The Effect of Remittances on India's Gross Domestic Savings: Issues and Evidence

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Abstract

This paper enquires the effect of remittances on India's gross domestic savings using ARDL model. The results show that remittances have a significant negative effect on gross domestic savings. This contradicts the studies that show positive relationship between remittances and gross domestic savings. The paper also finds that income has a positive impact whereas interest rate, exchange rate and inflation have negative impact on savings both in the short-run and in the long-run.

Keywords: Remittances, Economic Growth, Gross Domestic Savings, Dependency Ratio, Interest Rate, Inflation, Economic Openness, Cointegration.
JEL Classification: F24, E21, E31, C32

1. Introduction

Inflows of remittances to India have experienced a sharp rise in recent years.Remittances are one of the most important international capital flows besides foreign aid and foreign direct investment. In addition, remittances can be the most stable flow in comparison to the other international flows. Remittances posses one of a vital comparative advantages as this type of international capital inflow into the home country does not create any kind of future repayment obligation and liabilities (Ratha 2003). Moreover remittances come to the households as a private aid to care about the wellbeing of the family back home of the migrants' member.According to the World Bank (2013), remittances act positively in reduction of the level and extremity of poverty, thus leading to positive effects on higher human capital accumulation, improve health and educational spending, improve access to information and communication technologies, enhance small business investment, better preparedness for adverse shocks such as natural disasters and also contribute to a reduction in child labour. This type of view is also illustrated by Solimano (2003). He argues that remittances play a vital role as a positive developmental instrument for receiving economies through its effects on savings, investment, growth and consumption. These possible effects of remittance inflows on the domestic economy raise an important area for research.Among countries today, the top recipient countries are India with $79 billion, followed by China ($67 billion), Mexico ($36 billion), the Philippines ($34 billion), and Egypt ($29 billion) (World Bank 2019). India, with a vast reservoir of highly skilled, semi skilled and unskilled labour force, is became a major contributor of labour to the contemporary global labour flows. Available evidences indicate that migrant labour flows from India since 1990s have not only

registered impressive growth in respect of the traditional destinations like United States of America (USA), United Kingdom (UK), Canada and the Gulf countries but also have diversified and expanded to newly emerging migrant destinations in continental Europe (Germany, France, Belgium), Australasia (Australia, New Zealand), East Asia (Japan) and South-East Asia (Singapore, Malaysia).

The impact of these international capital flows on the growth of the recipient countries varies from country to country and their effect on different macroeconomic variables also varies country wise. India is the highest remittance receiving country in the world (World Bank 2019) with an increasing number of migrants living overseas. The inflow of remittances into the country has certainly grown dramatically in the past few years. So it is an important matter to identify significance of the macroeconomic impacts of remittances inflow on the Indian economy.

2. Objective of the Study

With the increasing magnitude of remittances inflow into the home country, now it is obvious that a question arises: what are the microeconomic implications, and the macroeconomic effects, and the social consequences of this international capital inflow?The possible effects of remittances inflow on the domestic economy has emerged as area of research.In fact, a large portion of the existing literature on remittances has focused on the motivation for these transfers and their microeconomic implications, but it has been largely silent on the macroeconomic effects of these inflows. As mentioned earlier that India is the highest remittance receiving country in the world (World Bank 2019) with an increasing number of migrants living overseas. So it is an important matter to investigate the significance of the macroeconomic impacts of these inflows on the Indian economy. On the other hand, over the last few decades many empirical researches are conducted to enquire the nexus between savings and its determinants in countries concerned. In this paper, we have attempted to examine whether the inflow of remittances have any significant effect on savings of India or not? So this study intends to include remittances as one of the determinant factors of savings in case of India .Moreover, the present study attempts to investigate the short run as well as long run relation dynamics of the foreign remittances inflow and savings in India.

3. Theoritical Framework and Reveiw of Litreture

Duesenbury's paper in 1949 argued that an individual's spending behavior is influenced by two important frames of reference—the individual's own standard of living in the recent past and the living standard of others in the previous. Thus, in Duesenbury's account, people are subject to both intrapersonal and interpersonal consumption externalities. His Relative Income Hypothesis attempted to explain three important empirical regularities: (a) Long-run aggregate savings rates remain roughly constant over times, even in the face of substantial income growth;(b) aggregate consumption is much more stable than aggregate income in the short-run and (c) individual savings rate rise substantially with income in cross-section data. The alternative theory—the Permanent Income Hypothesis -- is developed by Milton Friedman. Its fundamental premise—that saving rates are independent of permanent income—has been reflected by numerous careful studies.

The Life Cycle Hypothesis of Modigliani and Ando (1963) and Modigliani (1970) articulated that the main reason for savings is to meet the expenses after the retirement and to acquire wealth. Hence, the age of the household plays an important role in the saving behavior. More

specifically, in the *Life-Cycle Hypothesis* it is stated that saving depends on age composition of the population of the country. Besides, a higher dependency ratio in the population structure negatively contributes aggregate savings, which may have growth retarding affect.

On the other hand a widespread debate related to remittances inflow and their impact on economic development, has pointed out the motives and types of remittances and in addition, the way in which remittances are spent by migrants' family left behind. The behaviour of both migrants and households of the home country has a significant impact on development of home country. Since 1970s until the late 1980s, the researchers have not found any positive correlation between remittances inflow and economic development (Baldé,2011). Early literatures have highlighted that this type of inflows is mainly used for basic consumption such as food, clothing etc., non-productive investments, repayment of debts, and that is why these kinds of expenditures tend to have little positive impact on home country's economic development.In the early studies about remittances it was believed that the motives of remittances inflow are "pure altruism". Pure altruism motive believes that the remittances are sent mainly for supporting family consumption (food, clothing…). This could be due to the fact that the migrants have undertaken his journey arising from poverty prevalence back home and hence to smooth the consumption of the family (Lucas, 1988), Chami et al.2003).

Lipton (1980) estimated that the 90% of remittances received are used in the purchases of consumer goods related to daily needs, about 68% to 86% of the Mexican migrants' remittances are used for consumption (1989).Rios Avila and Schlarb (2008) empirically established a relationship between remittances inflow and financial sector development on a micro level study. It revealed that remittances inflow had a significant positive effect on the probability of having a bank account by migrants' family in the home country. A household basis survey conducted by Adams (1998) reveals that in the late 1980s and early 1990s, the marginal propensity to save was higher (0.711) for income from international remittances than from domestic urban rural remittances (0.49) or rental income (0.085). In macro level similar type of view is suggested by Adelman and Taylor (1990).They found that the remittances inflow has a positive and significant impact on savings and investment. Obwona and Ddumba (1995) articulated that the household sector is the main source of domestic savings in Uganda and one of the factors that influence the saving behavior of households is the ability to save which depends on disposable income and the household expenditure. Since remittances increase a household's disposable income, this clearly indicates that there is a positive relationship between remittances and domestic savings. This is in agreement with a study conducted by Athukorala and Sen (2004) who also found that savings rate is increased with the rate of growth of disposable income.

The theoretical literature predicts that increase in the inflow of remittances will lead to increase in households' income of migrants' families, improve living standards enhance savings and generally contribute to economic growth. According to Grabel (1996), there is unambiguous evidence that once basic needs are met, remittances are used for savings, debt repayment, consumer durables, land and housing purchases, small enterprise development and agriculture, and investments in education and healthcare. Salomone, (2006) articulated that remittances have an effect on income, and a related impact on labour supply.

4. Data and Methodology

4.1 Variable and Data

This study involves annual time series dataset of India over the period 1975-76 to 2016-2018.The data on Gross Domestic Savings (GDS) as a percentage of GDP, remittances flow to India, Real Effective Exchange rate and CPI-Inflation are taken from World Bank and data

on GDP is taken from Reserve Bank of India, hand book of statistics of the Indian economy. As the determinants of Savings, the study involves real GDP, call money rate as the measure of interestrate, real effective exchangerate,whichisintendedtocapture the degree of pass-through from the exchange rate to the domestic savings and CPI inflation.

Table 1 Variables and representation

Variables	Specification	Representation	Source of Data
Savings	Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption) and it is taken as a percentage of GDP	GDS_t	World Bank
Interest Rate	Call money rate	$CALL_t$	RBI
Exchange Rate	Real effective exchange rate(Base 2010) is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.	$REER_t$	World Bank
Inflation	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	CPI_INF_t	World Bank
Income	GDP at current price	GDP_t	RBI
Remittances	Remittances inflow to India	REM_t	World Bank

The study has incorporated a model for the purpose of analysing the dynamics of the relationship between the Gross Domestic Savings and considering one of the determinant variables of Savings that is Remittances in India.

$$GDS_t = \alpha_1 + \alpha_2 GDP_t + \alpha_3 REER_t + \alpha_4 REM_t + \alpha_5 CALL_t + \alpha_6 CPI\_INF_t + \varepsilon_t$$

The study uses a battery of time series econometric techniques as methodology. Before doing any estimation, we perform several transformations on our data. First, Remittances and GDP at current price are transformed in real terms by dividing the variables with the Consumer Price Index (CPI Base 2010). After that the real terms of Remittances, GDP, and also the Real Effective Exchange Rate, Interest rate and Gross Domestic Savings as a percentage of GDP are taken in natural logarithm. The real and log and only log values of the variables are

renamed with an "LR_" and an "L_" sign at the front respectively. Then the stationarity of the variables are assessed by testing the presence of unit roots by using The Augmented Dickey-Fuller (1981; ADF, henceforth) and the Phillips and Perron (1988; PP, henceforth). The Augmented Dickey-Fuller (1981; ADF, henceforth) test used on the basis of following regression:

$$\Delta Y_t = \alpha + \beta_t + \gamma_i \, Y_{t-1} + \Sigma \,^n_{i=1} \lambda_i \, \Delta Y_{t-1} + \mathcal{E}_t$$

where Y_t is the variable under consideration, Δ is the first difference operator and α, β, γ, λ are the parameters to be estimated. The test of unit root involves testing $\lambda=0$. The null hypothesis is that the variables have a unit root.

Analysing the result of Augmented Dickey-Fuller (1981; ADF, henceforth) and the Phillips and Perron (1988; PP, henceforth) test of stationarity, the test reveals that the selected variables are stationary at different order of integration i.e. I (0) and I (1). In this situation to assess the presence of long-run relation among the selected variables and their dynamics methodology suggests to apply the ARDL bound test approach of cointegration followed by the ECM-ARDL model, which is introduced by Peasran, Shine, and Smith (2001).However, this ARDL approach is also better to handle the small samples(Haug 2002). This approach is applicable irrespective of the order of integration but no variables should be in the order of integration 2 or higher. The estimable form of ECM-ARDL model is stated below:

$$\Delta L\_GDS_t= \alpha_0 + \Sigma^n_{i=0} \, \alpha_i \, \Delta LR\_GDS_{t-i} + \Sigma^n_{i=0} \, \beta_i \, \Delta LR\_GDP_{t-i} + \Sigma^n_{i=0}\gamma_i\Delta L\_REER_{t-i} +$$
$$\Sigma^n_{i=0}\theta_i\Delta L\_CALL_{t-i} + \Sigma^n_{i=0} \, \pi_i \, \Delta LR\_REM_{t-i} + \Sigma^n_{i=0}\delta_i\Delta CPI\_INF_{t-i} +\mu_1 L\_GDS_t + \mu_2 LR\_GDP_t$$
$$+ \mu_3 L\_REER_t + \mu_4 L\_CALL_t+ \mu_5 LR\_REM_t + \mu_6 CPI\_INF_t + \lambda \, ecm_{t-1} + \mathcal{E}_t$$

Where the parameter λ indicates error correction term or speed of adjustment to restore equilibrium, and 'n' is the optimum lag-length(s) chosen for the estimation. The parameters β_i, γ_i, θ_i, π_i and δ_i indicate short-run multiplier, while parameters μ_1, μ_2, μ_3, μ_4, μ_5 and μ_5 stand for long-run multiplier. In this model the null hypothesis of no cointegration implies $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 =\mu_6 = 0$ and alternative hypothesis of cointegrating relation implies $\mu_1\neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6\neq0$.

5. Empirical Results and Findings

To find out the possibility of the long run relationship among the selected macro economic variables, annual time series data of those variables are being used as discussed previously. Before doing ARDL bound test approach of cointegration it is an obvious step to check whether the concerned variables are stationary or not.   The results of the Augmented Dickey Fuller (1981) tests are reported in the Table 2 and the results of PP Peron test are revealed in Table 3 and both the test reveals that Savings (L_GDS), Income (LR_GDP), Exchange Rate (L_REER) and Remittances (LR_REM) are non-stationaryatat level but become stationary upon the first differencing indicating that order of integrationof these series is one, that is these are I (1) stationary series on the other hand Interest Rate (L_CALL) and Inflation (CPI_INF) are stationary at level i.e. I (0).

Table 2: Augmented Dickey Fuller (ADF) Unit Root Tests

Variables and Specifications	Level		First Difference		Order of Integration
	Statistic	Prob.	Statistic	Prob.	
Savings (L_GDS$_t$)	-1.69	0.42	-6.83	0.00	**I(1)**
Interest Rate (L_CALL$_t$)	-3.01	0.04			**I(0)**
Exchange Rate (L_REER)	-1.31	0.61	-4.66	0.00	**I(1)**
Inflation (CPI_INF$_t$)	-4.72	0.00			**I(0)**
Income (LR_GDP$_t$)	-0.08	0.94	-4.24	0.00	**I(1)**
Remittances (LR_REM$_t$)	-1.94	0.31	-7.89	0.00	**I(1)**

Table 3: PP ParonUnit Root Tests

| Variables and Specifications	Level		First Difference		Order of Integration
	Statistic	Prob.	Statistic	Prob.	
Savings (L_GDS$_t$)	-1.68	0.42	-6.84	0.00	**I(1)**
Interest Rate (L_CALL$_t$)	-2.99	0.04			**I(0)**
Exchange Rate (L_REER)	-2.07	0.25	-4.76	0.00	**I(1)**
Inflation (CPI_INF$_t$)	-4.70	0.00			**I(0)**
Income (LR_GDP$_t$)	-0.72	0.83	-5.97	0.00	**I(1)**
Remittances (LR_REM$_t$)	-1.88	0.33	-7.70	0.00	**I(1)**

According to our unit root test analysis we found that the order of integration of the selected variables are different so for enquiring the existence of long-run relationship among the variables of our model the ARDL bound testing approach ofcointegration is the most appropriate methodology suggested by the exixting theories.Moreover, the test reveals that none of the variables has an order of integration 2 and, as a result, issue of reliability of the ARDL model is achieved. Result of ARDL bound test of cointegration is reported in table 4.

Table 4: ARDL Bounds Tests

| F-statistic	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound	Diagnostic Statistics
10.7692	2.9943	4.3361	2.5001	3.6781	#Serial correlation: 0.937 (0.83) #Normality: 2.37(0.02) #Heteroscedasticity: 3.74(0.00)

The value of F-statistic calculated from the ARDL (1, 3, 2, 1, 1, 1) model is 10.76, which is higher than the 95 percent UCB; indicating that Savings (GDS) has a long-runrelationship with the selected variables namely, Income (GDP, Interest Rate (CALL), Real Effective Exchange Rate (REER), Inflation (CPI_INF) and Remittances (REM).Furthermore, the stability of the ARDL cointegrating model has been examined by CUSUM tests. The time plots of the cumulative sum of recursive residuals and also the cumulative sum of squares of recursive residuals of the model, is presented in Figures 5& 6, lie within the 95 percent acceptance regions. These figures indicate that the ARDL cointegrating models are stable. Moreover, the estimated ARDL models have passed though several of diagnostic tests like the serial correlation tests, the normality tests and the test for heteroscedasticity. These diagnostic tests, in general have confirmed appropriateness of the models showed in table 4.

Plot of Cumulative Sum of Recursive Residuals
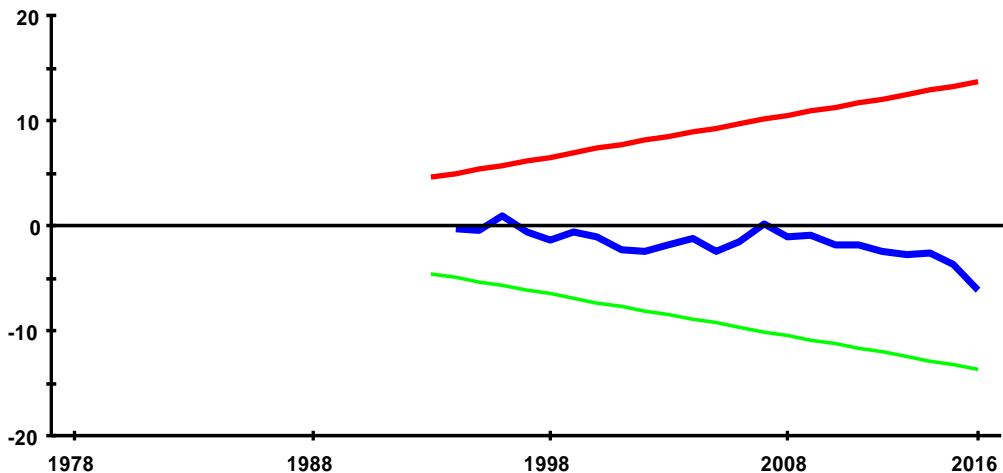
The straight lines represent critical bounds at 5% significance level

Plot of Cumulative Sum of Squares of Recursive Residuals
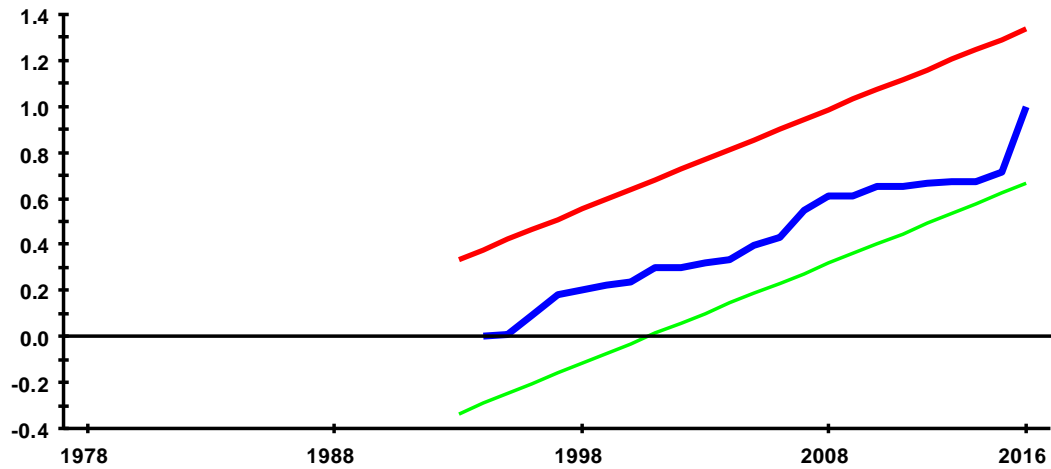
The straight lines represent critical bounds at 5% significance level

Above analysis confirms that the long-run relationship among the Savings and the selected variables of the model are maintained. However, in order to enquire the dynamics of savings with its determinant variables; the long-run coefficients and the ECM representation of the ARDL models is required. The error correction term indicates the speed of the adjustment which restores equilibrium in the dynamic model. The ECM coefficient shows how quickly variables moves towards long run equilibriumby correcting the disequilibrium errors of the past periods and it should have a statistically significant coefficient with a negative sign. (Bannerjee et al. (1998)) holds that a highly significant error correction term is further proof of the existence of a stable long-term relationship. Table 7 reports the short-run coefficient estimates obtained from the ECM version of the ARDL model followed by estimated long-run coefficients of model, as presented in the Table 8, explain the long-run dynamics of savings with its selected determinants.

Table 5: Short Run ECM-ARDL (1, 3, 2, 1, 1, 1)

Variables	Cofficient	t Statistic	Prob
CoinEq(-1)	-0.6167	-5.8410	0.00*
dLR_GDP	0.5102	1.3570	0.18
dLR_GDP1	0.4807	1.3568	0.18
dLR_GDP2	1.2921	5.5192	0.00*
dL_REER	-0.0805	-0.5563	0.58
dL_REER1	-0.5798	-4.0312	0.00*
dLR_REM	-0.1829	-4.4063	0.00*
dL_CALL	-0.0426	-1.4563	0.15

dCPI_INF	-0.0083	-3.2293	0.00*

Table 6: Estimated Long Run Coefficient ARDL (1, 3, 2, 1, 1, 1)

Variables	Cofficient	t Statistic	Prob
LR_GDP	0.3878	3.2854	0.00*
L_REER	-0.3015	-4.3920	0.00*
LR_REM	-0.1307	-1.6680	0.10***
L_CALL	-0.3212	-4.1197	0.00*
CPI_INF	-0.0012	-0.2784	0.78
INPT	1.9716	2.6530	0.01*

The empirical findings from the error-correction model reveal that the Savings adjusts to its equilibrium rapidly at a rate of 61% with a 5% level of significant error correction coefficient. It is also observed thatin short run, Savings is determined by Income, Exchange Rate, Interest Rate and Remittances. According to the empirical result remittances inflow can instantaneously have a negative impact on Savings of the economy with 5% level of significance. This result is supported by the theoretical evidences discussed in section III. As we know inflation have a negative influence on Savings,the empirical result also reflects that the inflationary pressure instantaneously leads to dissave in the economy.According to the ECM-ARDL result Exchange Rate depreciation boosts up savings in the economy. It is evident from the empirical result that thelong-run coefficients of Income, Exchange Rate,Interest Rate of the ARDL model of savings are significant at 1% level indicating that these variables have significant impact on savings. Among these significant coefficients the sign of the Income is positive and that of the Exchange Rate and Interest rate is negative. So, rise in the Income of the economy causes a rise in savings The positive impact of income on savings, as found here, is supporting the Keynesian view that savings is a positive function of Income (Keynes,1936). Whereas the negative sign of the Exchange Rate highlights that depreciation of Real Effective Exchange Rate boosts up Savings in the economy. Levy-Yeyati and Sturzenegger (2007) also argued that a depreciated in real exchange rate results in higher saving in the economy. The depreciation in Real Effective Exchange Rate meansincrease in international competitiveness of the economy which in turn leads to increase in the export of the economy, cause to hick in the economies' income and savings. Further the negative sing of the coefficient of the Interest Rate contradicting the classical view that savings is an increasing function of the interest rate.According to the life-cycle hypothesis, the nexus between the real interest rate and savings is not clearly explained. The net impact of the real interest rate on savings can be decomposed into two effects, the substitution effect which implies that a rise in interest rate is followed byan in the increases the current price of consumption relative to the future price, and thus affecting savings positively. On the other hand, an alternative effect, which is called the income effect, indicates that if the household is a net lender, an increase in the interest rate will increase lifetime income, and so increase consumption and reduce saving. Therefore, it is expected that the interest rate will have a positive impact on saving only when the substitution effect dominates over the income effectand if the income effect is dominated by substitution effect then there will be a negative influence of interest is observed on savings. However Remittances inflow has a negative and significant impact on savings at 10% which tries to

justify the argument that the consumption tendency would improve welfare and consumption smoothing, especially in low and middle income households, meanwhile it can enhance more future consumption tendency including increase in import, which in turn negatively impacts on the households' ability to save. In addition, it may increase the aggregate demand and cause inflation (Salomone, 2006).

6. Conclusion and Policy Implications

The present study has revealed that remittances have a significant but negative effect on domestic savings in case of India.In other words, the findings of this study are supporting with the argument of Rempel and Lobdell (1978) and Lipton (1980) that remittances are mainly devoted to daily consumption needs and the inflow of remittances would lead to high consumption tendency and consumption smoothing, especially in low and middle income households of migrant family back home for improvement of their welfare; meanwhile it can enhance more future consumption tendency. In addition, it may increase the aggregate demand and cause inflation.In a nutshell, the large flow of remittances to India can be attributed to the altruism motive which mainly determines the flow of remittances in LDCs but a large percentage of remittances is used for consumption purpose, whereas a less amount is going for investment.Other variables including interest rate, exchange rate, inflation has a negative impact too on savings in India. However income shows a positive significant effect on savings which is consistent with the Keynesian view that savings is a positive function of Income.

India has emerged as the highest remittances receiving country of the total global remittances inflow according to World Bank data 2016. So Remittance inflows to India have evolved as an important component of the current account of the balance of payments of the country.The study suggests that remittance itself is not an evil, in fact it is the manner in which the received amount are mainly used for consumption purpose which suppressed the saving in the economy. Therefore, productive investment is needed to counter the positive impact of the remittances on the savings. The study indicates that government of India should formulate policies to channel the remittances for productive investments rather than for consumption by diverse means; i.e. through investment in social infrastructure, and by generating the productive capacity that would satisfy the demand created by remittances. So the policy makers should therefore design such strategies that will help India to channel their remittances into priority developmental areas of the economy.

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