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## Workers' Remittances and Household Consumption Expenditure in Selected South Asian Countries

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### ABSTRACT

The remittance inflow becomes as an important factor for economic development in developing countries especially in South Asian countries. It would affect exchange rate, investment, private consumption, poverty and economic growth, etc. The purpose of this paper is to investigate the impact of workers' remittance inflow on household consumption expenditure in South Asian countries between 1987 and 2016. Study considered Bangladesh, India, Pakistan and Sri Lanka from South Asian region, based on the availability of data. The data of growth rate of remittance inflow and growth rate of household consumption obtained from World Development Indicator, World Bank Database. The study applied multiple linear regression model, Random effect model and fixed effect model to trace out the impact remittance inflow on household consumption expenditure in South Asian region. The multiple linear regression results suggested that growth rate of remittance inflow had a positive and significant impact on household consumption expenditure only in Bangladesh but insignificant impact in India, Pakistan and Sri Lanka. The fixed effect model revealed that remittance inflow had a negative and insignificant impact on household consumption expenditure in South Asian region. But, random effect model revealed that remittance inflow had a positive and insignificant impact on household consumption expenditure in selected South Asian region. Housman Test concluded that random effect model preferred to fixed effect model to explain the impact of workers' remittance on household consumption expenditure in this selected South Asian region. Therefore, this study reports that growth rate of worker's remittance has positive impact but exert no significant influence on growth rate of household consumption expenditure in this region during the study period.

### Introduction

Workers' remittances have grown dramatically worldwide, particularly in developing countries. It is playing as second largest source of foreign finance after foreign direct investment

(FDI) flows. The worldwide workers' remittances transfers through official channels reached 536988Mn.US\$ in 2016 (the world Bank 2016).

The direct impact of migration is increased income, mainly through remittances (Mckenzie and Sasin, 2007). Remittances send by the migrants are remarkable capital flow for migrant-sending household, especially in developing countries. There are different reasons for migrants send remittances to their households in home countries (Stark, 1995; Lucas and Stark, 1985; Cox, 1987, 1890). The most often cited, the remittance motives are altruism exchange and insurance. The altruism

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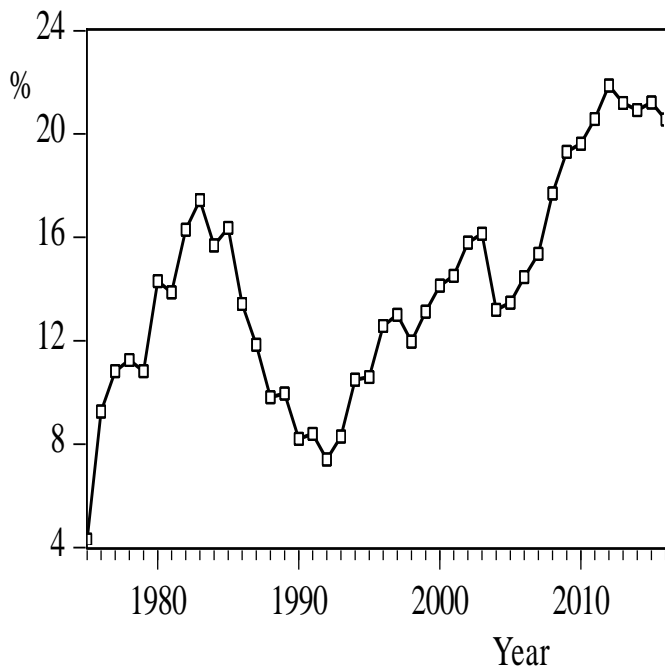
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means that people give transfers to others because of care and love. It assumes that the migrant derives utility from the standard of living of those left at home.

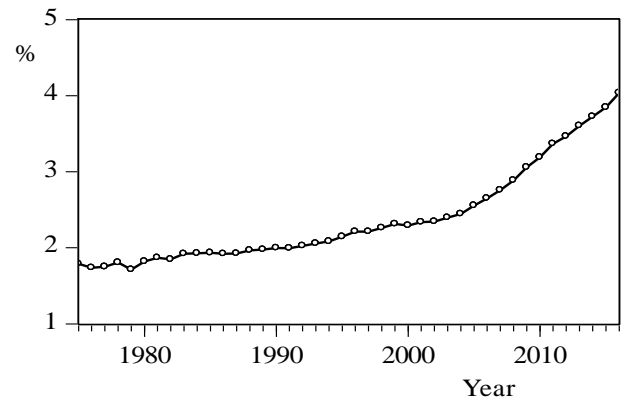
Over the last two decades, South Asian countries have witnessed an unparalleled rise in workers' remittances. According to the World Bank (2016) estimates, official remittances received by South Asian countries increased from 11% in 1998 to 20.5% in 2016 as percentage of total remittance of world. The Figure.1 shows the increasing trend of percentage share of remittance of South Asia in the World. The Figure.2 represents the increasing trend of household consumption expenditure as a percentage share in world's household consumption expenditure. Further, the fluctuation of growth rate of worker's remittance is greater compared to growth rate of household consumption expenditure in South Asian region (see Figure.1&2). In South Asia, the household consumption expenditure has been increased from 1.74% in 1976 to 4.03% in 2016 as percentage share in world's household consumption expenditure but it has been decreased from 75% in 1975 to 63.7% in 2016 as a percentage of GDP (World Development Indicator, 2016).

Remittances are playing an important role in household consumption in South Asian countries. Based on World Bank data (2016), the Figure. 3 represents that although workers' remittance inflows differ among the South Asian region, there are few countries like India, Pakistan and Bangladesh show the higher remittance inflow in 2016. Figure.4 indicates the percentage share of household consumption expenditure in the world. It revealed that India has higher percentage share of household consumption expenditure among this region.

**Fig.-1: Share of Workers' Remittance of South Asia in the World**

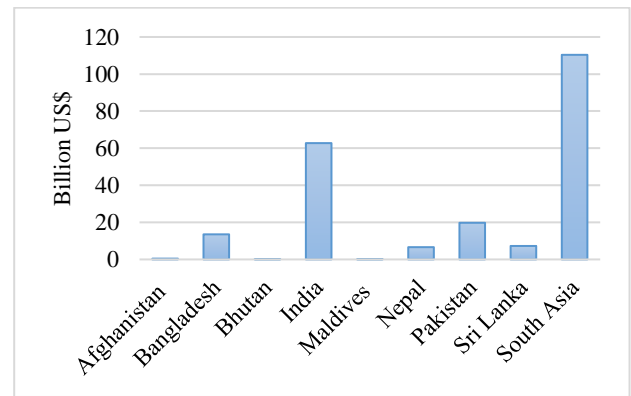


**Fig.-2: Share of Household Consumption Expenditure in the World**

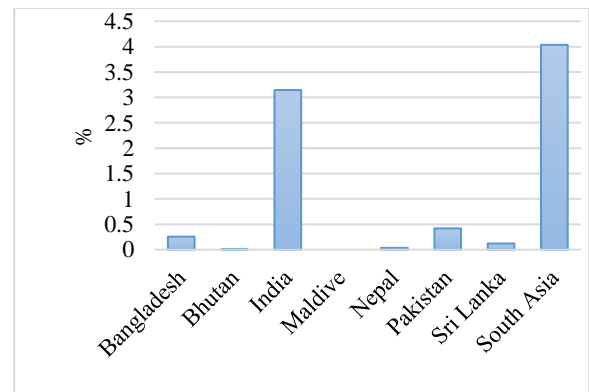


Source: World Development Indicator, 2016

**Fig.-3: Worker's Remittance Inflow in South Asia in 2016**



**Fig.-4: Share of Household Consumption Expenditure of South Asia in the World**



Source: World Development Indicator, 2016

**Literature Review**

The empirical literature has identified number of key economic indicators that might impact on the volume of remittances that country receive. Mahalia, Roland and Winston (2008) has identified remittances have a significant and positive impact on investment and consumption volatility. Further remittances have no direct impact on consumption volatility.

The findings are seen as altruism. Nguyen and Daniel (2012) studied international migration and remittances are spent on housing and land, depth repayment and saving. A small proportion of remittances are used to buy durable goods. Remittances are not spent in production as well as living consumption.

Siddique et al. (2010) used the Granger causality test to identify the direction of the relationship between workers' remittances and economic growth in South Asian countries. The study based on annual data suggested that the bidirectional causality between workers' remittances and economic growth in Sri Lanka. Unidirectional causality was run between workers' remittances and economic growth in Bangladesh and identified the relationship. No causal relationship is found among the workers' remittances and economic growth in India. Yasmeen et al. (2011) annual time series data from 1984 to 2009 have been used to identify the impact of workers' remittances on private investment and total consumption in Pakistan. The findings indicate that workers' remittances have a significant positive impact on total consumption and private investment.

Syed (2012) have used annual time series data over the period of 1980 to 2009. The co integration results confirm that there exists significant positive long-run relationship between remittances and economic growth in Korea. At the same time significant negative relationship exist between remittances and economics growth in China. The error correction model confirms significant positive short run relationship between workers' remittances and economic growth in Korea while, the results of china were insignificant in the short- run. Harridutt (2017) estimate the consumption augmentation and stability impact for the period from 1989 to 2014. The result indicate consumption responds higher to remittances than to real income.

The literature found that there are few studies were done on time series data in South Asian Countries and several research have investigated the impact of remittances and economic growth. No study found related to remittances and consumption expenditure. So, this study examines the relationship between workers' remittances and household consumption expenditure in South Asia using a panel data analysis.

### Data and Methodology

Study selected four South Asian Countries, Sri Lanka, India, Pakistan and Bangladesh based on the availability of data. The data were gathered from World Development Indicator. For the analysis, the study considered only three variables, Growth rate of workers' remittance, growth rate of consumption expenditure and rate of inflation, from 1987 to 2016.

The multiple linear regression model was applied for each selected South Asian country. Then, since study compile all four countries together and considered as a panel data, the random effect model and fixed effect model have been applied

to find the impact of remittance on household consumption in selected South Asian countries.

### Multiple Linear Regression Model

$$\text{comp}_t = \alpha + \beta_1 \text{remit}_t + \beta_2 \text{infla}_t + u_t \quad (1)$$

The above multiple model is applied to find the impact of workers' remittance on household consumption expenditure in selected South Asian countries. The inflation rate has been considered as a control variable in above model where *comp* denotes growth rate of household expenditure, *remit* represents growth rate of workers' remittance *inflow* shows the rate of inflation and  $u_t$  denotes error term of the model. In model, the  $\beta_1$  gives the impact of growth rate of remittance on growth rate of household consumption expenditure. This model has been applied for Bangladesh, India, Pakistan and Sri Lanka separately.

### Fixed Effect Model

Study applied the fixed effect within group model to identify the impact of workers' remittance on household consumption expenditure. This model allows the association between unobserved variables and observed variables ( $\text{Cov}(x_{itj}, a_i) \neq 0$ ). Consider following model;

$$y_{it} = \beta X_{it} + a_i + u_{it} \quad (2)$$

Where  $a_i$  denotes fixed effect or un observed heterogeneity (as well as individual heterogeneity) and  $u_{it}$  represents idiosyncratic error or time-varying error.

Averaging over time gives;

$$\bar{y}_i = \beta \bar{X}_i + a_i + \bar{u}_i \quad (3)$$

Where,

$$\bar{y}_i = \sum_t y_{it} / T, \quad \bar{X}_i = \sum_t X_{it} / T, \quad \bar{u}_i = \sum_t u_{it} / T$$

When subtract the first equation (2) from second equation (3);

$$\dot{y}_{it} = \beta \dot{X}_{it} + \dot{u}_{it} \quad (4)$$

This transformed equation wipes out the differential intercepts. The Ordinary Least Square estimator for  $\beta$  from this transformed model is called within-groups Fixed Effect (FE) estimator, or simply within estimator, as this estimator is based only on the variation within each entity. Further, this transformation eliminated the omitted variable bias that is unobservable across group differences.

### Random Effect Model

Random Effect (RE) model assumes that there is no correlation between error component and observed variables. Consider following RE model;

$$y_{it} = \alpha_i + \beta x_{it} + v_{it} \quad (5)$$

$$v_{it} = a_i + u_{it}$$

Where,  $v_{it}$  is the composite error which combined both unobserved heterogeneity,  $a_i$ , (as well as individual heterogeneity) and idiosyncratic error or time-varying error,  $u_{it}$ . The equation (5) becomes a random effect model if  $Cov(x_{itj}, a_i) = 0$ ,  $t = 1, 2, \dots, T$ ;  $j = 1, 2, \dots, k$ .

**Hausman Test**

Hausman Test applied to decide whether Random Effect model is appropriate or not. The null hypothesis of Hausman test is that random effect model would be consistent and efficient. If the p-value of this test is greater than 0.05, then study fail to reject the null hypothesis. This means that study conclude that random effect model would be appropriate to explain explanatory variables on dependent variable. If the p-value of this test is less than 0.05, the study fails to accept the null hypothesis. This means that study would conclude Fixed Effect model would be appropriate.

**Results**

**Table-1: Multiple Linear Regression Results: Workers' Remittance and Household Consumption Expenditure in the Selected South Asian Countries**

Variables	Bangladesh	India	Pakistan	Sri Lanka
Remittance	0.059 (0.045)	0.036 (0.305)	-0.016 (0.419)	0.037 (0.165)
Inflation	0.383 (0.010)	0.235 (0.284)	0.020 (0.900)	0.438 (0.004)
constant	1.599 (0.109)	3.925 0.037	4.377 (0.007)	1.337 (0.187)
R <sup>2</sup>	0.322	0.085	0.027	0.122
Prob.(F)	0.006	0.302	0.693	0.174

Note: In the above table, the p-values for the corresponding coefficients are given in parentheses.

Table.1 shows the results of multiple regression model to find the impact of worker's remittance on household consumption expenditure in Bangladesh, Indian, Pakistan and Sri Lanka. Here, the study considered growth rate household consumption expenditure as a dependent variable, and growth rate of workers' remittance and inflation rate as independents variables. Since all the variables are in growth rates, there are no problems of unit root among the data series.

The results also show that growth rate of remittance has positively and significantly influence on growth rate of household consumption in Bangladesh. In India, the growth rate of workers' remittance has a positive and insignificant impact on the growth rate of household consumption expenditure at 5% level. In Pakistan and Sri Lanka, it had a negative and no significant impact on the household consumption expenditure.

Further, in Bangladesh, the inflation rate has a positive and statistically significant impact on household consumption

expenditure during the study period. In India, Pakistan and Sri Lanka, the inflation rate has positive but statistically no significant impact on household consumption expenditure. Further, the R<sup>2</sup> values are less than 20% and the model are insignificant at 5% level in all selected Asian Countries except Bangladesh (Table.1).

**Table-2: Results of Random Effect and Fixed Effect Model: Worker's Remittance and Household Consumption Expenditure in Selected South Asian Countries**

Variables	Random Effect Model	Fixed Effect Model
Remittance	0.0015 (0.921)	-0.0019 (0.903)
Inflation	0.1021 (0.199)	0.1163 (0.161)
Constant	4.0849 (0.000)	4.0098 (0.000)
R <sup>2</sup>	0.0126	0.0177

Note: In above table, the p-values for the corresponding coefficients are given in parentheses.

Table.2 shows the results of both random effect model and fixed effect model to find the impact of remittance on household consumption in selected South Asian region. Random effect model revealed that workers' remittance has a positive but no significant impact on the household consumption expenditure in this region. The fixed effect model result shows that workers' remittance had a negative and no significant impact on the household consumption expenditure in this region during the period of 1987-2016.

**Table-3: Results of Hausman Test**

Variables	RE (b)	FE(B)	Differences (b-B)
Remittance	0.0015	-0.0019	0.0004
Inflation	0.1021	0.1163	-0.0142
Chi square statistics: 1.81			
Probability value of Chi square statistics: 0.4041			

Table.3 represents the results of Hausman Test to decide either random effect model is appropriate or fixed effect model is appropriate. The probability value of Chi Square statistics is 0.4041 which revealed that the study fails to reject the null hypothesis that random effect model is appropriate. Therefore, the study conclude that workers' remittance and inflation had a positive but no significant impact on household consumption expenditure in selected South Asian Countries during the study period of 1987-2016.

**Conclusion**

The study investigated the impact of worker's remittance on household consumption expenditure in South Asian region through applying multiple regression model, random effect model and fixed effect model. The multiple linear regression results suggested that growth rate of remittance inflow had a

positive and significant impact on household consumption expenditure only in Bangladesh but no significant impact in India, Pakistan and Sri Lanka. The fixed effect model revealed that remittance inflow had a negative and insignificant impact on household consumption expenditure in South Asian region. But, random effect model revealed that remittance inflow had a positive and insignificant impact on household consumption expenditure in selected South Asian region. Housman Test concluded that that random effect model preferred to fixed effect model to explain the impact of workers' remittance on household consumption expenditure in this selected South Asian region. Therefore, this study reports that growth rate of worker's remittance has positive impact but exert no significant influence on growth rate of household consumption expenditure in this region during the study period.

Most of the previous studies' findings coincide with this study results. For the policy implication, this study suggests that the remittance would induce the private investment than household consumption expenditure to enhance the economic development. The main limitation of the study is, it does not consider the relationship remittances and investment.

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