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RETRACTED: THE NEXUS BETWEEN REMITTANCES INFLOW AND PRIVATE INVESTMENT: CROSS COUNTRY ANALYSIS OF SOUTH ASIAN COUNTRIES



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ABSTRACT

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This study attempts to inspect the nexus between remittances inflow and private investment for Pakistan, India, Sri-lanka, Nepal and Bangladesh from 1990 to 2014. This study uses Private investment as dependent variable followed by remittances inflow, real interest rate, economic growth and remittances inflow interacting with business freedom as independent variables. Further, this study implies Panel Autoregressive Distributive Lags Model (PARDL) to find the long run and short run association between remittances influxes and private investment. The findings of this paper suggest the presence of positive association between remittances inflow and private investment. However, remittances inflow with low business freedom suggests negative relationship with private investment for Pakistan, Bangladesh, Nepal, Sri-lanka and India.

Contribution/ Originality: This study contributes in the existing literature by taking into account interactive term of business freedom and remittances, also using newly available data till 2016. The paper's primary contribution is finding that the presence of positive association between remittances inflow and private investment. However, remittances inflow with low business freedom suggests negative relationship with private investment for Pakistan, Bangladesh, Nepal, Sri-lanka and India.

1. INTRODUCTION

Staggering numbers of people i.e. 3.4% of the world population, live outside of their countries of birth (World Bank Report, 2016) mostly believed to be present in the developed countries. As a result, foreign remittance inflow to developing countries is consistently moving on an upward direction and in fact is becoming single greatest contributor to economic growth in the said countries. This is well evident from the recent (WBR, 2016) the volume of remittances being sent by migrants to the developing countries is well beyond US\$441 billion, three fold of the size of official aid inflows to these countries. While the world wide remittance flows is estimated to be well above US\$601 billion excluding the remittance being sent through informal networks which is supposed to be considerably

larger than mentioned figure. The same report further asserts that the volume of remittance highly contribute towards an increased investment in education, small businesses and health in the developing countries.

In case of least developing countries in particular, remittance inflow exceeds the level of foreign direct investment (Bjuggren *et al.*, 2010) that highly contributes to the respective countries GDP by boosting up private investments in particular.

Looking more specifically in the context of South Asian countries, foreign remittance gives greater economic benefit to them by leveraging their foreign reserves to meet their balance of payments obligations against their respective import or in other words mitigating current account deficit (World Bank, 2008). Moreover, as predicted by the IMF (2015) report, as a result of strong remittance inflow South Asian countries particularly India, Pakistan, Bangladesh and Sri Lanka real GDP growth is likely to remain at robust levels for both 2015 and 2016. This is well evident by the fact that only in 2015 India, Pakistan, Sri Lanka, Bangladesh and Nepal were recipients to US\$ 125 billion remittances which does not include the amount been remitted through informal channels (WBR, 2016). India is the highest remittance recipient among South Asian countries followed by Pakistan and Bangladesh respectively. Most importantly, in the South Asian countries in particular, remittance inflow has a positive effect on the level of private investments, as a result of the absence of adequate financial institutional framework for mobilizing credit to private investors, that further paves the way for generating more economic activities (Bjuggren *et al.*, 2010). A study conducted by Bank (2012) also complements the preceding findings that foreign remittance found to be the major contributor in the acquisition of agricultural land among the Nepalese residents. Hence, it can be argued that remittance is being used as credible source of capital to finance private investments in the South Asian countries.

Similarly, Pakistan gets greater economic benefit from foreign remittances which culminates to more than US\$20 billion as per 2015 World Bank's report which is almost 10 percent of the country's GDP. The country's reliance on foreign remittance is even increasing further because of the country's deteriorating export market as a result of its engagement in war on terror. Especially, the higher volumes of remittance positively contribute to a surge in private investment that leads to higher rate of economic growth in the country (Yasmeen *et al.*, 2011). However, contrary to this, the finding of Rahman (2015) reveals that remittances have minimal impact on private investment but overall it has a positive impact on the economic growth.

Nevertheless, as depicted by figure (1.1) and (1.2) depicts the level of total amount of remittances received by Nepal, Bangladesh, Pakistan, India and Sri-lanka both in terms of percentage of GDP and also in terms of Current US billion dollars.

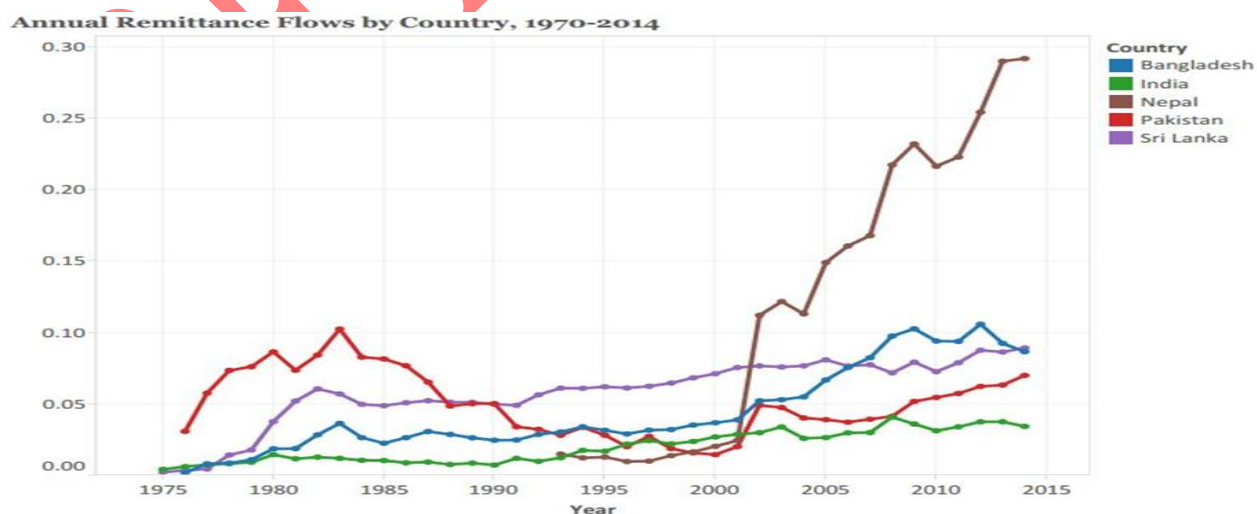


Figure-1.1. Asian countries of Highest Recipient of Remittances as %GDP:

Source: Migration Policy Institutes Data (2015)

There has been an increasing trend in remittances inflow to Bangladesh, Pakistan, Sri-lanka, Nepal and India. Interestingly, the major portion of remittances inflow as percentage of GDP in the year 2015 is received by Nepal, second highest by Bangladesh then Pakistan, Sri-lanka and at the end India.

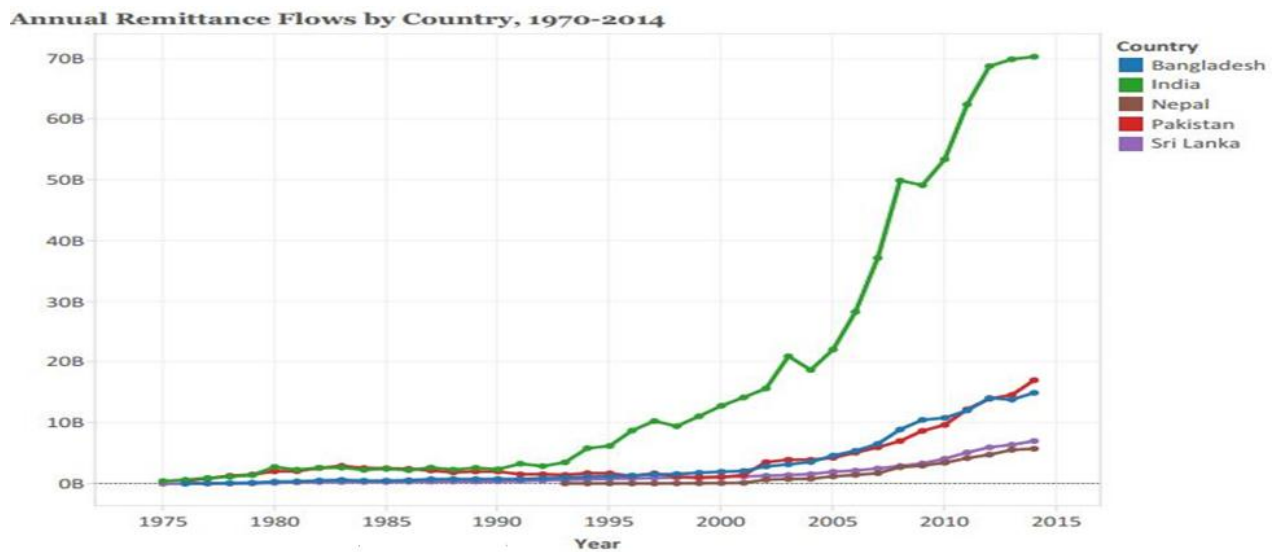


Figure-1.2. Asian countries with highest Receiver of Remittances in terms of US Billion Dollars:

Source: Migration Policy Institutes Data (2015)

In contrast, in terms of Current US dollars, India received the major amount in the year 2015, followed by Pakistan, Bangladesh, Sri-lanka and Nepal respectively. There has been an increasing trend in both graphs in terms of both percentages to GDP and Current US dollars to these five south Asian Countries.

In order to further investigate this phenomenon, this study aims to empirically investigate whether remittance inflows has an impact on private investments across the country. This study would provide greater empirical insight compared previous study as a considerable surge is being witnessed in the flow of remittance in the recent years. This work is structured by providing literature review in next section followed by research methodology and analysis in the second and third section respectively. A comprehensive conclusion is provided in the fourth section followed by reference and bibliography at the end.

2. LITERATURE REVIEW

There has been an extensive literature available on the role of remittances in promoting Private Investment not only in case of Asian countries but also in case of other developing countries too. Some of the findings suggest positive affect of remittances inflow on private investment, while some of them suggest negative findings. However, there have been several studies which favor remittances inflow for private investment, but subject to certain conditions. This section will focus on all such studies which includes; supporting; opposing and conditional studies based on the nexus between remittances inflow and private investment.

Some of the empirical findings by Griffith *et al.* (2008); Okodua (2013); Yasmeeen *et al.* (2011); Malik (2013); Le (2011); Das (2009); Singh and Mehra (2014); Cherono (2013); Thagunna and Acharya (2013) and Akter (2016) suggested remittances inflow positively affect private investment, as an increase in remittances inflow leads to increase private investment. However, some of the studies by Rahman (2015) suggested minimal level of relationship between remittances inflow and private investment.

However, some of the empirical findings by Ojapinwa and Odekunle (2013) suggested that remittances inflow does positively affect private investment, but it is conditional to the development of financial sector. Similarly, remittances inflows only support small scale industrial units to invest, proposed by the findings of Khan *et al.* (2007). Chami *et al.* (2003) suggested that only small shares of remittances inflow are devoted to investment.

In contrast some of the empirical findings by Mallick (2012) suggested that remittances inflow doesn't have any positive effect on private investment.

Interestingly, some of the findings by Woodruff and Zenteno (2007) and Osili (2004) suggested that remittances inflows are mostly invested in capital investment, housing and micro-enterprises.

Several other findings by Yang (2005); Edwards and Ureta (2003) and Adams *et al.* (2008) suggested Remittances inflow one of the key source for promoting education, Investment in Education is also considered as investment in humans, it creates human capital with knowledge and skills.

3. THEORETICAL BACKGROUND

3.1. School of Thoughts on the Role of Remittances

Migrant remittances have been viewed critically over different decades by different school of thoughts. However, there exist two key school of thoughts regarding the role of migrant remittances; Pessimistic theory of 1970-80 and Classical Developmentalist Optimism theory of 1950-60s. According to Classical Developmentalist Optimism theory of 1950-60s, remittances has effect on the promotion of economic development, alleviation of Poverty and help government to overcome the large external deficits to involve in testing structural changes, increase education, promote industrialization, promote democratic ideas and advanced knowledge. It also investors and promote innovation in the recipient countries. On the other hand, pessimistic theory 1970-80s grasp the view that remittances is harmful for the economic growth as it produces unproductive investment real estate and excessive consumption. According to Structuralist and Dependency theories they suggest that remittances cause's dependency in the recipient community. In contrast, Neo-Marxist theory suggested that remittances and migration produce and reinforce capitalist system which is based on inequality and it also increases the demand for imported goods, which may cause deficit in trade of a country. Neoclassical Theory assume that unrestricted labor migration would lead to shortage of labor, causing higher marginal productivity of labor and surging wage levels in migrant transfer societies.

3.2. Harrod-Domar Growth Model (1946)

Harrod-Domar Growth Model which assumes that fluctuations in ΔY national income rely linearly on variations in capital stock ΔK and that investment or variations in capital stock is financed through S (domestic savings) in the closed economy form of the model i.e. $\Delta K = S$. The model says that domestic savings S itself is subject to national income Y , i.e. $S = sY$, whereas s is the saving ratio of income:

$$\Delta Y = b\Delta K \dots \dots \dots (1)$$

$$\Delta K = S = sY \dots \dots \dots (2)$$

Switching (2) into (1), getting

$$\Delta Y/Y = sb \dots \dots \dots (3)$$

Harrod-Domar clarified that equilibrium economic growth is based on the product of savings ratio s and annual investment returns. This clarifies that economic growth will progress at the rate at which society can mobilize domestic savings resources tied with the productivity of investment. Realizing that the key restraint on the part of developing economies is the scarcity of capital, the Harrod- Domar model recommended the open extension where investment can be finances mutually by the domestic and the foreign capital inflow (stress on remittance). Then the model is written as:

$$\Delta Y = b\Delta K \dots\dots\dots (4)$$

$$\Delta K = S + F \dots\dots\dots (5)$$

Exchanging (4) into (5) and dividing through Y, we have

$$\Delta Y/Y = b [(S/Y) + (F/Y)] \dots\dots\dots (6)$$

$$\Delta Y/Y = b[s + f] \dots\dots\dots (7)$$

This infers that if $f > 0$, economic growth can be improved beyond what domestic savings resources will consent.

In the same manner, remittance influxes can increase domestic investment funds to improve the volume of the economy to grow.

3.3. Accelerator Theory by Samuelson (1939)

Linking Accelerator theory with Remittances and increase in Investment, This theory lightens on the joint upshot of Remittances and financial segment development on private sector investments. This theory argues that there is a direct association amid the rate of output of an economy and the level of investment in capital goods, Ayeni (2014). An increment in aggregate demand for output necessitates causes additional investments which are depends on the availability of financial resources such as inflow of capital to invest in order fulfill the growing demand and remittances inflow may be considered as one of the key and easy source for expanding firm production causing surge in investment by multiple times.

4. RESEARCH METHODOLOGY AND DATA

This study is based on the link between Remittances influx and private investment, having controlled variables real interest rate, economic growth and multiplicative term of Remittances inflow and Business freedom in the country. This study uses secondary data for the empirical analysis. The data has been mostly collected from the global economy.com and World Bank (WB). Data for five cross sections will be collected for the year 1990- 2014.

4.1. Econometrics Model

$$PI_{it} = \alpha + \beta_1 RI_{it} + \beta_2 RIR_{it} + \beta_3 EG_{it} + \beta_4 RI*BF_{it} + \mu_{it} \dots\dots\dots (i)$$

Where;

The word “*i*” specifies cross sections while “*t*” designates the time period.

PI: Specify Private Investment

RI: Remittances inflow

EG: Economic Growth

RIR: Real Interest Rate

RI*BF: Specifies the multiplicative term of Business freedom and Remittances influx.

The business freedom index shows the level of freedom to start business, starting from 40, indicates minimum level of freedom, reaching to 100 which show maximum level of freedom for starting new business.

4.2. Panel Autoregressive Distributive Lags Model (PARDL)

$$\Delta PI_{it} = \alpha + \beta_1 \sum_{i=1}^p \Delta PI_{i,t-i} + \beta_2 \sum_{i=1}^p \Delta RI_{i,t-i} + \beta_3 \sum_{i=1}^p \Delta RIR_{i,t-i} + \beta_4 \sum_{i=1}^p \Delta EG_{i,t-i} + \beta_5 \sum_{i=1}^p \Delta RI * BF_{i,t-i} + \lambda_1 PI_{i,t-1} + \lambda_2 RI_{i,t-1} + \lambda_3 RIR_{i,t-1} + \lambda_4 EG_{i,t-1} + \lambda_5 RI * BF_{i,t-1} + \mu_{it} \quad (I)$$

“ β_0 ” shows the drift, while “ μ ” indicate white noise error term. Furthermore, the term with summation sign imply the error correction dynamics. The 1st part of the equation indicates the short run while the 2nd part depicts the long run association. For PARDL we will first estimate the Equation (I) through PARDL and select optimum lags, which provides us efficient model. There are three main criteria’s for lags selection for the model which mainly include; Aikaie Information Criteria (AIC), Hannan-Quinn Criteria (HQC) and Shwarz Information Criteria (SIC). After lags selection, long run relationship will be finds then by estimating the following equation.

$$PI_{it} = \alpha + \beta_1 \sum_{i=1}^p PI_{i,t-i} + \beta_2 \sum_{i=1}^p RI_{i,t-i} + \beta_3 \sum_{i=1}^p RIR_{i,t-i} + \beta_4 \sum_{i=1}^p EG_{i,t-i} + \beta_5 \sum_{i=1}^p RI * BF_{i,t-i} + \mu_{it} \quad (ii)$$

If there is an indication of long run relationship, we will then move to establish the short run relationship among the variables by using Error Correction Mechanism (ECM)

$$\Delta PI_{it} = \alpha + \beta_1 \sum_{i=1}^p \Delta PI_{i,t-i} + \beta_2 \sum_{i=1}^p \Delta RI_{i,t-i} + \beta_3 \sum_{i=1}^p \Delta RIR_{i,t-i} + \beta_4 \sum_{i=1}^p \Delta EG_{i,t-i} + \beta_5 \sum_{i=1}^p \Delta RI * BF_{i,t-i} + \lambda ECM_{it-1} \quad (iii)$$

Where λ specify the pace of adjustment en route for equilibrium.

5. DISCUSSIONS WITH RESULTS

In order to analyze the long and short run link between Private Investment and Remittances over the period of 1990-2014 in case of Bangladesh, Pakistan, Nepal, India and Sri-lanka. For that purpose the current study implies Panel Autoregressive Distributive Lags Model (PARDL). Before applying PARDL, it is imperative to test the order of Integration of all variables and also to check cross sectional dependency. In order to check the level of stationarity of each variable this study uses Levin, Lin & Chu and Im, Pesaran and Shin. The results obtained from both Unit root tests are given below.

Table- 4.1. Unit root Test Result

Variables	Test Name	Coefficient (P-Value)	Coefficient (P-Value)	Level	1 st Difference
Private Investment (PI)	Levin, Lin & Chu Im, Pesaran and Shin	-1.72013 (0.0427) 0.36226 (0.6414)	-2.29719 (0.0108) -3.97904 (0.0000)	I(0) -	I(1) I(1)
Economic Growth (EG)	Levin, Lin & Chu Im, Pesaran and Shin	-4.33364 (0.0000) -3.97193 (0.0000)	- -	I(0) I(0)	- -
Real Interest Rate (RIR)	Levin, Lin & Chu Im, Pesaran and Shin	0.60313 (0.7268) -1.55258 (0.0603)	-2.92506 (0.0017) -6.60271 (0.0000)	I(0) -	I(1) I(1)
Remittances Inflow (RI)	Levin, Lin & Chu Im, Pesaran and Shin	0.34840 (0.6362) 3.09258 (0.9990)	-3.39929 (0.0003) -3.51554 (0.0002)	- -	I(1) I(1)
RI*Business Freedom	Levin, Lin & Chu Im, Pesaran and Shin	0.82464 (0.7952) 1.18862 (0.8827)	-5.74099 (0.0000) -5.08714 (0.0000)	- -	I(1) I(1)

Source: Author Own Calculation

It is imperative to have mixed order of integration before applying Panel Autoregressive Distributive Lags Model (PARD), the results in the above table clearly depict that we have mixed order of integration for our data. Hence, we have mixed order of integration, so this study will employ PARDL to establish the long-run and the short-run association amongst the variables. Cross sectional Dependency test will also be applied in order to check that whether there exist cross sectional dependency or not. If exist, then this study will proceed for PARDL.

Table-5.2. Residual Cross Section Dependence Test

Null hypothesis: No cross section dependency (correlation) in residuals

Test	Statistics	Probability
Breusch-Pagan LM	25.14908	0.0051
Pesaran scaled LM	2.269403	0.0232
Pesaran CD	-1.748325	0.0804

Source: Author Own Calculation

The results obtained from residual cross-section dependence test shows there is cross-sectional dependency among the variables. In order to apply Panel autoregressive distributive lags model (PARDL), it is imperative to select the optimum level of lags for the model. For the purpose of lags selection of the model, this study uses Aikake Information Criteria (AIC), Hannan-Quin Criteria (HQ) and Bayesian Information Criteria (BIC). This study will use all the three criteria's but selection will be based on the one having minimum value amongst the rest of criteria's. The table given below depicts the results obtained for the model selection for this study before employing PARDL.

Table-5.3. Lags Selection for the Model

Dependent Variable: Private Investment					
Model	LogL	AIC*	BIC	HQ	Description
1	194.299012	-3.219128*	-2.055706	-2.749191	ARDL(1, 1, 1, 1)
2	178.513892	-3.096040	-2.203181	-2.735391	ARDL(2, 1, 1, 1)
4	171.220709	-3.047249	-2.289672	-2.741243	ARDL(4, 1, 1, 1)
3	181.032126	-3.043237	-2.015096	-2.627943	ARDL(3, 1, 1, 1)

Source: Author Own Calculation

The outcomes depict in the given table demonstrate different models with their specific AIC, BIC, and HQ values. This study will select the model having optimum lags, the result clearly depict that Model (1) have minimum AIC value (-3.219128) among the other two criteria's, this study will select Model (1) having optimum lags of PARDL (1, 1, 1, 1).

Table-5.4. Estimated Long Run Results

Dependent Variable: Private Investment				
Designated Model: PARDL(1, 1, 1, 1)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
RM	0.089664	0.015336	5.846808	0.0000
RIR	-0.026875	0.006286	-4.275610	0.0001
EG	0.066830	0.013923	4.800116	0.0000
RM*BF	-0.335502	0.099224	-3.381254	0.0011

Source: Author Own Calculation

Estimated long run results for this study confirms positive association amid remittances influx and private investment supporting the findings of Griffith *et al.* (2008); Okodua (2013); Yasmeen *et al.* (2011); Malik (2013); Le (2011); Das (2009); Singh and Mehra (2014); Cherono (2013); Thagunna and Acharya (2013) and Akter (2016). In contrast, real interest rate has negative relationship with the private investment. However, Economic growth has also positive relationship with private investment. Moreover, interactive term remittances inflow and Business freedom indicate negative relationship for Pakistan, Bangladesh, Sri-lanka India and Nepal.

Table-5.5. Estimated Short Run Outcomes

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Λ	-0.330748	0.066619	-4.964745	0.0000
D(RM)	0.088014	0.127278	-0.691507	0.4913
D(RIR)	-0.006057	0.003087	1.962151	0.0534
D(EG)	0.011813	0.007414	-1.593342	0.1152
D(RMTBFLN)	0.083499	0.103962	0.803161	0.4244
C	1.140030	0.236242	4.825687	0.0000

Source: Author Own Calculation

The short run results suggest that there is positive but statistically insignificant association between remittances inflow and private investment. The reason behind statistically insignificant relationship is that initially remittances are mainly used for the purpose of consumption; recipients hardly manage to save money to create investment. Further, negative statistically significant relationship between private investment and real interest rate in the short run. Economic Growth, interaction between remittances and Business Freedom possess positive but statistically insignificant relationship with private investment.

5.1. Pooled Mean Group (PMG) or Mean Group (MG)

This study uses Pooled Mean Group (PMG) to detect the long and short run relationship between remittances inflow and Private Investment. The reason behind using Pooled Mean Group is that it permits short-run coefficients, containing the intercept, and pace of adjustment to the long run equilibrium values, error variance to be heterogeneous for each country, though long run coefficients are constrained to be homogeneous across countries.

However, we can't decide solely by ourselves to use PMG, for this purpose we first run both Pooled Mean Group (PMG), Mean Group (MG) and then on the basis of Hausman test criteria decision will be made that whether to use PMG or MG. The null hypothesis suggests that we should use PMG and the alternative suggest MG.

Table-5.6. Hausman Test Results:

Ho: Difference in coefficients not systematic

Variables	Coefficients		(A-B) Difference	sqrt(diag(V_A- V_B)) S.E.
	(A) MG	(B) PMG		
RI	.5201581	.0896694	.4304887	.6826895
EG	-.0053487	.0668311	-.0721797	.1084634
RIR	-.0167509	-.0268681	.0101172	.0257122
RM*BF	-17.7172	-.3354162	-17.38178	27.57647

$$\text{Chi2 (4)} = (\text{A-B})[(\text{V}_\text{A}-\text{V}_\text{B})^{-1}](\text{A-B})$$

$$= 0.14$$

$$\text{Prob}>\text{chi2} = 0.9977$$

In order to decide between PMG and MG, Hausman test has been used. The null hypothesis support PMG while the alternative hypothesis favors MG. The result obtained by using Hausman test clearly indicate that PMG model is more suitable for the current study as compare to MG model.

6. CONCLUSION AND POLICY RECOMMENDATIONS

6.1. Conclusion

The purpose of this paper was to ascertain the link between remittances influx and private investment for Sri Lanka, Nepal, Bangladesh, Pakistan and India over the period of 1990-2014. This study uses Levin, Lin & Chu and Im, Pesaran and Shin to test the stationarity of the variables. Further, in order to select optimum lags for the model Aikake Information Criteria (AIC), Hannan-Quin Criteria (HQ) and Bayesian Information Criteria (BIC) has been applied. Residual Cross sectional dependency test were used to check the cross sectional dependence among the cross-sections. To check the association amid remittances inflow and private investment Panel Autoregressive Distributive Lags Model (PARDL) was implied. For short run, Error correction Mechanism (ECM) has been castoff. The result confirms the presence of positive link among remittances inflow, Economic growth and private investment. Moreover, there exists negative relationship among, real interest rate, interaction between remittances inflow and business freedom with private investment. Our results supporting the similar findings of Griffith *et al.* (2008); Okodua (2013); Yasmeen *et al.* (2011); Malik (2013); Le (2011); Das (2009); Singh and Mehra (2014); Cheron (2013); Thagunna and Acharya (2013) and Akter (2016) in terms of remittances and private investment. Similarly, our result also support the Classical Developmentalist Optimism theory of 1950-60s as one of its view support the role of remittances in terms of Investment and encouragement of Investors. The results also support accelerator theory and Harrod-Domar model under open economy.

However, difficulties in starting new business, obtaining license, minimum capital and cost of initiating business are the key reasons behind the negative association between RM*BF and private investment.

6.2. Policy Recommendations

- 1) In order to benefit more from the inflow of remittances in case of Pakistan, Bangladesh, Nepal, Sri-lanka and India, there is need to develop strong financial system and to channelize remittances.
- 2) To reduce restrictions on opening new businesses, as providing them business freedom through easy availability of business licenses and reduce the cost of starting business.
- 3) Real interest rate should be kept minimum as to compensate more and more investment opportunities.

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