



## Effects of Remittances on Financial Development: A Time Series Analysis for Pakistan

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### Abstract

*International migrant remittances are possibly the largest source of external finance in developing countries and this inflow has considerable importance in the development of the financial sector. The present study aimed to analyze the link between workers' remittances and development of the financial sector in the context of Pakistan. To carry out this empirical analysis, the study utilized a data set of annual frequency ranging from 1980 to 2015 (post-liberalization period). The econometric methodology of Auto-Regressive Distributed Lag (ARDL) has been used to get the short-run and long-run elasticities of the model. Overall findings suggested that there is a strong positive link between the inflow of remittances and the development of the financial sector in the context of Pakistan.*

**Key Words:** Remittances, External Finances, Econometric Methods, ARDL

### Introduction

Remittances are generally restricted to refer to the cash that is transferred by the migrant to their families and communities and are earned by local labor working in the international economy for contributing their part in the economic growth. Remittances develop the incorporation of countries into the international economy. As migrations continue to rise, the resultant growth of remittances has increased the flow of foreign currency into many developing countries and Pakistan in particular. Policymakers in developing countries have started to modernize financial systems, removing controls and creating incentives, with the aim of attracting remittances especially through official channels. International migrant remittances are possibly the largest source of external finance in developing countries. Recent worldwide approximation shows that Worker remittance inflows have considerable importance in developing nations. In the developing world, remittances now exceed Official Development Assistance receipts (Ratha, 2003). Official development Assistance transfers to developing countries in 2001 were recorded at about US\$ 52.3 billion whereas; international remittances inflow was about US\$ 77.0 (The World Bank, 2004). Van Hear (1998) labels some of these people as “new Diasporas”, *i.e.* immigrant groups that become Diasporas because of major contemporary economic and political transitions.

A conservative approximation specifies that every year there are about 200 million people migrating around the world (Harris, 2002). This number is significant and indicative of broader changes in the global context. The trend of worker's remittances in Pakistan is increasing over time. Pakistan is one of the largest recipients of remittances in the developing world. For many years in Pakistan worker's remittances have exceeded the either the foreign direct investment or official development assistance. In the 1980's, worker's remittances were linked with a reduction in poverty and now its symbol of reduction of ODA. The main sources of foreign remittances in Pakistan are the US, the UK, the KSA and UAE (Pakistan Economic Survey, 2015-16. Since Pakistan's financial sector is at its preliminary level of development, remittances can be seen as relaxing the budget restriction (Giuliano *et al*, 2005). Transformation in the financial system after a period of sustained divergence is a challenging task for the government.

Financial development is a good leading sign of growth; the primary level of financial development envisages subsequent rates of economic growth, human capital accumulation and productivity growth, even after controlling for income, education, political stability, and measures of monetary, trade, and fiscal policy. This study is closely related to the literature that investigates the relationship between remittance flows and financial sector development. The study has explored the effects of remittance inflows on financial sector size. In order to check the impact of remittances on financial sector size and

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efficiency are measured as the ratio of Liquid liabilities/GDP and Broad Money/GDP show that migrant remittances have a positive influence on financial sector size. This study differs from the previous literature in that it not only examines the effect of migrant remittances on financial sector size.

## Literature Review

Recently the research on the link between the financial sector, size and remittance inflow is increasing. A brief review of studies on this issue is presented in this section. In recent years there, is a boost in international remittances than foreign direct investment (FDI) increasing the number of remittances in several countries and rising by 10-15% per annum over 2001-05. The major argument in favor of their inflow is the improvement in the consumption and investment pattern and ultimately contributing towards lessening the extent of poverty. A study conducted for the poor economies of sub-Saharan Africa and South Asia (Maimbo and Ratha, 2005) argued that Remittances not only have a positive effect on physical investment but they also accommodate the human capital accumulation, such as dealing in health and education. Ruiz-Arranz (2009) concluded that remittances play a sound role in promoting economic growth in developing countries by enhancing financial sector development, particularly in financially less developed countries. Quartey (2005) also found similar results that remittances have a constructive impact on economic growth and it has played a vital role in reducing the poverty in Ghana.

Cattaneo (2005) investigated that remittances are usually used upon investment in physical assets as well as investment in education and health, which encourages growth. Whereas Barajas *et al.* (2009) did not found any evidence of a relationship between workers' remittances and economic growth, at the same time as Abih *et al.* (2008) confirmed that remittance inflows could lead to a decline in economic growth and financial development. Whereas, a positive relation was found between remittances and the financial sector development in the study of Ruiz-Arranz *et al.* (2009). Jongwanich (2007) examined the outcome of the worker's remittances and reduction in poverty of developing nations like the Asia Pacific. The results recommended that, while workers' remittances have a considerable impact on poverty reduction through increasing income, even consumption and lessening capital limitations for the poor, but there is a secondary impact on growth getting through domestic investment and financial development. Ratha D (2010) has investigated the relationship between workers' remittances and financial sector development for the period of 1973-2006. The study found that remittances promoted the development of the financial sector.

Barajas *et al.* (2009) examined the outcome of the remittances and economic growth; they conclude that migrants' remittances have donated slightly too economic growth. Rao and Hassan (2009) have examined the impact of remittances on growth by using the Solow growth model. Their study found that migrant remittances have a positive but minor effect on financial development. Kumar (2010) investigated the correlation between remittance inflow and economic growth of the Philippines by applying the Bounds test analysis. They found that remittances have certainly a positive effect on economic growth. The study carried out by Habib *et al.* (2006) for exploring the relationship between remittance and economic growth in the framework of South and Southeast Asian countries by applying simultaneous equations model under the model of panel data least-squares dummy variable regression model. Their results showed that there is an inverse relationship between remittances and real GDP in the perception of Thailand, Sri Lanka, India and Indonesia, whereas finding positive effect of remittances on real investment for Bangladesh, Pakistan, and the Philippines. Adams (2005) founds in his study that remittances had positive effects if they are invested in education, health, and poverty reduction. Iqbal and Sattar (2005) investigated that workers' remittances appeared to be the third important source of capital for economic growth in Pakistan. In other words, remittances are financial supply flows getting from the cross-border movement of nationals of a country after foreign loans, aids and FDI (Kapur *et al.*, 2006).

Moreover, remittances also have a positive impact on the revenue side of fiscal policy, if government impose explicit taxes on incoming remittances, for instance, for a given taxation structure the increase in national income associated with a surge in remittances would *ceteris paribus* result in higher tax revenues (Lopez, *et al.*, 2007). As compare to resources, remittances are mostly utilized in daily consumption, in health issues, on tutoring and accommodation. To some extent, they are also spending it on savings or used for self-employment or small business purposes (Dawson, 1990). Kao *et al.* (2001) showed that remittances could play an important role in dropping enforced child labor. As income increases with the help of remittances, people stop their children from doing cheap jobs and prefer to send schools. All of the above studies conclude that Worker's Remittances have a positive impact on financial sector development. Their findings strongly support the belief that remittances promote financial sector development in developing countries. If remittances inflows are through a proper channel like a financial institution, it increases the opportunities for greater saving mobilization. Especially, in crisis periods like natural disasters and political instability. Therefore, remittances can surely help to improve the developing countries' development prospects.

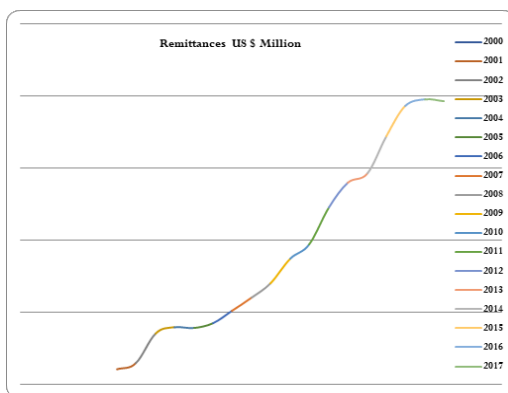
### Workers' Remittances

Remittances comprise the largest and most flexible sources of foreign exchange earnings for developing countries like Pakistan. Streaming of workers' remittances to developing countries has grown progressively over the past year (Khan, 2009). Remittances are classified form of foreign exchange, which is completely different in nature from the others as they are used partly on consumption and to a certain extent on investment. These flows serve as a means to raise families' income and liquidity restraints and allow them to progress their consumption and living standards. In Pakistan, a significant part of remittances are frequently spent on personal needs, housing, and land, and are not used for prolific investment that would add to long-run growth. The perception that remittances can lead to financial development in developing countries is based on the concept that money transferred through financial institutions paves the way for recipients to demand and gain access to other financial products and services, which they might not have otherwise (Orozco, & Fedewa, 2005).

**Table 1.** Country wise portion of Worker's Remittances

Country Wise Worker's Remittances				
Country	2015-16	2016-17	% share 2015-16	% share 2016-17
U.S.A	2,579.69	2,452.9	12.68	12.68
U.K	2,579.69	2,341.70	12.95	12.10
U.A.E	4,365.29	4,328.10	12.92	22.37
Saudi Arab	5,968.25	5,469.80	29.92	28.27

Source: State Bank of Pakistan



**Figure 01** Worker's Remittances (2000-2017)

Source: World Development Indicator

### Data, Variables, and Methodology

For this empirical study, annual time series data set is utilized collected from different sources over the period from 1975 to 2015. These sources include the World Development Indicator (WDI), various issues of Pakistan Economic Survey, compiled by the ministry of finance. The dependent variables in the study are the financial sector size as measured by Liquid Liabilities (LL), whereas, independent variables are Worker's remittances, Exports, Foreign Direct Investment (FDI) and Gross Fixed Capital Formation (a proxy for share of investment in GDP). All these variables are deflated and the natural log has been taken.

The ARDL representation of the model is given as:

$$\begin{aligned} \Delta \ln(RLL) = & \alpha_0 + \sum \beta \Delta \ln(RREM)_{t-i} + \sum \gamma \ln(REXP)_{t-i} + \sum \delta \Delta \ln(RFDI)_{t-i} \\ & + \sum \lambda \Delta \ln(RGFCF)_{t-i} \\ & + \alpha_1 \ln(RREM)_{t-1} + \alpha_2 \ln(REXP)_{t-1} + \alpha_3 \ln(RGFCF)_{t-1} \\ & + \alpha_4 \ln(RFDI)_{t-1} + vt \end{aligned}$$

Where,  $\ln(RLL)$ ,  $\ln(RREM)$ ,  $\ln(REXP)$ ,  $\ln(RFDI)$  and  $\ln(RGFCF)$  is the natural log of real liquid liabilities, real worker's remittances, real exports, real foreign direct investment and real gross fixed capital formation respectively. " $\Delta$ " is used as first differences operator,  $\alpha_0$  is the intercept of the model and  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\lambda$  and  $\sigma$  are coefficient of long-run variables whereas  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_3$  and  $\alpha_4$  are the coefficient of the short-run impact of variables at the first differences variables and  $v_t$  is the error term.

### Empirical Findings

The present section reports empirical findings with interpretation. Firstly the unit root test and secondly, ARDL estimation results are given. The Augmented Dickey-Fuller (ADF) unit root test is used to check the order of the integration of all the variables. Since the order of integration is different, therefore this study applied the Autoregressive distributed lag (ARDL) technique. The results of the ADF unit root test are reported below. The table shows that  $\ln(RLL)$  and real exports (REXP) are stationary at the level and the rest of all other variables are stationary at the level and become stationary at first difference. The mixed order of integration gives a justification to use Autoregressive Distributed Lag (ARDL) methodology to use for estimating short run and long-run elasticities.

**Tables 2.** Unit Root Test Result

Variables	Level	1 <sup>st</sup> Difference	Order of Integration
$\ln(RLL)$	-2.178134 (1.9507)	-5.485561(-1.9526)	I(0)
$\ln(RREM)$	-0.852408 (1.9507)	-4.751574*(-1.9526)	I(1)
$\ln(RFDI)$	-0.920569 (-1.9507)	-6.325830*(-1.9526)	I(1)
$\ln(SI)$	-1.866887 (-1.9507)	-5.345476*(-1.9526)	I(1)
$\ln(REXP)$	-3.134186 (-1.9507)	-7.479668(-1.9526)	I(0)

Note: \* indicates significant at 5%

In the second step, the bounds test is applied to check whether the long-run relationship exists between remittances and financial sector development. The next table reports the findings of the ARDL bounds test of co-integration. This test follows *F*-test to check the existence of long-run relationships; which has an asymptotic non-standard distribution. Further, the null hypothesis of no co-integration among the observed variables is tested.

**Table 3.** Bounds Test for Co-integration

F-stats	Probability
9.57433	0.00023

Note: Null Hypothesis: There is no Co-integration, the hypothesis rejected at 5% level of significance.

After establishing the evidence of co-integration, this study estimated the long run and short-run estimates specified in the model. The results of the unrestricted error correction model for each variable are given below in Table 5.3. Liquid liabilities  $\ln(RLL)$  are used to check the effects of the financial sector on financial remittances. The findings show that remittances have a positive and significant impact on the development of the financial sector in the case of Pakistan; however, the effect is significant at 1% level of significance. A positive and significant impact of exports has been reported by this study, a robust and positive impact of investment on financial development is reported here. In this analysis, FDI has a positive but insignificant impact on the development of the financial sector.

**Table 4.** Long-run and Short-run Estimation for Liquid Liabilities

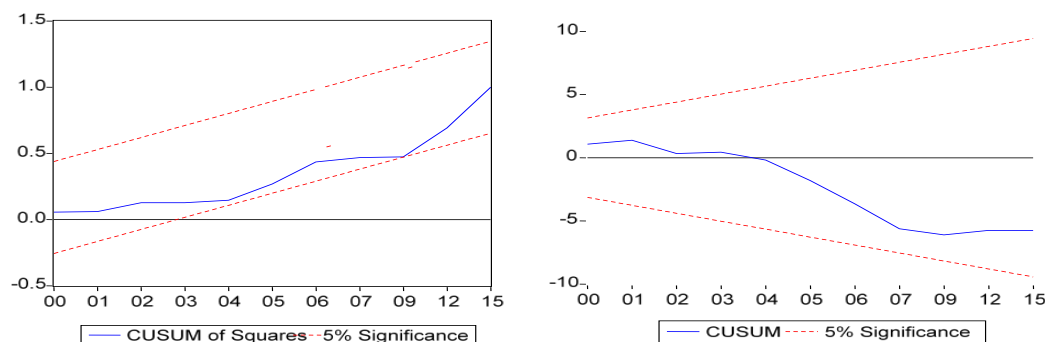
Short-run Estimates				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.512065	1.114494	0.459459	0.6500
$\Delta \ln(RREM)$	0.101337	0.058307	1.737991	0.0950
$\Delta \ln(REXP)$	0.458411	0.156757	2.924346	0.0074
$\Delta \ln(SI)$	0.251814	0.111787	2.252629	0.0337
$\Delta \ln(RFDI)$	0.021357	0.029893	0.714462	0.4818
Long run Estimates				
$\ln(RLL(-1))$	0.038495	0.071798	0.536159	0.5968

$Ln(RREM(-1))$	-0.030536	0.029008	-1.052691	0.3030
$Ln(REXP(-1))$	0.157194	0.183364	0.857276	0.3998
$Ln(RFDI(-1))$	-0.002336	0.026581	-0.087879	0.9307
$Ln(SI(1))$	-0.015339	0.068472	-0.224017	0.8246
<b>Adjusted R-squared</b>	0.756694	<b>Durbin-Watson stat</b>	2.072853	
<b>S.E. of regression</b>	0.065413	<b>F-statistic</b>	11.57420	
		<b>Prob (F-statistic)</b>	0.000001	

Note: \* indicates that significant at 5%

The normalized long-run equation is given as:  $LRLL(-1) = 0.789 LRREM(-1) + 3.94 LREXP(-1) - 0.05 LRFDI(-1) + 0.263 LRGFCF(-1)$

The short-run diagnostic testing shows that: F-stats show that models are overall significant and Durbin Watson (D.W) test detects the problem of autocorrelation. D.W shows that there is no problem with the auto correlation in the model estimated. R<sup>2</sup> coefficient for  $Ln(RLL)$  is 0.75 (75%) variation in Liquid Liabilities is explain by explanatory variables include in the model. Liquid Liabilities  $Ln(LRLL)$  and Worker’s Remittances (LRREM) show a positive relationship in the long run. The result indicates that worker’s remittances have a positive and significant impact on the financial sector size variable. Figures below show that the CUSUM and CUSUMSQ test of stability to  $Ln(RLL)$ .



### Conclusion

The present study examined the impact of worker’s remittances on financial sector size. The empirical findings suggested that remittances lead to increases in the level of credit distribution, and the volume of bank deposits increases as remittances increase in the country (Aggarwal *et al*, 2006). Remittances provide resources through which recipients can open accounts that lead to improving the liquidity of the banking system and the availability of credit to the public (Cooray, 2011). There is also some support that gross domestic capital formation is important for financial sector development suggesting that the level of financial knowledge to the society and investment in infrastructure are significant fundamentals for financial sector development. The facts also show that better results in development are measured as principally by the volume of exports to GDP and to some extent FDI, supply’s to financial sector development. The result also shows that there is evidence that remittances contribute positively to financial sector development, the governments should take measures to improve the range of money transmission services provided to migrants through normal channels. This would contribute not only to increase the size and efficiency of the financial system but also to bring larger remittances to the country. While measures have been taken by several countries to introduce financial literacy programs and improve the infrastructure necessary for the provision of financial services, it is important to ensure that these programs are targeted to the masses increasing financial extensiveness.

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