remittances emerged to be a third significant source of assets for economic growth and poverty reduction in Pakistan (Almani et al., 2005).

Remittances had a positive significant relationship with the economic growth (GDP) of Pakistan. In Foreign remittances on Economic growth relation, it plays a vital role for GDP. So, it also played an essential role in form of foreign remittances in economic growth in the recipient country like Pakistan. To enhance and support the stream of remittances, the Government must reach out to their nationals and a foreign country. Internationally, it also plays an active role in the human rights of their migrants out of the country. So that, in poorest countries, it had a significant way of supplementary earnings and consumption in these recipient countries.

Fayissa and Nsiah (2010) explicate the collision of remittances on financial growth along with the extension in

Africa. By using the panel data and the period was used for 1980-2004. The practical study shows that the role of remittances on trade and industry growth do surely interconnected. Falki (2009) examined the Impact of Foreign Direct Investment on Economic growth in Pakistan, The role of foreign remittances analyze the connection between FDI inflows and economic growth as well as national income along with other factors of manufacture for the period 1980-2006. So, the study concludes that FDI might influence not only the intensity of output per capita but also its growth. FDI had positive impacts on growth in the case of per capita income (Blomstrom et. al., 2002). In short, the advantage of environments in the recipient nation-state (Buckley et al., 2002).

As remittances are a considerable source of financial sector growth like Pakistan. It should recover by focusing on communications and creates a secure macro-economic structure that could devote to industrious speculation. As a result, to speed up the progress of development especially in the recipient country like Pakistan.

Barajas (2009) recommends that Worker' payments had matured to develop into one of the prevalent supply of monetary stream to rising countries. So the pragmatic survey demonstrates that worker's remittances had no crash on economic growth. (Barajas et al, 2009) a statement that typical worker's remittances-GDP ratio for all growing nation-state for the period 1995-2004. Thus remittances could co-operate a vital role in the development of investment and support economic growth. (Rajang and Subramanian, 2005) analysis that there was little evidence that authorized transfer should donate much to the development of the rising nation. Foreign Remittances could also improve the credit-worthiness and thereby improve its entrance to the international capital flow market for financing communications and further growth projects. A remittance also helps to reduce the poverty as well as inflation and boost up economic development.

Batten and Vo (2009) imply that remittances as well as monetary progress: surrogate or else accompaniment in money-

making growth? This paper studies the affiliation among remittances and intensity of financial development in economic growth. Here financial system was surrogated with habitually based indicators. (Chami, et. al. 2003), suggested that remittances could have an unenthusiastic force on the fiscal growth of the being paid country. So, the new study introduced the new quality-based to determine the shape of the inadequacy of the domestic banking system. This document shows that a competent banking system was the complements and optimistic effect of remittances on GDP growth. Thus impacts of remittances on cost-effective growth were harmful anywhere reservoir competence was short and vice versa (Agawam, et. al. 2006; Beck, et. al. 2007; and Gupta, et. al. 2009).

Monac (2009) makes clear that remittances, monetary promote development plus economic growth, in the case of Latin America and The Caribbean. The studies analyze the force of workers' remittances also pecuniary intermediation as well as financial market progress on economic growth. Remittances were affirmative and significant stuff on growth through using the panel data. (Chami et. al. 2003) consider an unresponsive relation involving remittances and GDP development. These mediators might be able to influence the remittances in the state of the actual rate of growth. Both academic and experimental studies measured the effects of remittances on economies. Remittances were transmitted through different channels, by helping assemble a monetary structural design that decreases the operational costs of intermediation along with increases its transparency. Remittances that were invested in productive activities would contribute directly to output growth furthermore reducing the poverty of a recipient country like Pakistan.

Siddique and Selvanathan (2010) studied remittances and economic growth: practical proof from Bangladesh, India, and Sri Lanka. The percentage growth rate of remittances has been taken to study in the country like Bangladesh, India, and Sri Lanka from 1977 to 2005. It studies the link between remittances and monetary growth in these three countries especially in Bangladesh, India, and Sri Lanka, But in India, in appearance was

no essential affiliation involving remittances along with economic development. While in Sri Lanka, found the two-way directional causality.

Ahmad et, al. (2013) reading the foreign remittances and economic growth in Pakistan by using the ordinary least square (OLS) for the period of 1978-2011 with the secondary time series data. Multiple regression techniques were used to recognize the connection among variables. And the Result shows that foreign remittances had an unbeatable and momentous comparison with GDP in Pakistan. Pakistan was along with those of ten countries who receive remittances and remittances increases day as a result of the day. The increment in remittances of Pakistan shows that Pakistani immigrant-send to their home countries. That is why foreign business deal plays a key role in pecuniary sector was to the stabilization of Pakistan.

3. Data and Methodology

This research focused on the effectiveness of foreign remittances and economic growth. The data used for this study are taken from world development indicators (2018), the Economic Survey of the Ministry of Finance (Various Issues), and the Federal Bureau of Statistics (FBS) for the period 1972-2018. To check the stationary of the data Augmented Dickey-Fuller test is used and Autoregressive Distributed Lag (ARDL) was selected based on the data.

3.1 Model Specification

To examine the foreign remittance and economic growth the model has been formulated as follows.

$$GDP = \alpha_0 + \alpha_1 INF + \alpha_2 INV + \alpha_3 GFCF + \alpha_4 T + \alpha_5 LF + \alpha_6 FR + \varepsilon_1 t$$

There are two steps in the application of the ARDL technique. First, F-statistic is used to examine the long-run association between relevant variables in the thesis. Second, the coefficients of the short-run are to be estimated along with the Error correction term. The general ARDL Equation is presented as following,

$$\begin{aligned}
 GDP_t = & a_0 + \sum_{i=0}^k \theta_{1j} GDP_{t-j} + \sum_{i=0}^k a_{1j} INF_{t-j} + \sum_{i=0}^k a_{2j} INV_{t-j} \\
 & + \sum_{i=0}^k a_{3j} GFCF_{t-j} + \sum_{i=0}^k a_{4j} T_{t-j} + \sum_{i=0}^k a_{5j} LFT_{t-j} \\
 & + \sum_{i=0}^k a_{6j} FR_{t-j} + \varepsilon_t
 \end{aligned}$$

Afterward, the determination of the short-run coefficients will be done through the inclusion of the error correction term. The Error Correction (ECM) illustration of ARDL is:

$$\begin{aligned}
 \Delta GDP_t = & a_0 + \sum_{j=1}^k \theta_{1j} GDP_{t-j} + \sum_{j=0}^k a_{1j} \Delta INF_{t-j} + \sum_{j=0}^k a_{2j} \Delta INV_{t-j} \\
 & + \sum_{j=0}^k a_{3j} \Delta GFCF_{t-j} + \sum_{j=0}^k a_{4j} \Delta T_{t-j} + \sum_{j=0}^k a_{5j} \Delta LFT_{t-j} \\
 & + \sum_{j=0}^k a_{6j} \Delta FR_{t-j} + \pi ECM_{t-1} + \mu_t
 \end{aligned}$$

ECM is the lagged value of error correction and π is the value of the coefficient of ECM. It measures the speed of adjustment. Where,

- GDP = Gross Domestic Product
- INF = Inflation Rate
- INV = Investment
- GFCF = Gross Fixed Capital Formation
- T = Trade
- LF = Labor Force
- FR = Foreign Remittance

Here ε_{1t} = Error term or stochastic Disturbance term

Table 3.1
List of independent Variables with Expected Signs in Model

Variables	Description	Unit of measurement	Expected Sign	Source
GDP	Gross Domestic Product	% of GDP	—	WDI
INF	Inflation	% of GDP	Negative	WDI
INV	Investment	% of GDP	Positive	WDI
GFCF	Gross Fixed Capital Formation	% of GDP	Positive	WDI

T	Trade	Annual growth %	Positive	SBP
LF	Labor Force	Annual growth %	Positive	IMF
FR	Foreign remittances	% of GDP	Positive	WDI

Source: Author's own description

4. Empirical Data Analysis

4.1 Descriptive Analysis

Descriptive analysis is helpful to see the past tendency and predict the future values of the variables. Descriptive statistics discuss the variables in numerical figures. Before the econometric investigation, descriptive analysis is carried out.

Table 4.1
Descriptive Analysis

	GDP	INF	INV	GFCF	T	LF	FR
Mean	2.262	8.635	74933.55	3.737	33.699	50.299	21.123
Median	2.158	7.882	56373	4.318	33.515	49.9	19.022
Maximum	6.692	20.904	866740	19.901	38.909	78.964	46.789
Minimum	0.828	2.463	1200	-7.705	27.719	22.667	2.5678
SD.	1.770	4.187	145293.6	6.122	2.799	11.131	11.568

Source: Calculations are carried out with E-Views 9

The future values of the variables can be predicted by checking the stationary of data. Prediction cannot be possible if data is non-stationary. In this study, we applied the Augmented Dickey-Fuller (ADF) test to examine the stationary of data.

4.2 Unit root Analysis

In the present study, time series data ranging from the period 1972 to 2018 has been used that first incorporate the. This data has been collected from different sources which are described in the earlier chapters.

Gross fixed capital (GDP) is stationary at level. GDP has an integration of Zero-order and its ADF value is -4.7362 at 1% critical value with intercept. So, it might be concluded that GDP - I (O). GDP is stationary at level.

Table 4.2
Augmented Dickey-Fuller Test Result

Variables	At Levels		At 1st difference		Integration
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
GDP	-4.7362*	-5.1603*	-10.4431*	-10.3008*	I (0)
INF	-4.7055*	-4.9602*	-9.3600*	-9.1503*	I (0)
INV	-5.6706*	-5.6113*	-9.8254*	-9.6907*	I (0)
GFCF	-4.5756*	-4.7371*	-8.9356*	-8.9242*	I (0)
T	-2.559	-2.537	-7.1743*	-7.2608*	I (0)
LF	-6.3452*	-6.4748*	-6.5144*	-6.4373*	I (0)
FR	-4.5803*	-5.6398*	-4.5344*	-4.5031*	I (0)

Source: calculation, the (*, **, ***) shows the level of significance at 1%, 5%, and 10% correspondingly.

4.3 Bound Test for Long-Run Relationship

Bound test estimates the long-run association between variables. By applying the Bound test, we set the condition that the long-run coefficients of variables will be equal to zero.

Table 4.2
Result of Bound test for Cointegration

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	29.1631	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Author’s own calculations

The computed value of F-statistics is 29.1631, while the critical value of an upper bound test is 4.68. The computed value is greater than the upper bound or critical value. So, we will reject the null hypothesis that tells that there is the absence of co-integration in the model and accept the alternative hypothesis. So, it is concluded that the long-run association between the variables as well as co-integration exist in the model.

4.4 Long Run Estimates of the Model

The results which are obtained by applying the ARDL technique are giving in the following table.

Table 4.3
Long Run Estimates of Model

Variables	Coefficients	Standard Errors	t-Statistic	Probability
INF	-0.131456	-0.013067	-10.060168	0.0021
INV	0.000005	0.000000	11.658005	0.0014
GFCF	0.053168	0.015515	3.426915	0.0416
T	0.158314	0.019211	8.240630	0.0037
LF	0.208746	0.011028	18.92907	0.0003
FR	0.063959	0.005551	11.52245	0.0014
C	-14.544049	1.125132	-12.9265	0.001

Source: Author's own calculations

The above table shows that the coefficient of INF is negative and its value is -0.131456. It is statistically significant as shown by its value of probability is 0.0021. The value of the coefficient of INF indicates that a 1% rise in INF will decrease economic growth by -0.131456%. It points out that when inflation increases due to a persistent increase in prices, and economic growth are decreased in the economy. In this way, prices increase which leads to an increase in inflation. So, inflation has a negative relationship with economic growth. The results match with (Barrow, 2004; Temple, 1999).

The coefficient of Investment is positive and its value is 0.000005. It is statistically significant as shown by its probability value which is 0.0014. The value of the coefficient of INV shows that a 1% rise in INV would result in a rise in economic growth by 0.000005% (percent). The results match with (Hakura, 2004).

The results indicate that when investment increases in an economy, it means that price of foreign currency increases. The domestic currency is depreciated which leads to discouraging the import consumption and demand for domestic goods increases leading to an increased price level as well as inflation in Pakistan. So, this study indicates that there is a positive relationship between investment and economic growth.

The coefficient of Gross Fixed Capital Formation is positive and its value is 0.053168. It is statistically significant as indicated by its probability value that is 0.0416. The value of the coefficient of GFCF shows that if GFCF increases by 1% then accordingly there would be a 0.053168% increase in economic growth. If GFCF increases then it increases the economic growth firstly. They all view that GFCF is positively related to economic growth.

The coefficient of Trade is positively correlated and its value is 0.158314. It is statistically insignificant as its probability value is 0.0037. The value of the coefficient of T points out that a 1% increase in T leads to an increase in economic growth by 0.158314% (percent). When the government traded, then it starts budget financing. The sources are, for example, getting external loans. Accordingly, the supply of money decreases in the economy. As the money supply decreases, prices also decrease leading to raise economic growth.

The coefficient of Labor Force is also positive and its value is 0.208746. It is statistically significant as shown by its probability value which is 0.0003. The value of the coefficient of LF indicates that an I% rise in LF would result in a 0.208746% rise in economic growth. There is a positive relation between LF and economic growth. It is expected that when LF increases, it increases economic growth. It shows that LF is positively related to economic growth. The results match with (Naseem, 2004).

The coefficient of Foreign Remittance is positive and has a value of 0.063959. It is highly statistically significant as its probability value is 0.0014. The coefficient value of FR indicates that if FR increases by 1% then it will result in a 0.063959% increase in economic growth. FR is an important factor of economic growth because an increase in FR, increase in economic growth, and a higher rate of foreign remittance, the higher rate of economic growth. So, foreign remittances are positively correlated with economic growth. The results also match with Fayissa and Nsiah (2010).

4.5 Short Run Estimates of Model

To examine the short-run results of coefficient with ECM and CointEq estimation, the outcome from the short run for economic growth model are given in the following table.

Table 4.4
Short-run Estimates of Model

Variables	Coefficient	Standard error	t-statistic	Probability
D (GDP)	0.370645	0.084801	4.370769	0.0222
D (INF)	0.000003	0.000001	4.499288	0.0205
D (INV)	0.036064	0.019925	1.809971	0.168
D (GFCF)	0.378744	0.040439	9.365812	0.0026
D (T)	-0.062952	0.016839	-3.73853	0.0334
D (LF)	-0.158991	0.011479	-13.85003	0.0008
D (FR)	-1.846834	0.133117	-13.87374	0.0008
CointEq(-1)	-0.64458	0.26000	-0.15985	0.0000
R-Squared	0.999581			
Adjusted R ²	0.995108			
F-statistic	223.5083			
Prob (F-statistic)	0.000421			

Source: Author's own calculations

Here, the value of CointEq is -0.64 which is statistically significant as pointed out by its probability value which is 0.000. Both restrictions of minus sign and significance have been satisfied here. The value of Coint Eq shows the velocity of modification to re-establish the state of long term equilibrium. About 64% of disequilibrium in the previous year is converted into long-run equilibrium in the present year. The value of CointEq is highly significant indicating the confirmation that there is a stable long-term association among variables. Outcomes point out that disequilibrium converges to the state of equilibrium very quickly as the velocity of adjustment is very high. The values of short-run coefficient estimates differ from their long-run values. For the variables such as GDP, INF, INV, GFCF, T, LF, and FR. Additionally, the Significance of the variables has also been dissimilar.

4.6 Diagnostic Analysis

Various diagnostic tests have been used to examine the heteroscedasticity, Correlation, and misspecification in the model. The present study applied Breush Godfrey serial correlation LM test to check the existence of the autocorrelation in the Model. Different diagnostic tests for the Model of economic growth.

Table 4.5
Diagnostic Test for Model

Test	F-Statistic	Probability
Breush-Godfrey Autocorrelation LM Test	0.048756	0.9545
ARCH Test of Heteroskedasticity	1.323916	0.4726

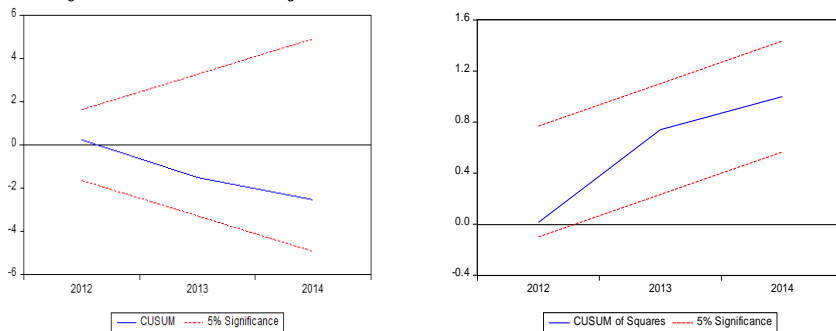
Source: Author’s own calculations

From the above two tables, it is clear that the probability of F-statistics values regarding two tests I-e Brush-Godfrey Correlation LM Test and ARCH Test for Heteroskedasticity for the model of economic growth is greater than 5% (0.05) at 95 a % confidence interval. It means that there is no autocorrelation in both models, Heteroscedasticity does not exist in the models and both models are correctly specified.

4.7 Test of Stability

The Cummulative Sum of Recursive Residual (CUSUM) and Cumulative Sum of Recursive Residuals of squares (CUSUM) are plotted for stability tests.

Figure 1.1
Plot of Cumulative Sum of Recursive Residuals



5. Conclusion and Policy Recommendations

The overall study concludes that foreign remittances have an optimistic and momentous relation with the economic growth of Pakistan. Thus, it should emerge that remittances are a superior tool to address transient poverty which occurs due to the shocks whether at the domestic or general level rather than a structural scarcity. When remittances are properly measured and when the growth equations are well specified plus instrumented. The study could not set up a vigorous and significant positive shock of remittances on long-term growth as well as initiate an unconstructive link between workers, remittances and economic growth.

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