

Remittances Flow to India and its Impact on Growth: Empirical Evidence from India

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Abstract

Over, a long period of time the determinants of economic growth in developing countries have been the subject matter of extensive debate. Conventional drivers of growth have included surplus labour, capital accumulation, technological advancement, foreign aid, foreign direct investment, and investment in human capital, as well as gains from innovation and research and development. The literature has thoroughly explored both the positive and negative impacts of these factors along with recognized the role of institutional variables such as political freedom, political instability, and governance indicators in shaping economic performance. Despite the growing significance of remittances in global capital flows, their direct and indirect effects on economic growth remain relatively underexplored in empirical research. In many developing countries, remittance payments from migrant workers are observed as an increasing magnitude and becoming a significant source of foreign reserve earnings. Remittances inflow is noted to be very useful in promoting household welfare, health and education particularly in developing countries. Inflows of remittances to India have experienced a sharp rise in last three dictates. An important empirical question is whether remittances also contribute to long-term economic growth or not. In this study we have concentrated on the long-run relationship between remittances inflow and the economic growth in case of India considering annual data over the period 1975-2016. For this purpose, we have used Johansen (1988, 1995) cointegration technique and further to assess the short run dynamics of the co-integrating relationship is estimated by Vector Error Correction model (VECM).

Key words: ECM, ECT, Growth, Remittances, Unit root tests, VECM

Jel Code: C22, F22, F23, F24, F63

I. Introduction

Over the past few decades, India has emerged as one of the highest recipients of international remittances in the world. In many developing countries, like India remittance payments from migrant workers have grown substantially over the years and now represent a major component of foreign exchange earnings. These financial transfers, primarily sent by migrant workers to their families back home, have become a critical source of external financing for the country, often surpassing official development aid and foreign direct investment. On a macroeconomic level, the steady and relatively stable flow of remittances contributes to strengthening the balance of payments, increasing foreign currency reserves, and enhancing a country's ability to meet external obligations. Furthermore, the increasing magnitude of remittances has

prompted governments and financial institutions to develop policies and infrastructure that facilitate smoother, safer, and more efficient transfer mechanisms, amplifying their developmental potential. The sheer volume of remittances flowing into India has sparked considerable interest among the policymakers and researchers regarding their potential influence in fostering socio-economic development through the channel of economic growth. The conventional drivers of growth have included surplus labor, capital accumulation, technological advancement, foreign aid, foreign direct investment, and investment in human capital, as well as gains from innovation and research and development. The literature has thoroughly explored both the positive and negative impacts of these factors along with recognized the role of institutional variables such as political freedom, political instability, and governance indicators in shaping economic performance. While remittances are widely recognized for their positive impact on reducing poverty, stabilizing household consumption, and enhancing access to education and healthcare, thereby contributing to an improved standard of living. However, their broader macroeconomic effects especially on economic growth remain a subject matter of ongoing debate for the researchers and policy makers. Some argue that remittances can enhance growth by increasing investment in human and physical capital, while others caution that they may create dependency, reduce labor supply, or lead to inefficient allocation of resources. Despite the growing importance of remittances in India's external sector, there remains a gap in empirical research that rigorously examines the relationship between remittance inflows and economic growth in the Indian context. This study aims to fill that gap by analyzing the impact of remittances on India's economic growth using robust econometric techniques. This research provides more reliable evidence on whether and how remittances contribute to India's long-term economic performance.

II. Flow of Remittances to India

Inflows of remittances to India have experienced a sharp rise in recent years. Remittances have also emerged as a more important and stable source of foreign exchange inflow compared to official development assistance, foreign direct investment or other types of capital flows in particular in developing countries. Remittances have some comparative advantages as they do not create any future repayment obligation and liabilities. More over remittances come to the households as private aid to care about the well being of the family back home of the migrants' members. 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 both highly skilled and semi skilled and unskilled labour force, is a major contributor 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). Consequently the proportion of Indian migrants in total immigration inflows in the major receiving countries has registered considerable increase in recent years. The most beneficial impact of the increasing number of migrants from India is the growing magnitude of remittances inflow, which is now far in excess of the external sector aid and foreign investment flows and a major factor accounting for the improvements in India's balance of payments. The inflows come from an Indian Diaspora estimated at around 25 million spread across nearly 130 countries and are both quite stable and rapidly growing with the flows all set to diversify further in the years to come (Ratha 2009). India is the highest remittance receiving country in the world. With an increasing number of Non-Resident Indians (NRIs)

living overseas, either for work or having settled there, flows into the country have certainly grown dramatically in the past few decades. The magnitude of the remittances can be judged by the fact that they sometimes exceed far over the foreign direct investment (Table 1).

Table 1: Remittances as a share of GDP

Year	Remittances Inflow (Rs Billion)	Remittances as a percentage of GDP	Net FDI Inflow as a percentage of GDP
1975-76	3.614494	0.416862998	-0.010628169
1976-77	5.7880931	0.619564246	-0.007604007
1977-78	8.1929375	0.77402856	-0.030083406
1978-79	9.5356413	0.831739278	0.01335363
1979-80	11.7393947	0.933706201	0.032176041
1980-81	21.75668	1.453915345	0.043059214
1981-82	20.0103652	1.138213657	0.048148456
1982-83	24.8890728	1.665691951	0.036397108
1983-84	26.9870898	1.178367477	0.002618983
1984-85	26.0675119	1.015837665	0.00919131
1985-86	30.563808	1.055657148	0.046244655
1986-87	28.2736879	0.872782071	0.047923052
1987-88	34.4996976	0.936954561	0.077119938
1988-89	32.2403599	0.73794636	0.031182439
1989-90	42.344118	0.843629325	0.086308037
1990-91	41.6830944	0.711058361	0.074736972
1991-92	74.737566	1.109071653	0.027593624
1992-93	75.0660576	0.969163284	0.097238944
1993-94	110.9093366	1.244277943	0.199720325
1994-95	183.695941	1.756863981	0.301406511
1995-96	201.8019968	1.645046745	0.603030361
1996-97	310.4678322	2.187506964	0.625827257
1997-98	375.3267464	2.38697646	0.871838424
1998-99	391.0939929	2.168674526	0.633739715
1999-00	478.785417	2.366557844	0.479034915
2000-01	577.2555845	2.651107459	0.77555818
2001-02	671.4053253	2.849955431	1.070660341
2002-03	763.3492051	3.009663995	1.025248066
2003-04	978.9186285	3.445073359	0.614080764
2004-05	849.8203245	2.621115186	0.775952192
2005-06	975.7125	2.641795336	0.898676912
2006-07	1283.728538	2.989095268	2.176329406
2007-08	1538.867125	3.08570153	2.100365807
2008-09	2174.244387	3.861847349	3.656950691
2009-10	2381.7147	3.676718597	2.687536065
2010-11	2445.437176	3.141573803	1.653785022
2011-12	2916.972078	3.237582777	2.002065552
2012-13	3677.62907	3.636435168	1.312934337
2013-14	4100.088066	3.610798509	1.516275965
2014-15	4295.805476	3.414846991	1.698769519
2015-16	4420.707429	3.196443895	2.105852937
2016-17	4218.117762	2.748317088	1.96389782

Source: World Bank Data 2017

India has received immigrant remittances in excess of 1% of its gross domestic product for many years. For example, as far back as 1982, remittances by Indians working overseas were estimated to be equal to 1.6% of Indian GDP. Total remittances by overseas Indians were reported to have reached \$8 billion by 2000, about 2% of Indian GDP. By 2006, they were double that amount.

III. Objective of the Study and Research Implications

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. Now it is an important matter to identify the significance of the economic impacts of remittances inflow on the Indian economy. Thus the study focuses on the impacts of remittances on the potential macroeconomic variable like Growth of the Indian economy and it will assist the policymakers of India in the development of policies to have the maximum benefits of these inflows. So our objective is to estimate the impact of international remittances inflows on economic growth in India.

Hypotheses:

H₀: There is no significant relationship between remittances inflows and economic growth in India.

H₁: There is significant relationship between remittances inflows and economic growth in India.

IV. Theoretical Background on Remittances and Economic Growth

In the post-1945 period there have been three waves of interest in growth theory. The first wave focused on the neo- Keynesian work of Harrod (1939) and Domar (1946) emphasizing the role of savings in the growth of output in an economy. In the mid-1950s the development of the neoclassical growth model by Solow(1956) and Swan(1956) stimulated a second more lasting and substantial wave of interest, this model attempts to explain the long-run economic growth by looking at capital accumulation, labor or population growth, and increases in productivity, commonly referred to as technological progress. The Solow growth model is the extension of the Harrod–Domar model by adding labor as a factor of production and capital-output ratios that are not fixed as they are in the Harrod–Domar model. Remittances can play a significant role in fostering economic growth by increasing household savings, a key factor in both the Harrod-Domar and Solow-Swan growth models. In both models, remittances serve as a catalyst for higher savings and investment, either directly fuelling capital formation or indirectly fostering conditions conducive to sustained economic growth. Their impact, however, also depends on how effectively these funds are channelled into productive uses rather than solely for consumption. Although attention to growth theory waned between 1970 and 1986, it experienced a resurgence thereafter, marking the beginning of a third wave of renewed interest and significant theoretical advancement by the third wave, initiated by the researches of Paul Romer (1986), Robert Lucas (1988), Sergio Rebelo (1991) and Ortigueira and Santos (1997), led to the development of endogenous growth theory, which emerged in response to theoretical and empirical deficiencies in the neoclassical model. The Endogenous Growth Model considered mainly two factors: Human capital (increase in labour quantity and quality) and Physical capital in process of economic growth. The model assumes that human capital has no depreciation and it holds that investment in human capital, innovation, and knowledge are significant contributors to economic growth. The theory also focuses on positive externalities and spillover effects of a knowledge-based economy which will lead to economic growth and development. These works inspired the development of a ‘new’ breed of endogenous growth models and generated renewed interest in empirical and theoretical questions relating to long-run development. In this above context of endogenous growth models, the inflow of remittances may lead to increase factor productivity by increasing human capital such as through improved health and access to education. According to Altruistic Theory it is believed that the migrant remit to his family as a result of his love and affection for his family members and hence to smooth the consumption of the family back home. So this

flow of money can be used by migrant household for education of the children and to have better medical facility. Another theoretical transmission channel can be expected through the financial development of the domestic economy that would speed up remittances inflow to be translated into economic growth. The greater the width and depth of financial development, the more it creates positive externalities to the impact of remittances inflow on the growth process of the economy. First, remittances inflow would be channelized towards productive investment, rather than conspicuous consumption, if the financial sector was ready to absorb the funds sent by migrant workers home. Instead of 'wasting' the extra income received by recipients in developing countries, they would be incentivized by financial institutions offering higher returns. Second, recipients of foreign income would access financial institutions simply to collect their revenue streams but in the process they could demand other financial services as their knowledge and trust increase. Third, banks will be able to resolve their asymmetric information problems (between customers and banks) by increasing the knowledge of new customers who have access to foreign incomes sent by relatives and friends working abroad. Fourth, banks will be able to increase their overall lending based on new deposits created via remittance and these financial multipliers will increase the supply of loanable funds to the rest of the economy. Fifth, remittances are often lumpy and recipients might wish to utilize 'financial products that allow for the safe storage of these funds' (Aggarwal, Demirgüç-Kunt and Peria, 2006.); this allows for the growth of new and innovative financial products even when the original remittances were not received through normal commercial channels. Sixth, the risks associated with such transfers via the curb market (common to many poor developing countries and regions) is eliminated with higher quality of financial services accessible to senders and recipients alike. This could potentially increase the total supply of such transfers. Although the above theoretical knowledge indulges the concept that remittance inflow has a positive impact on economic growth but some alternative view which postulate that remittances inflow may cause the economic growth negatively. Supporting this above argument it is argued that remittances inflows may also influence economic growth through their effects on the rate of growth of labour inputs (while holding the level of human capital fixed). One channel through which remittances could impact labour inputs is through labor force participation in the domestic economy. Remittances inflow would be expected to have a negative effect on labor force participation, for the following reasons. Firstly, the remittances inflows are simple income transfers from migrants to their households, recipient households may rationally substitute these unearned, nonobligatory (no liabilities for future repayment) remittance income for their labor income. In addition to that, regardless of their intended use, remittances inflow may raise the issue of moral hazard problems, this idea that was first introduced by Chami, Jahjah and Fullenkamp, (2005). Because this type of transfer occur under asymmetric information and so it is difficult to monitor and enforce by the distance separating remitter and recipient, moral hazard problems may induce recipients to divert resources to the consumption of leisure, thereby reducing their labor market effort. In another way it can be theoretically justified that remittances inflow for the purpose of investment can be procyclical, but it can fuel up the real effective exchange rate (REER) to appreciate further which in turn affects inversely the international competitiveness. As a result it causes to contract the export sector of domestic country and indirect affects economic growth negatively.

IV.1 Empirical Literature on Remittances and Economic Growth

Remittance flow has grown faster over past three decades most of which has flowed to developing economies. Similarly there are a growing number of theoretical and empirical studies which were endeavored to investigate whether remittances inflow positively affects economic growth process or not and the studies have also provide evidence of the possible

transmission channels. Existing literatures provides mixed results. A group of studies suggest a positive effect of remittances inflow on economic growth through higher consumption, savings and investment. For example, Aggarwal, Demirgüç-Kunt and Peria (2006), assuming the hypothesis that financial development enhances economic growth find that remittance inflow promotes financial sector development in developing countries. Similarly, Catrinescu, Leon-Ledesma, Piracha, and Quillin (2006) reject the existence of negative effect of remittance inflow on long-run economic growth. However, Rao and Hassan (2011) speak different with that remittance has no direct effect but small indirect effect on economic growth. There are also groups identified as groups called: Second groups. They find a negative impact of workers' remittance on economic growth. These studies follows suit with the happening of Dutch Disease thus indicating that remittances inflow appreciates real exchange rate and reduces international competitiveness. It also reduces workers' participation in the labour market (Majumder & Karmakar, 2015). Lopez, Molina, and Bussolo (2007) and Chowdhury and Rabbi (2014), for instance, suggest that remittance inflow significantly appreciates real exchange rate of recipient country, which ultimately reduces international competitiveness in the export sector. Chami, Jahjah, and Fullenkamp (2003) also in their model indicate that remittance is actually a non-profit driven compensatory private transfer and therefore has a negative correlation with economic growth. Barajas, Chami, Fullenkamp, Gapen, and Montiel (2009) suggest that even if remittance has an enormous effect on poverty eradication, at present and the years to come combined with consumption smoothing positive effect, it does not significantly affect economic growth. Third branch of literatures estimate the relationship between remittance inflow and financial development. Aggarwal, Demirgüç-Kunt and Peria (2006) find a positive association between remittance flow and financial development. Chowdhury, Mamta and Fazle (2014) suggest that there is a positive relationship between remittance inflow and financial development; however, the reverse causation is absent in Bangladesh data. There is yet fourth group of research which examines the role of remittances inflow in investment, productivity, employment and import. For instance, Lucas (2005) and Glytsos (2002) show that remittance inflow accelerates investment. Leon-Ledesma and Piracha (2004) show that remittances increases productivity and employment through investment. Roberts and Banaian (2004) shows that average propensity to save from remittance is 40 percent. Glytsos (2002) states that inflow of remittances act as a source of financing for imports and decrease the balance of payments (BoP) deficit in LDCs. On the contrary, Russell (1986) indicates that remittance increases imports and widen balance of payments deficit. A further group of research estimates impact of workers' remittance on economic growth through institutional development. Catrinescu, Leon-Ledesma, Piracha, and Quillin (2006) suggest that a sound institutional environment enhance efficiency of investment leading to higher output. Using the data set used by Richard H Adams Jr and John Page (2005) on international migration, remittances etc., Paulo Giuliano and Marta Ruiz-Arranz (2009) determine the relationship between remittances and growth, given their importance in total international flows. Covering over 100 developing countries, they found that remittances augmented growth in countries with less developed financial systems and that remittances inflow positively affect economic growth however. On the contrary, Ahamada and Coulibaly (2011) find that although the effect of financial development varies country to country, a high level of financial development helps remittances to have a high stabilizing effect on GDP growth. The IMF occasional paper, by Chami, Barajas et al. (2008) in a detailed study of countries that receive hefty amount remittances addresses two questions: how to manage their macroeconomic effects and how to harness their development potential. So, it is clear that there is the effect of remittances inflow on macroeconomic variables. Kireyev (2006) argues in this context that the impact of remittance depends on the structural characteristics such as consumption and investment patterns as well as the capacity to manage large financial inflows of the recipient

country. Ratha and Mohapatra (2007) review the recent experiences of the developing countries in regard to the impact of remittances on poverty, growth, real wages, and external competitiveness. Their study handles the policy options available to the developing countries when remittances inflows are high and persistent. Along these lines, Singh and Hari (2011) have gone through to show the impact of remittances on various macroeconomic and developmental aspects of the Indian economy they have examined data on remittances and some of the macroeconomic variables like the GDP, GDPCF, savings, FDI, FII, export, import, and balance of trade deficit for the period between 1971 and 2008. Our study gives a hint to that, expanding the period from 1975 to 2016 to have a better mirror.

V. Variables, Data and Methodology

As per the objective the empirical analysis of our study employs annual dataset covering the period 1975 to 2016. The time series data on Remittances Inflow are taken from World Development Indicators of World Bank (2016). On the other hand time series data on Output, Inflation are collected from Hand Book of Statistics on the Indian Economy published by RBI (2016). Apart from the Remittances inflow a set of Control Variables are used in our empirical analysis. Especially in the identification of the impact of Remittances Inflow on the Economic Growth or Output we have used M_3 money supply as share of GDP as a proxy of financial development, Total Government Expenditure as share of GDP, Gross Fixed Capital Formation as a share of GDP, Net FDI as a share of GDP and Real Export. The data on Net FDI inflow are collected from World Development Indicators of World Bank and for the other variables viz. M_3 money supply, Total Government Expenditure, Gross Fixed Capital Formation, and Export are collected from the RBI's Handbook of Statistics on the Indian Economy (**Table 2**).

Table 2: Representation of Variables

Variables	Specification	Representation
1. Remittances inflow	Real remittances inflow = Remittances inflow Rs billion/ CPI_2010	R_REM
2. Output	Real GDP = GDP at current market price Rs billion/ CPI_2010	R_GDP
3. M_3 as a share of GDP	M_3 Rs billion/ GDP at current market price Rs billion	M_3_GDP
4. Total Govt. Expenditure as a share of GDP	Total Govt. Expenditure Rs billion/ GDP at current market price Rs billion	TEXP_GDP
5. Gross Fixed Capital Formation as a share of GDP	Gross Fixed Capital Formation Rs billion/ GDP at current market price Rs billion	GFCF_GDP
6. Net FDI as a share of GDP	Net FDI inflow Rs billion/ GDP at current market price Rs billion	FDI_GDP
7. Real Export	Total export Rs billion/ CPI_2010	R_X

Source: Authors' own representation

The study uses a battery of time series econometric techniques as methodology. At first the Descriptive Statistics are being analysed. All of the statistics are calculated using the observations in the current sample. After the Descriptive Statistics it is an important issue to check whether a series is stationary or not before using it in a regression. In the event of same order of integration (I(1)) among the variables the long run relationship of GDP with the selected determinants have enquired by Johansen (1988, 1995) co-integration technique. Presence of co-integration implies that we run the error correction model (ECM) to correct for

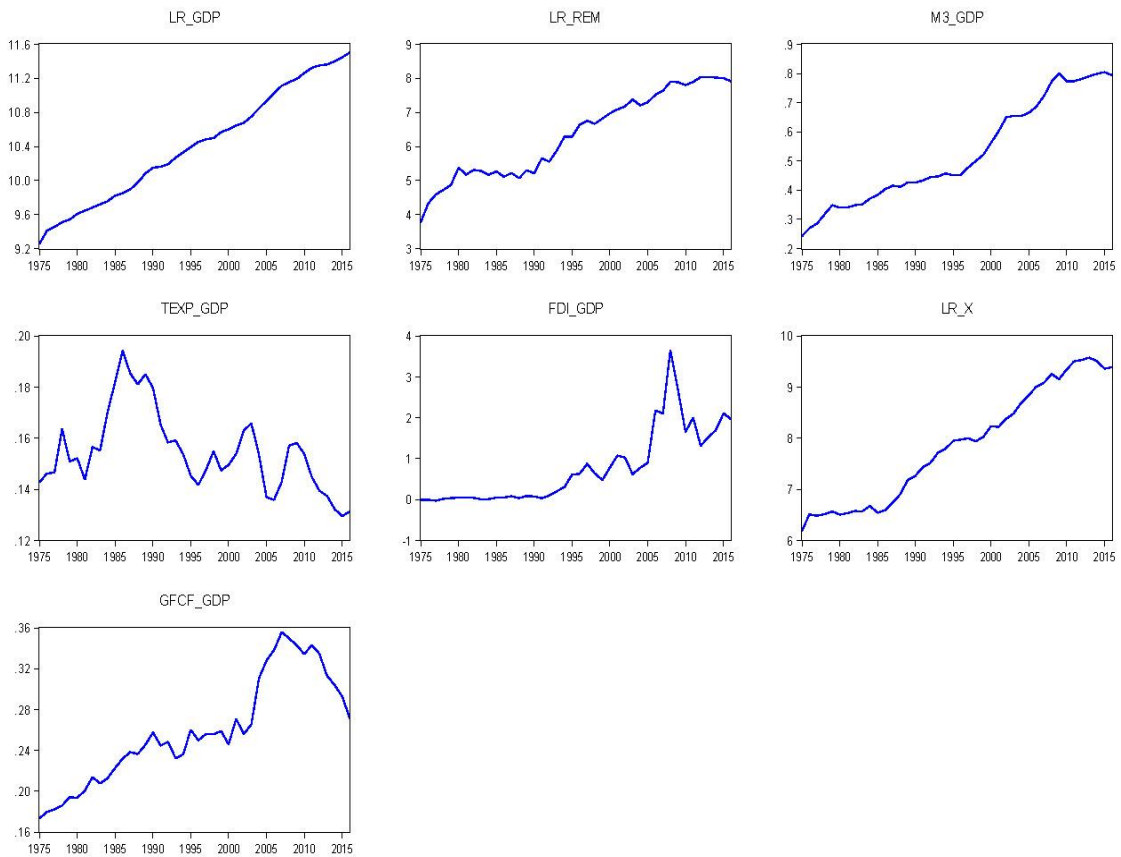
the short term disequilibrium as the variables move towards long run equilibrium, and the short run dynamics of the co-integrating relationship is assessed by Vector Error Correction model (VECM). The VEC has co-integration relations built into the specification so that it restricts the long run behaviour of the endogenous variables to converge to their co-integrating relationships while allowing for short-run adjustment dynamics. The co-integration term is known as the Error Correction Term (ECT) since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments. VECM has a scope to study the nature and direction of the causal impact of the selected determinants including Remittances inflow (REM) on Output (GDP). If the estimated dynamics is maintained at the near future, then how the GDP profile get constituted through these endogenous random innovations of control variables are ascertained through a variance decomposition analysis. This analysis has a scope for identifying the relative strengths of innovations affecting GDP profile in the out-of-sample forecast horizon.

V. Empirical Results of Remittances and Economic Growth

According to our objective, to assess the possibility of the long run relationship among the selected macroeconomic variables Output (LR_GDP), Total Govt. Expenditure as a share of GDP (TEXP_GDP), Gross Fixed Capital formation as a share of GDP (GFCF_GDP), Money Supply as a share of GDP (M₃_GDP), Real Export (LR_X), Net FDI as a share of GDP (FDI_GDP), Remittances inflow (LR_REM) time series data from the period 1975 to 2016 of those variables are being used as discussed previously.

The graphical representation of the time series data of the variables is presented in Figure 1. As can be seen from Figure 1, there is a trend in each of the series of the selected variables and therefore, the means and variances of the time series data of the variables are changing over time, so the series in their original form may not be stationary. The first step in this regard is to check whether the concerned variables are stationary or not or in other words the order of integration. The results of the Augmented Dickey Fuller (1981) tests considering at first the assumption of only intercept and further considering the assumption of both intercept and trend are reported in the Table 3, 4 and the results of PP Peron (1988) test considering at first the assumption of only intercept and further considering the assumption of both intercept and trend are revealed in Table 5, 6.

Figure 1: Graphical representation of time series data of the variables



Source: *Computed by the researchers*

Table 3: Augmented Dickey Fuller (ADF) Unit Root Tests (Intercept)

Variables and Specifications	Level		First Difference		Order of Integration
	Statistic	Prob.	Statistic	Prob.	
Output (LR_GDP)	-0.085	0.94	-4.244	0.00*	I(1)
Total Govt. Expenditure as a share of GDP (TEXP_GDP)	-2.024	0.27	-3.931	0.00*	I(1)
Gross Fixed Capital formation as a share of GDP (GFCF_GDP)	-1.659	0.44	-5.262	0.00*	I(1)
Money Supply as a share of GDP (M ₃ _GDP)	-0.580	0.86	-3.776	0.00*	I(1)
Real Export (LR_X)	-0.619	0.85	-5.985	0.00*	I(1)
Net FDI as a share of GDP (FDI_GDP)	-1.370	0.58	-7.358	0.00*	I(1)
Remittances inflow (LR_REM)	-1.940	0.31	-7.896	0.00*	I(1)

Source: *Computed by the researcher*

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

Table 4: Augmented Dickey Fuller (ADF) Unit Root Tests (Intercept & Trend)

Variables and Specifications	Level		First Difference		Order of Integration
	Statistic	Prob.	Statistic	Prob.	
Output (LR_GDP)	-2.996	0.14	-4.184	0.01*	I(1)
Total Govt. Expenditure as a share of GDP (TEXP_GDP)	-2.689	0.24	-4.023	0.01*	I(1)
Gross Fixed Capital formation as a share of GDP (GFCF_GDP)	-0.568	0.97	-5.486	0.00*	I(1)
Money Supply as a share of GDP (M ₃ _GDP)	-2.171	0.49	-3.725	0.03**	I(1)
Real Export (LR_X)	-2.797	0.20	-5.895	0.00*	I(1)
Net FDI as a share of GDP (FDI_GDP)	-3.017	0.14	-7.172	0.00*	I(1)
Remittances inflow (LR_REM)	-2.401	0.37	-8.003	0.00*	I(1)

Source: Computed by the researcher

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

Table 5: PP Unit Root Tests (Intercept)

Variables and Specifications	Level		First Difference		Order of Integration
	Statistic	Prob.	Statistic	Prob.	
Output (LR_GDP)	-0.720	0.83	-5.979	0.00*	I(1)
Total Govt. Expenditure as a share of GDP (TEXP_GDP)	-1.739	0.40	-5.238	0.00*	I(1)
Gross Fixed Capital formation as a share of GDP (GFCF_GDP)	-1.674	0.43	-5.455	0.00*	I(1)
Money Supply as a share of GDP (M ₃ _GDP)	-0.588	0.86	-3.577	0.01**	I(1)
Real Export (LR_X)	-0.627	0.85	-6.040	0.00*	I(1)
Net FDI as a share of GDP (FDI_GDP)	-1.276	0.63	-7.544	0.00*	I(1)
Remittances inflow (LR_REM)	-1.886	0.33	-7.705	0.00*	I(1)

Source: Computed by the researcher

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

Table 6: PP Unit Root Tests (Intercept & Trend)

Variables and Specifications	Level		First Difference		Order of Integration
	Statistic	Prob.	Statistic	Prob.	
Output (LR_GDP)	-2.547	0.30	-5.849	0.00*	I(1)
Total Govt. Expenditure as a share of GDP (TEXP_GDP)	-2.280	0.43	-5.892	0.00*	I(0)
Gross Fixed Capital formation as a share of GDP (GFCF_GDP)	-1.290	0.87	-5.636	0.00*	I(1)
Money Supply as a share of GDP (M ₃ _GDP)	-1.568	0.78	-3.527	0.04**	I(0)
Real Export (LR_X)	-1.865	0.65	-5.960	0.00*	I(1)
Net FDI as a share of GDP (FDI_GDP)	-3.017	0.14	-7.454	0.00*	I(1)
Remittances inflow (LR_REM)	-2.797	0.20	-7.773	0.00*	I(1)

Source: Computed by the researcher

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

As we have found all the variables are stationary at 1st difference now as mentioned earlier the long run relationship of Output (LR_GDP), Remittances inflow (LR_REM) and other control variables have enquired by Johansen (1988, 1995) cointegration technique. To determine the existence and the number of cointegrating vectors, Johansen cointegration technique is used. There are two hypothesis tests used for cointegration testing, called the Trace (λ trace) test and Maximum Eigen value (λ max) test. The cointegration test results at 5% level of significance are presented in Table 7 and 8.

Table 7: Johansen Cointegration Test Results
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob
None*	0.7961	172.9550	150.5585	0.00*
At most 1	0.5995	107.7595	117.7082	0.17
At most 2	0.4972	70.2383	88.8038	0.49
At most 3	0.3111	42.0425	63.8761	0.77
At most 4	0.2695	26.7597	42.9152	0.69
At most 5	0.1651	13.8812	25.8721	0.66
At most 6	0.1462	6.4822	12.5179	0.40

Source: *Computed by the researcher*

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

Table 8: Johansen Cointegration Test Results
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eygen Statistic	0.05 Critical Value	Prob
None*	0.7961	65.1955	50.5998	0.00*
At most 1	0.5995	37.5211	44.4972	0.23
At most 2	0.4972	28.1957	38.3310	0.44
At most 3	0.3111	15.2828	32.1183	0.93
At most 4	0.2695	12.8785	25.8232	0.81
At most 5	0.1651	7.3989	19.3870	0.87
At most 6	0.1462	6.4822	12.5179	0.40

Source: *Computed by the researcher*

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

From the results above so far, we found that the variables are stationary at 1st difference i.e. I(1) and are cointegrated. Therefore they have a long-term relationship. So their short-run fluctuation can be described by their first-differences, which are stationary. The interactions in the short-run fluctuations may therefore be described by a VAR system in first differences. We determine the optimal lag length for the VAR system by using the Schwarz (1978) Criterion (SC) and the Akaike (1974) Information Criterion (AIC). We used a VAR system of “i” lags and estimate it for various lag lengths and found that the optimal lag lengths for Output (LR_GDP) and Remittances Inflow (LR_REM) and other control variables, to be 2. So from the foregoing discussion and the review of the literature, the effect of Remittances inflow (LR_REM) on the Output (LR_GDP) can be represented as follows:-

$$\Delta LR_GDP_t = \alpha + \sum_{i=0}^n \beta_{1i} \Delta LR_GDP_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta LR_REM_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta TEXP_GDP_{t-i} + \sum_{i=0}^n \beta_{4i} \Delta M3_GDP_{t-i} + \sum_{i=0}^n \beta_{5i} \Delta GFCF_GDP_{t-i} + \sum_{i=0}^n \beta_{6i} \Delta FDI_GDP_{t-i} + \sum_{i=0}^n \beta_{7i} \Delta LR_X_{t-i} + \lambda ecm_{t-1} + \epsilon_t$$

According to the test it reveals that the variables have a long run relationship at 1% level of significance. The results of cointegration test are interpreted through Vector Error Correction Model (VECM) which is a restricted version of VAR model designed for non stationary time series. VECM captures the linear relationship among multiple time series by adding error correction features. The error correction term (ECT) tells how much the error is being corrected or adjusted from short run disequilibrium to long run equilibrium. The result of VECM is stated in Table 9.

Table 9: Vector Error Correction Estimates

Dependent Variable D(LR_GDP)

Regressors	Coefficient	t-Statistic	Regressors	Coefficient	t-Statistic
CoinEq1	-0.2952	-2.0636***	D(M ₃ _GDP(-1))	-0.3632	-0.9009
D(LR_GDP(-1))	0.3672	1.5002	D(M ₃ _GDP(-2))	0.7697	2.3862***
D(LR_GDP(-2))	0.1763	0.7135	D(FDI_GDP(-1))	0.0274	1.9304***
D(LR_REM(-1))	-0.1270	-2.6808*	D(FDI_GDP(-2))	0.0302	2.0755*
D(LR_REM(-2))	-0.0815	-1.9156***	Constant	0.0433	3.0774*
D(TEXP_GDP(-1))	-1.6130	-2.1337***	R squared	0.5412	
D(TEXP_GDP(-2))	-0.9306	-1.4673	Adj. R squared	0.2419	
D(GFCF_GDP(-1))	-0.5452	-1.2112	D-W Stat	2.0144	
D(GFCF_GDP(-2))	-0.5676	-1.2294	Akaike (AC)	-4.5663	
D(LR_X(-1))	-0.0309	-0.3920	Schwarz (SC)	-3.8838	
D(LR_X(-2))	-0.0327	-0.6104			

Source: Computed by the researcher

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

In the above study VECM was used to examine short runs dynamics and correct for short run disequilibrium among the variables LR_GDP, LR_REM, TEXP_GDP, GFCF_GDP, LR_X, M₃_GDP, and FDI_GDP. The co-efficient of error correction term (ECT) is equal to -0.2952 and is statistically significant at 5%. The sign of (ECT) conforms to the restriction of negativity and less than one (Gujarati, 2009). It also implies that the rate at which short runs disequilibrium is being corrected to arrive to the long run equilibrium at a rate of 29.52% per annum. From the above results we can conclude that the Output (LR_GDP) is determined by lag values of Remittances inflows (LR_REM), Total Govt. Expenditure (TEXP_GDP), FDI (FDI_GDP) and Money supply (M₃_GDP). We have provided empirical evidence showing that remittances inflow has a negative impact in both the 1st lag (-0.1270 at 1% level of significance) and 2nd lag (-0.0815 at 5% level of significance) on the Output of India, depleting the fact that the inflow may create dependency, reduce labor supply, or lead to inefficient allocation of resources popularly known as Dutch Diseases. On the other hand empirically it is observed that Total Govt. Expenditure (TEXP_GDP) has negative impact at 5% level of significance which can be justified that initially Govt. Expenditure may have a negative impact or no impact as a Govt. Expenditure requires sum lag period to give a positive thrust to the economy. However, the positive impact of FDI (FDI_GDP) in the 1st lag and in the 2nd lag at 5% and 1% level of significance respectively, FDI through its spillover effect have direct positive impact on the economic growth of the host countries, which support the view of positive correlation among foreign capital inflow and economic growth. Whereas it is empirically also evident the theoretical opinion that the increase in money supply can spur the economic growth through demand side. According to standard macroeconomic theory, an increase in the supply of money should lower the interest rates in the economy, leading to more consumption and lending/borrowing. In the short run, this should increase the Output (GDP) of the economy. Here Money supply positively influences Output in the 2nd lag at 5% level of significance. The empirical result VECM also reveals that there is no autocorrelation detected in the sample with D-W value of 2.01. The Durbin Watson (DW) statistic is a test for autocorrelation in the residuals from a statistical regression analysis. The Durbin-Watson statistic will always have a value between 0 and 4. If the value comes out to be 2.0 means that there is no autocorrelation detected in the samples. Values from 0 to less than 2 indicate positive autocorrelation and values from 2 to 4 indicate negative autocorrelation. Furthermore To test for the presence of heteroscedasticity in the regression model, we applied White's general test for

heteroscedasticity. This test is robust to various forms of heteroscedasticity, including both linear and non-linear relationships between the error variance and the independent variables. The null hypothesis of the test assumes homoscedasticity. In our study the calculated F-statistic is 0.6345 with probability 0.58, consequently, we fail to reject the null hypothesis and conclude that there is no evidence of heteroscedasticity in the model, suggesting that the variance of the residuals is constant.

Now if the estimated dynamics is maintained at the near future, then how the Output (LR_GDP) profile get constituted through these endogenous random innovations of control variables are ascertained through a variance decomposition analysis. This analysis has a scope for identifying the relative strengths of innovations affecting the Output (LR_GDP) profile in the out of-sample forecast horizon. The result of Variance Decomposition is shown in Table 10.

Table 10: Variance Decomposition of LR_GDP

Variance Period	LR_GDP	GFCF_GDP	FDI_GDP	LR_X	M ₃ _GDP	LR_REM	TEXP_GDP
1	92.2077	0.0000	0.0000	0.0000	0.0000	7.7922	0.0000
2	72.8644	0.0354	0.9260	1.8015	0.5860	20.9859	2.8005
3	67.1729	1.0829	0.5220	3.5860	0.6578	20.3433	6.6347
4	61.9717	3.2629	1.3732	5.2455	3.0723	17.8636	7.2105
5	57.4728	4.3048	2.7324	5.8566	6.6303	16.0716	6.9312
6	54.4104	5.2279	3.9475	6.2006	9.6010	14.5656	6.0466
7	51.5644	5.6415	5.1190	6.6079	11.8824	13.6952	5.4893
8	49.0730	6.1908	6.4273	7.0036	13.9510	12.4915	4.8624
9	46.4556	6.6729	7.8978	7.4252	15.8758	11.3516	4.3208
10	44.2192	7.1061	9.2761	7.7268	17.6388	10.2389	3.7939

Source: *Computed by the researcher*

(* Significant at 1%, ** Significant at 5%, *** Significant at 10%)

According to Table 10 it is found that the Remittances inflow innovation would account 20.98% variance of Output at the 2 forecast period horizon that is the highest innovation among 10 forecast horizon and 10.23% of such variance at the 10 forecast period horizon. The variance decomposition analysis, therefore, confirms that in the near future the Remittances inflow may be an important cause for negative Output growth in India.

VI. Concluding Remarks and Policy Pointers

In what follows from our dissertation is the fact that Indian emigration has been taking place since centuries and therefore they are not fortuitous, it is systematic. History is the evidence to the fact that India witnessed massive movements of people from the country to other parts of the world. This happened during the 19th, 20th and 21st centuries. It goes back several centuries the intimate contact with the Persian Gulf region and south-east Asia, both in terms of trade in goods and movement of people. According to the Ministry Overseas Indian Affairs (2018), India is the second largest diaspora in the world and the highest recipient of remittances. The money that migrants send home is very important not only to their families but also to their country's BoP. At the macro level, remittances inflow are an important source of external financing for developing countries, often providing a steady source of capital in excess of funds generated through FDI and portfolio flows. Importantly, remittances flow also serves to stabilize recipient economies at times of economic downturn brought on by such phenomena as a natural disaster, financial crisis, political conflict etc. In essence, inflows can be counter-

cyclical to smooth macroeconomic shocks in the migrants' home countries. It is true that remittances have proved to be an important and stable source of external finance to cushion the impact of a weak merchandise trade account in India. For India, inward remittances flows have been pivotal in financing the trade deficit (43 per cent in 2017-18). In micro level, emigrants send home money by way of periodic remittances. One of the inevitable consequences is the increase in disposable income at the household level thus providing financial resources for household. The sudden increase in household income has had a considerable impact on household consumption patterns (food; clothing, electric appliances such as rice cooker, water boiler, mobile phones; payment of electricity and telephone bills; etc.). Inflows of remittances from the people working abroad have had a significant effect on poverty eradication with the result that the overall percentage of people in the country in question decreases. Econometric evidence also confirms positive impact of remittances on poverty. Anecdotal evidence suggests that remittances have helped alleviating poverty for many of the households, both in the rural and the urban areas. Ratha (2006) finds that remittances can reduce poverty, improve households' ability to withstand adverse shocks (for example, households receive higher levels of remittances during adverse health outcomes, crop failures.etc.), provide credit for household enterprises, and improve household investments on education and health. In addition, remittances are an important source of national savings that can lift the investment rate of a country. The savings take the form of direct investment, cash or deposits into the financial system. While such inflows that increase investments are likely to have a positive effect on economic growth, a good investment climate including the presence of a well-developed financial system will partly determine the extent to which remittances are invested in physical and human capital. Whereas despite of all positive impact of remittances this study has examined the paradoxical relationship between remittance inflows and economic growth, highlighting the potential adverse effects that remittances can have on the long-term development trajectory of recipient economies based on the **Dutch Disease hypothesis**, **dependency theory**, and **neo-classical growth models**. While remittances are often hailed as a stable source of foreign exchange and a buffer against poverty, the findings suggest that their persistent inflows can generate economic distortions, including reduced labour force participation, dependency syndromes, and weakened incentives for domestic production and investment. Moreover, excessive reliance on remittances may lead to macroeconomic vulnerabilities such as exchange rate appreciation (Dutch disease), inflationary pressures, and a widening current account deficit. According to the Dutch Disease framework, large remittance inflows can lead to real exchange rate appreciation, reducing the competitiveness of tradable sectors such as manufacturing and agriculture. This shift not only distorts resource allocation but also hampers the development of productive capacity, thereby weakening long-term growth potential. Additionally, dependency theory suggests that continuous external income inflows can foster a culture of reliance, diminishing labour market participation and domestic initiative. Neo-classical growth theory also implies that while remittances may increase consumption in the short run, their long-term impact on capital accumulation and productivity is limited unless effectively invested in human capital or productive assets. Our study, have examined the long run and short run relationship among Remittances Inflow, Output, and other selected control variables. The empirical findings from the error-correction model stated that the Output adjust to its equilibrium rapidly in short run. From the above results we can conclude that the GDP is determined by lag values of remittances inflows, total govt. expenditure, gross fixed capital formation, FDI and money supply. We have provided empirical evidence showing that remittances inflow has a negative impact on the GDP of India. The analysis indicates that remittances, when not productively channeled, can undermine growth by encouraging consumption over investment and reinforcing structural weaknesses in the economy. Therefore, policymakers must focus on creating institutional frameworks and

financial instruments that redirect remittance flows toward productive sectors, enhance financial literacy, and integrate remittance recipients into formal economic systems. Only through such strategic interventions can countries transform remittances from a potential liability into a sustainable driver of inclusive economic growth.

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