

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

**Impact of Remittances on Poverty
in Developing Countries**



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1. INTRODUCTION

Remittances have become significant private financial resources for households in countries of origin of migration although they cannot be considered as a substitute for FDI, ODA, debt relief or other public sources of finance development.¹ There has been a fifteen-fold increase in remittances to developing countries since 1988 with remittances increasing from \$ 20 billion to \$328 billion in 2007. This makes it important to continue to analyse the potential of migrants' remittances to contribute to development. Though there is a growing literature on the impact of remittances on development, very few studies have empirically estimated the impact of remittances on development in general, and on poverty in particular, in the developing countries. To fill this gap in the literature, this study undertakes impact analysis of remittances on poverty in developing countries at three levels. **Firstly**, it estimates the impact of remittances on poverty in 77 developing countries, with separate analyses for 29 developing countries and 21 Asian developing countries, which have 5% or more share of remittances in GDP. **Secondly**, it undertakes a case study of India and estimates the impact of remittances on poverty in India, which has been one of the top recipients of remittances in 2008; and **Thirdly**, it undertakes a more micro-level analysis by estimating impact of remittances on poverty in Kerala, which is one of the top remittance receiving states in India

The gap between migrants from developing countries to developed countries and to other developing countries has reduced over time. In 2005, the migrant stock from developing countries to developed countries was around 53% while to other developing countries, it was around 47%. Studies have pointed out that most migration, and especially the migration of the poor, takes place between developing countries². In terms of number of emigrants, developing countries take a lead and explain around 95% of total emigrants³. The remittances flows are accordingly much higher to developing countries. In 2008, top ten remittances receiving countries were developing countries. In 2007, the total remittances to developing countries through official sources was estimated at \$328 billion and it is likely that billions more are transferred through unofficial sources (World Bank-2009). For many developing countries the remittances flow has grown not only in size but also in importance in terms of their share in GDP. In many developing countries, more than 20% of GDP is contributed by remittances. In this context, it becomes important to estimate the impact of remittances on poverty levels in developing countries. Using the panel data for 77 developing countries for the period 1980-2008, the study estimates the impact of remittances on Poverty Headcount ratios, Poverty Gap at \$ 1.25 a day (PPP) and Poverty Gap at \$2 a day (PPP).

To examine the impact of remittances on poverty, micro level analysis is important as it may reveal useful insights in terms of channels through which the impact of remittances on poverty levels is transmitted. The study therefore undertakes a case study of India and a state in India for estimating the impact of remittances on poverty. India is chosen as a case study since it has been among the top five remittances receiving country for many years and was the top recipient of

¹ UNCTAD (2008), UNCTAD XII: Accra Accord, paragraph 122.

² House of Commons International Development Committee (2003-04).

³ World Bank Working Paper No 102, 2007

remittances in 2008 with total inflow of remittances amounting to \$52 billion. The span of Indian Diaspora stretches across the globe in all continents. The Ministry of Overseas Indian Affairs has registered the presence of non-resident Indians (NRIs) in 180 of the 183 countries of the world. The numbers have varied from just two in Lebanon to almost a million in the US. Estimated at over 30 million, India ranks second to Chinese Diaspora.

The growing number of migrants from India has added to the remittance inflow over the years. Data in this regard reveals that, even though the remittance flows to the Indian economy during eighties remained more or less stable, the post reform period from 1991 onwards has experienced a significant increase in remittances. There has been an annual average trend growth of 16% during the period 1990 to 2008. In 2008, India reported 34% growth over 2007.⁴ The surging inflow of remittances to the Indian economy has received much attention worldwide as it emerged as single largest recipient with more than one tenth share in global remittances⁵. Even during the current economic slowdown, a recent World Bank Report⁶ reveals that India would continue to receive the highest global remittance for the year 2009 whereas, the remittances flows to the developing countries is expected to decline. Given that around one thirds of world poor⁷ reside in India, India makes an interesting case study for the analysis of impact of remittances on poverty. The study undertakes time-series analysis to assess the impact of remittances on poverty ratio in India. Granger causality tests are undertaken with respect to remittances flow and different indicators of poverty in India for the period 1973-74 to 2008-09. Similar analyses are undertaken for the highest remittances receiving state of India, namely Kerala.

The rest of the paper is organised as follows: section 2 provides a review of literature on migration and development, including the studies on remittances and poverty; section 3 highlights the trends in remittances in developing countries and India in particular; section 4 presents the model and the results estimating the impact of remittances on poverty in 77 developing countries for the period 1980-2008, with a separate analysis for 21 Asian developing countries; section 4 presents the results of the model estimating the impact of remittances on poverty in India; section 5 reports the results with respect to Kerala; section 6 concludes with policy implications.

⁴ However, according to RBI, there has been a 13 per cent decline in remittances at \$22.8 billion during the first half (January-June) of the calendar year 2009, against \$26.2 billion in the same period last year.

⁵ However, the share of international remittances inflow to India as proportion of developing country's inflow stood nearly 16% in the year 2008.

⁶ Remittances flows to developing countries is expected to be \$317 billion in 2009, down from an estimated \$328 billion in 2008 (Migration and Development brief, World Bank, 3rd Nov 2009).

⁷ According to 2005 World Bank estimates, about 456 million Indians (42% of the total Indian population) now live under the global poverty line of \$1.25 per day (PPP). This means that a third of the global poor now reside in India.

2. REMITTANCES AND ECONOMIC DEVELOPMENT: REVIEW OF LITERATURE

The official recorded remittances are much lower than the actual remittances that take place through official and unofficial channels. Remittances through informal channels could add at least 50 percent to the globally recorded flows (World Bank, 2006, *ibidem*, p. 85). Despite this under reporting, many studies have highlighted the important nexus between the international migration, remittances and development. This section summarizes the existing studies, which examine this nexus, especially in the context of developing countries.

Several studies have pointed out that more the inflow of remittances, healthier the recipient country will be. In times of economic distress, remittances may actually be countercyclical to the extent that migrants are motivated by altruism and send more money home. The stability of these inflows also opens up an opportunity for developing countries to borrow at lower cost in international capital markets by securitizing future flows of remittances (IMF 2007). As remittance receipts are widely dispersed, they may not cause the real exchange rate to appreciate.

Pant (2008) argues that whether remittances are utilized for consumption or purchasing houses, or other investments, they produce positive impact on the economy by stimulating demand for other goods and services. Migrants provide different forms of capital that have developmental impact on their countries of origin. These impacts may be in the form of financial, social, cultural, political and/or economic impacts. The impact can be examined at both micro level, like in case of households and macro level like impact on GDP growth, poverty and development.

2.1. Link between Remittances and Household Development

Majority of the existing studies, which focus on the impact of migration on household members left behind, have shown positive impact in both short run and long run. Rapoport and Docquier (2006) show how the household members who are left behind, use migrants' remittances. Remittances are used to repay loans taken to finance migration or education, and insurance and strategic motives. It also directly contributes to household income, allowing households to purchase more assets; enables higher investment in business; and facilitate buying more goods, including education and health inputs. Yang (2004), and Woodruff and Zenteno (2001) suggest that at the household level, remittances can spur entrepreneurial activity. Hildebrandt and McKenzie (2005) emphasize the knowledge transfer and change in attitudes of the remaining family members of the migrants. For example, they find that the knowledge about contraceptives increased with emigration of household members from Mexico to the US.

2.2. Link between Remittances and GDP

Studies examining the relationship between remittances and GDP growth show mixed result. Faini (2002, 2003) finds a positive relationship between growth and remittances using cross-country data. Similarly, positive relationship between the two is also supported by several studies for Mexican economy. For example, Adelman and Taylor (1990) find that "every dollar Mexican migrants send back home or bring back with them increases Mexico's GNP from anywhere between US\$ 2.69 and US\$ 3.17, depending on which household income group received the remittances". Durand et al (1996) suggest that for every US\$ 2 billion in remittances that entered Mexico, production in the economy increased by over a US\$6.5 billion dollar. Ekanayake et al (2008) examine the impact of foreign remittances and foreign direct investment on the economic growth of developing countries. The study uses annual data of a large group of developing

countries covering Asia, Africa, and Latin America and the Caribbean for the period 1980-2006. They find that both remittances and foreign direct investment significantly promote growth in developing countries. However, this positive relationship is challenged in several studies, e.g. Spatafora (2005) finds that there is no direct link between real per capita output growth and remittances. Chami et al (2005), using panel data for 113 developing countries find that remittances have a negative effect on economic growth.

2.3. Link between Remittance, Consumption and Investment⁸

Many studies examine the relationship between remittances and investments in the home countries. Barajas et al. (July 2009) point out that for developing countries remittances are large relative to other financial flows⁹. They find that in last 10-year period, remittance flows have become as large as foreign direct investment (FDI) flows to developing countries, amounting on an average of about one third of export earnings, more than twice the private capital flows, almost 10 times official capital flows, and more than 12 times official transfers. In light of this, developing countries should capitalize this huge amount of remittance inflows and use it for investment to promote development and the growth. Empirical evidence in this regard shows that the inflow of remittances by the migrant workers and professionals from an underdeveloped and developing country helps in increasing the investment activities in the recipient country. Asiedu (2003) reveals that nearly 30 percent of remittances are used for the purpose of investment and construction of house in Ghana. Similarly, according to Drinkwater et al. (2003), if the primary income earner remains at home and continues to maintain the household, earnings from migration are more easily diverted to savings and investment. By using 1988 survey of 1526 Egyptians migrants, McCormick and Wahba (2001), attempt to find the probability of a migrant becoming an entrepreneur/employer/self employed person or a business owner- upon his/her return from working abroad. Even though, the results are different for literate and illiterate migrants, the general conclusion derived was that two factors namely, time spent working abroad and total amount of money saved abroad, have positive and significant effect on the likelihood of migrants becoming an entrepreneurs on their return to the home country.

Adams (2005a) examines the impact of remittances on the spending behavior of household for consumption and investments, in both the rural and urban Guatemala. The study takes the data from 2000 survey of 7276 households and compares the marginal budget share of remittance receiving and non-remittance receiving household on six consumption and investment goods. The findings show that the households receiving international remittances spend more at the margin on investment goods, especially, on housing and education, and spend less, at the margin, on food items. Similarly, Yang (2004) analyses how the exchange rate shocks during 1997 due to the Asian Financial Crisis affected the expenditure pattern of 1646 Philippine households receiving international remittances. Of the several findings in this paper, one of its findings shows that a favorable exchange rate shocks (i.e. more remittances income as a result of favorable exchange rate shocks) increases the investment of remittances receiving household in entrepreneurial activities specifically in transportation, communication and manufacturing enterprises.

⁸ It should be noted that remittances are private financial flows for households in countries of origin of migration and cannot be considered as a substitute for FDI, ODA, debt relief or other public sources of finance development.

⁹ In 2004 official international remittances were estimated at \$93 billion per year (Ratha, 2004), making them about twice as large as the level of official aid-related flows to developing countries.

2.4. Link between Remittances, Poverty and Welfare

The flow of remittances remains more or less stable irrespective of the economic condition of the recipient country¹⁰. Remittances are expected to reduce poverty as they may be directly received by the poor. The impact of remittances on reduction of poverty can be understood from both micro and macro perspectives. However, to capture this impact, there is no formal framework (Chimhowu et al 2005). But it is evident and it is reasonable to assume that the amount of transfer done by the migrants to the family members back home do have some overall impact in reducing the poverty. Uruci and Gedeshi (2003) using survey of long-term legal immigrants find that majority of the international migrants (69.7 %) send their money in order to meet “the essential needs of the family.”

Very few studies explicitly address the link between remittances and poverty. Adams and Page (2005) used household surveys of 71 developing countries to examine the impact of international migration on poverty. Controlling for the level of income, income inequality, and geographical region, they find that international remittances have a strong statistically significant negative impact on poverty. A 10 % increase in the share of remittances in a country’s GDP, lead to a reduction of 1.6 % of people living in poverty. Campos and Palomo (2002) find that in 2000, the remittances helped reduce the national poverty rate by 4.2% in El Salvador as well as reduced the Gini coefficient from 0.55 to 0.53.

Adams (2004) finds that the squared poverty gap measure in Guatemala declined by 19.8 % when international remittances were included as a part of the total household income. López-Cordova (2005) finds that remittances have a statistically significant impact in reducing poverty in Mexico at the municipal level. Gustafsson and Makonnen (1993) used the data of 7680 households from 1986-87 survey to examine the impact of remittances on poverty and welfare in rural and urban Lesotho. They found that 35 % of household incomes come from the remittances. It shows that if the remittances were set to zero, the average per-capita household consumption would fall by 32 % and the poverty head count index would increase by 26%. In addition, a cessation of remittances would lead to a 52 % increase in the poverty gap index. A similar study by Taylor et al (2005) used the data of 1782 household from 2003 survey of rural Mexico to show the impact of international remittances on poverty. The study estimates that poverty headcount and poverty gap indices would decline by 0.77 and 0.53 respectively with 10 % increase in international remittances.

2.5. Link between Remittances and Foreign Exchange:

Remittances constitute important sources of foreign exchange earnings for many households in developing countries. While remittances cannot be considered as a substitute for FDI and other official development assistance, it may ease short run foreign exchange constraints at times other financial flows decline due to external factors. Bouhga and Hagbe (2004) explain the importance of remittances to Morocco as a source of foreign exchange that could be used positively for development. Similarly Ranjan and Subramanyam (2005) also find that remittances have constituted an important stimulus to domestic demand.

¹⁰ In the wake of the Asian financial crisis in the late 1990s, remittances to developing countries continued to rise even though FDI and official aid flows declined (World Bank, 2004).

2.6. Link between Remittances and Employment

Very few studies have estimated the macro economic impact of remittances on the employment of the recipient country. At micro level studies suggest mixed results. Frank, (2001) argue that the families receiving international remittances severely curtail their work efforts. Similarly Rodriguez and Tiongson (2001) for Manila and Funkhouser (1992) for Managua conclude that remittances reduce employment. However, they do not take into account of endogeneity of remittances with respect to labor supply. Rodriguez and Tiongson (2001) conclude that when migration occurs, non-migrant relatives receive remittances, which they perceive as additional non-labour income. An increase in non-labour income then reduces their participation in local labour markets. In contrast to these studies, Cox-Edwards and Rodriguez-Oreggia (2006) find that remittances have no impact on the labor supply of household members in Mexico. However, at macro level, when the inflow of remittances is used for the investment, the non-migrated families get benefited by seeking employment.

Overall, literature provides sufficient evidence to support the hypothesis that remittances are beneficial to the recipient countries and can significantly affect poverty and development. However, most of the studies are survey-based and very few empirical studies exist which are able to quantify the impact of remittances on poverty levels in the developing countries.

3. TRENDS IN MIGRATION AND REMITTANCES

The differences in regional income, growing inequality and more particularly the increased demand for skilled/unskilled labour can be argued as the most common reasons for the rapid increase in the global migration. Besides these, rapid globalization and gradual liberalisation in migration policies of many countries are some of the facilitating factors for higher global migrants over the years. This section briefly examines the global trends in migration and remittances. A case study of India is provided for illustrative purpose as India is a major recipient of remittance.

3.1. Trends in Global Migrants

Human Development Report (2009)¹¹ in its estimation reveals that about 214 million people, or roughly 3.1 percent of the world's population, lived and worked outside the country of their birth in 2008, up from 120 million in 1990. Given the difficulties in the definition of a migrant across countries, this may be an underestimation of the real stock of migrants in the world.

Table 1 shows the movement of migrants from developing and developed countries. Interestingly, the migrants from developing countries to other developing countries constitute 47% of total migrants from developing countries in 2005. Migration therefore may no longer be considered as a 'South-North' phenomenon, as often assumed. Many countries in Southeast Asia, for instance, are heavily reliant on cheap migrant labour from neighboring countries¹². However, the extent and issues surrounding migration between developing countries remain poorly understood, largely because of incomplete and unreliable data on migration in developing countries (Rath and Shaw, 2007). Majority of migrants from high-income OECD countries go to other high-income OECD countries (85%). The gap between migrants in developing countries and developed countries is not very wide. 59% of total migrants are based in developed countries as compared to 41% in developing countries.

Table 1: Global Migrants Stocks (In Million)

Migrants From	Migrants In			
	Developing Countries	High Income OECD Countries	High Income Non OECD Countries	Total
Developing Countries	73.9 (47%)	61.8 (40%)	20.1 (13%)	155.8 (100%)
High Income OECD Countries	3.4 (11%)	25.5 (85%)	1.2 (4%)	30.1 (100%)
High Income Non OECD Countries	0.8 (17%)	3.6 (77%)	0.3 (6%)	4.7 (100%)
Total	78 (41%)	90.9 (48%)	21.6 (11%)	191 (100%)

¹¹Overcoming Barrier., *Human Mobility and Development*, UNDP (2009)

¹² House of Commons International Development Committee, (2003-04).

Source: World Bank Working Paper No: 102 (2007)¹³.

Country level estimates show that USA has the highest number of immigrants (38.4 million), followed by Russia (12.1 million) and Germany (10.1 million) (Table 2). On the other hand, foreign workers in Gulf countries continue to represent a high proportion of total population. In Qatar and Andorra, 78% of total population constitutes migrants.

Table 2: Top 10 Immigration Countries, 2005.

Countries	No. of immigrants (In Millions)	Countries	As % of Population
USA	38.4	Qatar	78
Russia	12.1	Andorra	78
Germany	10.1	UAE	71
Ukraine	6.8	Monaco	70
France	6.5	Kuwait	62
Saudi Arabia	6.4	Isle of Man	48
Canada	6.1	Channel Islands	46
India	5.7	West Bank & Gaza	45
U.K.	5.4	Singapore	43
Spain	4.8	Bahrain	41

Source: UN Population Division.

Similarly the available latest data on the number of emigrants shows that, Mexico (11.5 million) and Russia (11.5 million) have the highest number of emigration to the rest of the world during the year 2005 (Table 3). India stood second in the list, followed by China and Ukraine. However, emigrants as percentage of population is highest for Jamaica (39%) followed by Bosnia (38%) & Herzegovina (38%) (Table 3).

Table 3: Top 10 Emigration Countries in the year 2005

Countries	No. of Emigrants (In Millions)	Countries	As % of Population
Mexico	11.5	Jamaica	39
Russia	11.5	Bosnia & Herzegovina	38
India	10.0	Trinidad & Tobago	28
China	7.3	Albania	27
Ukraine	6.1	Armenia	27
Bangladesh	4.9	West Bank & Gaza	26
Turkey	4.4	Kazakhstan	25
Ukraine	4.2	Georgia	23
Germany	4.1	Ireland	22
Kazakhstan	3.7	Serbia & Montenegro	22

¹³ The Authors calculated on using the University of Sussex and World Bank data based on UN (2005), individual country censuses, OECD (2006), and others.

Source: Development Prospects Group, World Bank.

3.2 Trends in Global Remittances

Recent available data on the global remittances reveals that during the year 2008 the total remittances inflow to all the developing countries is estimated at \$ 338 billion, up by 16.7 percent over the same period last year. This estimates 10.8 % growth for the developed countries. At the country level, India, China and Mexico received around 40% of total remittances, despite the weak job market in many developed countries. Table 4 show top 10 remittances recipient countries.

Table 4: Top 10 Recipients of Remittances during the year 2008.

Top 10 Countries	US \$ Billion	Top 10 Countries	% of GDP
India	52	Tajikistan	50
China	49	Tonga	38
Mexico	26	Moldova	31
Philippines	19	Kyrgyz Rep	28
Poland	11	Lesotho	27
Nigeria	10	Samoa	26
Romania	9	Lebanon	25
Bangladesh	9	Guyana	24
Egypt	9	Nepal	22
Vietnam	7	Honduras	20

Source: Development Prospects Group, World Bank.

Remittances globally have increased by average annual growth rate of 17.7% in the period 2004-2008 (Table 5). The average annual growth rate in this period has been highest for Europe and Central Asia (32.5%); followed by Sub-Saharan Africa (29.3%) and East Asia and Pacific (21.4%). However, in 2008, South Asia (35.6%) experienced the highest annual growth in 2008 over 2007, followed by East Asia and Pacific (20.7%).

Table 5: Annual Growth of Remittances inflow in Different Region.

Income Groups/ Regions	1991	1995	2000	2004	2005	2006	2007	2008
All developing countries	9.71	9.50	8.74	17.06	21.03	18.33	22.93	16.72
Low-income countries	-16.66	13.38	10.37	15.18	21.82	23.88	23.37	28.32
Middle-income	12.70	9.25	8.62	17.22	20.96	17.85	22.89	15.64
Lower MICs	12.79	17.45	8.54	12.40	22.58	18.57	28.98	21.04
Upper MICs	12.56	-1.26	8.76	25.27	18.52	16.72	13.31	5.97
East Asia and Pacific	17.48	43.60	5.11	23.37	25.10	14.15	23.80	20.76
Europe and Central Asia	-13.15	-10.94	9.67	45.34	43.59	24.10	35.98	13.83
Latin America and Caribbean	18.23	20.70	13.54	18.36	15.68	18.11	6.82	2.34
Middle-East and North Africa	11.91	-5.38	0.76	13.13	8.35	4.62	20.11	10.62
South Asia	8.60	5.05	14.11	-5.51	18.23	25.35	27.09	35.63
Sub-Saharan Africa	-0.17	38.58	4.29	34.35	16.92	34.66	47.64	13.37
High income OECD	3.08	15.28	-4.06	12.93	3.67	7.58	17.05	10.57
High income non-OECD	3.72	-30.44	-1.96	35.10	12.48	5.33	8.64	14.90
High income	3.10	12.43	-3.99	14.11	4.23	7.43	16.49	10.84

World	6.09	10.77	3.69	16.13	15.85	15.31	21.26	15.26
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Source: World Bank

Note: MIC stands for middle Income Countries.

3.3. Trends in Indian Migrants and Remittances

The pace of migration from India accelerated in the post economic reforms of 1991. Accordingly, there has been a rapid increase in remittances since early 1990s. This section examines trends in migration and remittances in India.

3.3.1 Trends in Migrants from India

The measurement of Indian migrants to the rest of the world is not straight forward as it is difficult to count all single movement of people from the region. However, the recent data reveals that the Indian Diaspora spreads across the globe. Table 6 summarizes the approximate number of overseas Indians.

Table 6: Estimated Size of Overseas Indian Community: Top 15 Countries (December, 2001)

Country	PIOs	Indian Citizen	Stateless	Total Population
Myanmar	2,500,000	2,000	400,000	2,902,000
USA	N.A	N.A	N.A	1,678,765
Malaysia	1,600,000	15,000	50,000	1,665,000
Saudi Arabia	---	1,500,000	---	1,500,000
UK	N.A	N.A	N.A	1,200,000
South Africa	N.A	N.A	N.A	1,000,000
UAE	50,000	900,000	---	950,000
Canada	700,000	150,000	1,000	851,000
Mauritius	704,640	11,116	---	715,756
Trinidad & Tobago	500,000	600	---	500,600
Guyana	395,250	100	---	395,350
Fiji	336,579	250	---	336,829
Oman	1,000	311,000	---	312,000
Singapore	217,000	9,000	81,000	307,000
Kuwait	1,000	294,000	---	295,000

Note: PIOs- Persons of Indian Origin

Source: Compiled from the Report of High Level Committee on Indian Diaspora.

It is noteworthy to mention that the new migration of labour have taken a reverse turn globally due to the onset of global economic crisis. However, the Indian migration to other countries has experienced no sign of decline in the recent past. However, the rate of growth of migration has declined but in absolute term, there has been a substantial increase over the past years. The official data in this regard reveals that nearly 0.85 million population have been granted immigration clearance during the year 2008 against 0.8 million during 2007. Table 7 shows the immigration clearance to top destination countries in recent years.

Table 7: Distribution of Annual Labour Outflows from India to Major Destination

Countries	2002	2004	2006	2007	2008	Upto Mar' 2009
U. A. E.	95034	175262	254774	312695	349827	35905
Saudi Arabia	99453	12322	134059	195437	228406	80962
Malaysia	10512	31464	36500	30916	21123	4611
Qatar	12596	16325	76324	88483	82937	11953
Oman	41209	33275	67992	95462	89659	17175
Kuwait	4859	52064	47449	48467	35562	10982
Bahrain	20807	22980	37688	29967	31924	6806
Maldives	---	3233	4671	ECNR	ECNR	ECNR
Mauritius	---	3544	1795	ECNR	ECNR	ECNR
Jordan	---	2576	1485	1254	1377	242
Other	83193	121915	14175	6772	7786	2011
Total	367663	474960	676912	809453	848601	170647

*Source: Compiled from Annual Report (2008-09), Ministry of Overseas Indian Affairs.
ECNR: Emigration Clearance Not Reported.*

At a more disaggregated level, the official data on the state-wise emigration clearance shows that, Kerala is the state with highest immigration clearance in India in 2008 (Table 8). The share of Uttar Pradesh¹⁴ has increased drastically in recent years, and has become second only to Kerala during the year 2008 and up to March' 09. On the other hand, the share of major states such as Tamil Nadu, Andhra Pradesh and Maharashtra in the total immigration clearance has experienced a declining trend in recent years.

Table 8: Immigration clearance of workers granted during 2002-08. State-wise shares

Ranks (in 2008)	States	2002	2004	2006	2007	2008	Upto 31st Mar' 09
1	Kerala	22.29	13.37	17.74	18.59	21.29	20.58
2	UP	5.25	5.77	9.77	11.32	16.41	20.48
3	Tamil Nadu	21.53	22.94	22.99	18.64	15.18	13.33
4	Andhra Pradesh	10.45	15.28	14.43	12.98	11.49	11.12
5	Rajasthan	6.32	7.39	7.42	8.76	7.61	6.63
6	Bihar	5.23	4.59	5.39	6.40	7.15	7.66
7	Punjab	5.34	5.33	5.81	6.66	6.42	4.38
8	West Bengal	2.27	1.89	2.21	3.07	3.07	3.25
9	Maharashtra	6.93	6.04	2.27	2.66	2.92	3.20
10	Karnataka	3.82	4.05	3.60	3.34	2.64	3.22
11	Gujarat	3.24	4.68	1.96	2.48	1.85	1.69
12	Orissa	0.47	1.47	0.61	0.83	1.05	1.05
13	Delhi	1.09	1.27	1.34	0.66	0.53	0.41
14	Madhya Pradesh	2.02	1.87	1.04	0.45	0.27	0.31
15	Haryana	0.12	0.27	0.03	0.23	0.21	0.20
	Others	3.63	3.78	2.79	2.58	1.63	2.23
	Total	100	100	100	100	100	100

Source- Offices of the Protectors of Emigrants.

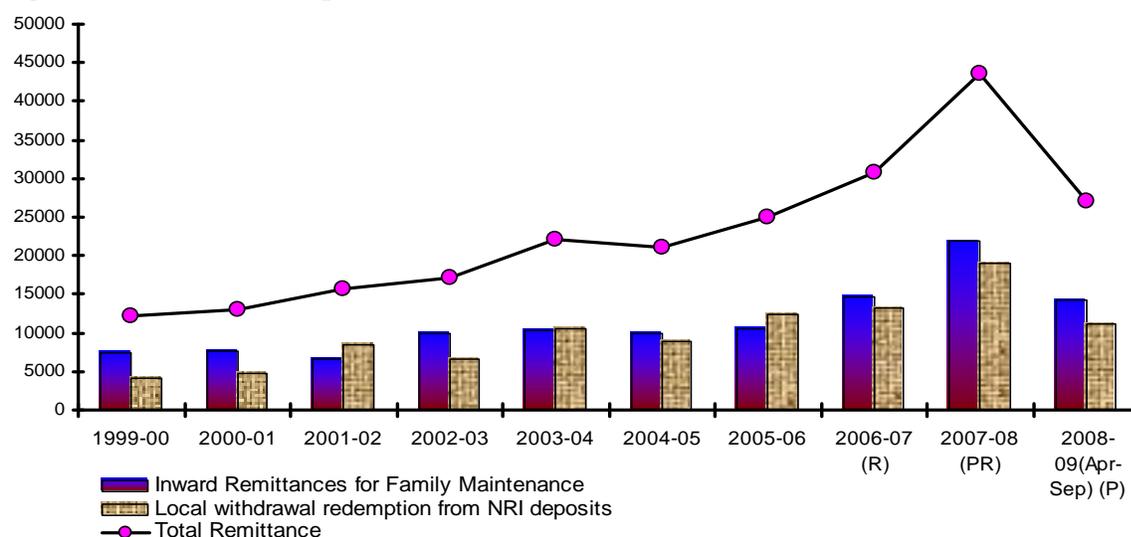
Note: The states have been ranked in descending order with 2008 migration data.

¹⁴ It is also the most populous state in India with an estimated 190 million people (around 17% of India's population) as of July 2008.

3.3.2. Trends in Indian Remittances:

The increasing number of migration from India has led to an increase in the remittances inflow into the country. Over the years, India has experienced a substantial increase in the remittances inflow. As per the RBI recognition, the inflow of remittances to India are of two types namely, direct inward remittance and local withdrawal from the NRI accounts. The inward remittances are direct transfer of funds from person abroad to person in India. Such transfers are generally meant for providing family support. However, the NRI deposit accounts¹⁵ are created with the aim to attract the foreign capital and foreign currency to boost the economy. RBI recognizes the foreign currency NRI deposits as debt¹⁶ and withdrawal from rupee denominated deposits as remittances. To understand this, Figure 1 shows in detail the remittances flow and its composition over the period.

Figure-1: Trends and Composition of Remittances Transfer.



Source: *Invisibles in India's Balance of Payments," RBI Bulletin", March-2009.*

Notes: R: Revised, PR: Partially Revised and P: Preliminary.

¹⁵ This scheme has been authorized by the GOI in 1970 and it gives the choice to the depositors for holding deposits either in terms of Indian currency or in terms of foreign currency.

¹⁶ This is because the principal amount can be withdrawn by the NRI depositors with interest when they wish.

It is evident that the remittances transfer to India has shown an increasing trend over the year irrespective of the global financial crisis (Table 9). This may be attributed to a number of factors, such as, depreciation of rupee resulting in the rise in inflows through rupee denominated NRI accounts to take advantage of the depreciation; hike in interest rate ceilings on NRI deposits since September 2008; and uncertainties in oil-prices, which might have induced the workers to remit their money to India as a hedging mechanism due to its relatively better growth prospects¹⁷.

Table 9: India's Workers' remittances, compensation of employees, and migrant transfers, credit (US\$ million)

Year	Inflow	Outflow	Outflow as % of Inflow
1980	2,757	29	1.05
1981	2,301	15	0.65
1982	2,618	14	0.53
1983	2,660	40	1.50
1984	2,295	27	1.18
1985	2,469	31	1.26
1986	2,240	42	1.88
1987	2,665	65	2.44
1988	2,315	93	4.02
1989	2,614	99	3.79
1990	2,384	106	4.45
1991	3,289	52	1.58
1992	2,897	68	2.35
1993	3,523	259	7.35
1994	5,857	351	5.99
1995	6,223	419	6.73
1996	8,766	538	6.14
1997	10,331	162	1.57
1998	9,479	44	0.46
1999	11,124	36	0.32
2000	12,890	486	3.77
2001	14,273	751	5.26
2002	15,736	1,187	7.54
2003	20,999	1,265	6.02
2004	18,750	1,653	8.81
2005	22,125	1,341	6.06
2006	28,334	1,580	5.58
2007	37,217	1,580	4.25
2008	51,581	1,580	3.06
2009e	47,000	---	

Source: World Bank, *Migration and development brief 11 (Nov- 2009)*

The peculiar picture which we capture in the trends and composition of remittances transfer shows that, the local withdrawals to the total remittances transfer which accounted about 50 percent in the first half of 1990s declined to 29 percent in the latter half (Table 10). However, since 2003-04 there has been relatively rising significance of the local withdrawal route in the total remittances transfer. The estimated local withdrawals in the total remittances during the year 2007-08 increased to 43.5% against the 42.8% during the same period last year.

¹⁷ RBI, Monthly Bulletin, April 2010

Table 10: Inflows and Outflows from NRI Deposits, Local Withdrawals and Remittances

Year	Inflows	Outflows	Local Withdrawals from NRI Deposits	Private Transfers (included in current Account of BoP)	Local Withdrawals as % of Private Transfers
1999-00	7,405	5,865	4,120	12,290	33.5
2000-01	8,988	6,672	4,727	13,065	36.2
2001-02	11,435	8,681	8,546	15,760	54.2
2002-03	10,214	7,236	6,644	17,189	38.6
2003-04	14,281	10,639	10,585	22,182	47.7
2004-05	8,071	9,035	8,907	21,075	42.3
2005-06	17,835	15,046	12,454	24,951	49.9
2006-07 (R)	19,914	15,593	13,208	30,835	42.8
2007-08 (PR)	29,401	29,222	18,919	43,506	43.5
2008-09(Apr-Sep) (P)	18,237	17,164	11,217	27,042	41.5
2007-08(Apr-Sep) (PR)	12,227	12,305	7,891	18,025	43.8

Source: *Invisibles in India's Balance of Payments: An Analysis of Trade in Services, Remittances and Income*, RBI, March-16, 2009.

Notes: P: Provisional, PR: Partially Revised and R: Revised

4. IMPACT OF REMITTANCES ON POVERTY IN DEVELOPING COUNTRIES: EMPIRICAL ANALYSIS

Very limited empirical literature exists on macro economic impact of remittance on poverty. However, recent cross-country studies are increasingly finding evidence of positive impact of remittances on reducing poverty. World Bank study by Adams and Page (2005) shows that, a 10% increase in per capita official international remittances will lead, on average to a 3.5% decline in the share of people living in poverty. Similarly, IMF (2007) study finds that on average, a 10% increase in the share of remittances in a country's GDP is associated with about a 1.5 % fall in headcount poverty and 1.1 % fall in poverty gap.

To estimate the impact of remittances on poverty in developing countries, a panel data is used for 77 developing countries for the period 1980-2008. In order to test whether impact of remittances share in GDP is stronger beyond a threshold level, a separate analysis is undertaken for 29 countries with remittances to GDP ratio higher than 5%. In order to assess the regional variations in the impact, further analysis is undertaken for 21 Asian developing countries, with remittances to GDP ratio higher than 5%.

Following Ravallion (1997) and Ravallion and Chen (1997) poverty is taken as a function of per capita income, some measure of income distribution, and the remittances to GDP ratio¹⁸. The baseline specification is

$$\text{Log (POV}_{it}) = \alpha_1 + \alpha_2 \log (\text{PCY}_{it}) + \alpha_3 \log (\text{INEQ}_{it}) + \alpha_4 \log (\text{REM}_{it}) + \varepsilon_{it} \dots\dots\dots(1)$$

(Where, $i = 1 \dots N$, $t = 1 \dots T_i$),

¹⁸ Similar model is estimated by IMF (2007).

Where POV_{it} is poverty measures in country i at time t ; α_1 captures fixed effects; PCY is per capita income; INEQ is income inequality as measured by the Gini index; and REM is remittances to GDP ratio

The model expects that poverty is reduced as per capita income rises; hence, α_2 is expected to be negative. Based on previous studies we expect higher poverty to be associated with greater income inequality; hence, α_3 is expected to be positive. Controlling for these two variables the model estimates the sign and magnitude of α_4 , which indicates the direct impact of share of remittances in GDP on poverty.

To measure poverty, three indicators are used- Poverty headcount ratio at \$1.25 a day (PPP) (% of population); Poverty gap at \$1.25 a day (PPP) (%); and Poverty gap at \$2 a day (PPP) (%). Poverty gap measures the mean distance below the poverty line as a proportion of the poverty line, and captures how poor the are poor, i.e., how far below the poverty line the average poor person's income is. Gini coefficient is used as a measure of inequality. Remittances are expressed as a ratio of the GDP of recipient countries. Per capita income variable used is per capita GDP in constant 2000 U.S. dollars. The log transformation of all the variables allows us to interpret the coefficients as elasticities.

Though some studies have estimated the impact of remittances on poverty estimating the above equation, the relationship between remittances and poverty may not be unidirectional. Higher poverty levels may lead to higher migration and therefore higher remittances. In order to take account of the endogeneity problem we estimate Three Stage Least Squares method and estimate two equations. Similar methodology is followed by IMF (2007).

The specification for the poverty equation is the same as in equation 1. Along with this equation, we also estimate an equation that captures determinants of remittances. Thus, the second equation estimated is remittances (REM) as a function of poverty (POV), trade openness (Trade to GDP ratio), Literacy levels and lagged remittances (Remt-1).

$$\text{Log (REM}_{it}) = \beta_1 + \beta_2 \log (\text{POV}_{it}) + \beta_3 \log (\text{TRADE}_{it}) + \beta_4 \log (\text{LIT}_{it}) + \beta_5 \log (\text{REMIT}_{it-1}) + \varepsilon_{it} \dots\dots\dots (2)$$

($i = 1 \dots N, t = 1 \dots T_i$),

To estimate the determinants of remittances, we use variables suggested by the literature on the motivation to migrate and remit. Since the data on migrants is limited, we do not use it directly. It is expected that higher levels of poverty will lead to more migration and higher remittances; therefore, β_2 is expected to be positive.

Trade openness, measured by trade to GDP ratio represents openness of the economy. The more open the economy the more easily the remittances may flow in and labour mobility may take place. Trade openness (β_3) is therefore expected to positively influence remittances. The sign of β_4 may be hypothetical depending on whether more educated migrate from the country or less educated migrate. Literacy levels are captured by literacy rate in adult total (% of people ages 15 and above). Lagged remittances are used to capture the dynamic impact.

The results of the Three Stage Least Squares model are reported in Table 11 to Table 13.

The analysis is first undertaken for all developing countries for which the data on remittances is available. We form an unbalanced panel data for 77 countries for the period 1980-2008. The three stage least squares estimation results show that remittances have a significant negative impact on poverty headcount ratio but the impact on other measures of poverty, like poverty gap and squared poverty gap, is not statistically significant (Table 11). Other variables like per capita GDP and inequality have the right signs and are found to be statistically significant. The impact of poverty on remittances is not found to be significant. Only lagged remittances is found to have statistically significant impact on remittances implying that the countries with higher remittances in the initial year, possibly indicating higher migrant stock, have higher remittances.

However, the results improve significantly when the analysis is undertaken for countries with remittances as a percentage of GDP of 5% or more (Table 12). These are 29 countries. Remittances are found to have significant impact on all three measures of poverty. With the given the level of GDP, a 10% increase in remittances reduce the poverty headcount ratio by about 3.1% and poverty gap by about 3- 5%, depending on how poverty gap is measured in developing countries with above 5% share of remittances in GDP. As expected, higher per capita GDP lowers poverty but higher inequality leads to higher poverty. These results indicate that remittances have stronger impact on poverty reduction if they are above the threshold of 5% of GDP of the country.

Table 11: Three Stage Least Squares Estimations: Dependent Variables- Poverty and Remittances (77 countries; 1980-2008).

VARIABLES	DEPENDENT VARIABLE- Poverty Headcount Ratio at \$1.25 a Day (PPP) (% of Population)		DEPENDENT VARIABLE- Poverty Gap at \$1.25 a Day (PPP) (%);		DEPENDENT VARIABLE- Poverty Gap at \$2 a Day (PPP) (%)	
	POVERTYHC	REMITTANC ES	POVERTY1	REMITTAN CES	POVERTY2	REMITTA NCES
Per capita GDP in constant 2000 U.S. dollars	-1.35*** (-18.86)		-1.54*** (-17.33)		-1.32*** (-16.83)	
Gini coefficient	1.09*** (4.09)		2.07*** (6.28)		1.43*** (4.87)	
Remittances as a ratio to GDP	-0.09** (-1.91)		-0.09 (-1.04)		-0.09 (-1.64)	
Lagged Remittances		0.89*** (22.66)		0.89*** (22.76)		0.89*** (22.67)
Poverty		0.01 0.31		0.02 0.48		0.01 (0.28)
Trade to GDP ratio		0.13** (1.94)		0.16 (1.27)		0.09 (0.77)
Literacy levels		-0.01 0.15		-0.01 -0.15		-0.01 (-0.13)
Constant	9.19*** (9.03)	-0.37 -0.47		-0.47 -0.71		-0.22 (-0.29)
Observations	264	264	264	264	244	244
Adj R Square	0.78	0.84	0.75	0.84	0.74	0.84
Chi 2	356.37***	550.31	305.21	554.32	284.42	549.23

Source: UNCTAD India Project estimation. The data source for the variables is World Development Indicators, 2009. Note: ** and *** represents the significance level at 5% and 10% level respectively

Table 12: Three Stage Least Squares Estimations: Dependent Variables- Poverty and Remittances (29 countries; 1980-2008)- Countries with Remittances as a Ratio of GDP as 5% or more

VARIABLES	DEPENDENT VARIABLE- Poverty Headcount Ratio at \$1.25 a Day (PPP) (% of Population)		DEPENDENT VARIABLE- Poverty Gap at \$1.25 a Day (PPP) (%);		DEPENDENT VARIABLE- Poverty Gap at \$2 a Day (PPP) (%)	
	POVERTYHC	REMITTANCES	POVERTY1	REMITTANCES	POVERTY2	REMITTANCES
Per capita GDP in constant 2000 U.S. dollars	-1.16*** (-8.68)		-1.21*** (-6.96)		-1.08*** (-7.36)	
Gini coefficient	2.95*** (9.22)		4.25*** (10.06)		2.97*** (8.30)	
Remittances as a ratio to GDP	-0.31*** (-2.82)		-0.31*** (-2.31)		-0.51*** (-4.36)	
Lagged Remittances		0.87*** (17.84)		0.87*** (18.35)		0.87*** (16.63)
Poverty		0.001 (0.03)		-0.01 (-0.62)		-0.02 (-0.59)
Trade to GDP ratio		0.10 (1.04)		0.10 (1.01)		0.07 (0.84)
Literacy levels		0.05 0.52		0.10 0.91		0.09 (0.86)
Constant	1.54 (0.92)	-0.32 -0.73		-0.49 (-1.10)		-0.31 (-0.71)
Observations	229	229	229	229	219	219
Adj R Square	0.78	0.87	0.75	0.84	0.71	0.87
Chi 2	248.39	472.96	305.21	554.32	164.67	440.51

Source: UNCTAD India Project estimation. The data source for the variables is World Development Indicators, 2009.

Note: ** and *** represents the significance level at 5% and 10% level respectively

Table 13 reports the results of impact of remittances on poverty reduction in Asian developing countries (21 countries), which have remittances to GDP ratio of 5% or more. The results show that remittances have a stronger impact on poverty headcount ratio in Asian developing countries. On an average, with the given GDP levels, a 10% rise in remittances will lead to reduction of 3.9% in poverty headcount ratio and around 3 - 3.5% in poverty gap in Asian developing countries which have above 5% share of remittances in GDP.

Table 13: Three Stage Least Squares Estimations: Dependent Variables- Poverty and Remittances (Asian Developing countries with Remittances to GDP ratio of 5% or above; 1980-

VARIABLES	DEPENDENT VARIABLE- Poverty Headcount Ratio at \$1.25 a Day (PPP) (% of Population)		DEPENDENT VARIABLE- Poverty Gap at \$1.25 a Day (PPP) (%);		DEPENDENT VARIABLE- Poverty Gap at \$2 a Day (PPP) (%)	
	POVERTYHC	REMITTAN CES	POVERTY1	REMITTAN CES	POVERTY2	REMITTAN CES
Per capita GDP in constant 2000 U.S. dollars	-0.94*** (-6.47)		-1.96*** (-8.71)		-1.54*** (-5.54)	
Gini coefficient	2.91*** (8.55)		4.17*** (6.67)		2.03*** (2.66)	
Remittances as a ratio to GDP	-0.39*** (-2.66)		-0.30*** (-2.32)		-0.35*** (-2.20)	
Lagged Remittances		0.79*** (12.44)		0.99*** (18.16)		0.97*** (17.20)
Poverty		-0.01 (-0.38)		-0.006 (-0.23)		-0.01 (-0.41)
Trade to GDP ratio		0.06 (0.53)		0.02 (0.22)		0.06 (0.63)
Literacy levels		-0.03 (-0.22)		0.10 (1.03)		0.09 (0.32)
Constant	0.02 (0.02)	-0.32 -0.73	1.86 (0.58)	-0.49 (-1.25)		-0.57 (-1.41)
Observations	145	145	145	145	124	124
Adj R Square	0.78	0.81	0.89	0.96	0.75	0.96
Chi 2	169.86	208.96	211.91	607.17	174..7	601.53

Source: UNCTAD India Project estimation. The data source for the variables is World Development Indicators, 2009.

Note: ** and *** represents the significance level at 5% and 10% level respectively

The empirical results indicate that the poverty reducing elasticity of remittances is higher for Asian developing countries where share of remittances is greater than 5% of GDP as compared to all developing countries with 5% or more share of remittances in GDP.

5. IMPACT OF REMITTANCES ON POVERTY IN INDIA

Literature reveals that in the poor countries remittances can greatly help in reduction of poverty. The results of the earlier section show that remittances can reduce poverty in the developing countries, especially Asian developing countries, the result being stronger in those countries where remittances are above 5% of GDP.

In case of India, remittances have steadily grown as a percentage of GDP. It increased from less than 1% in 1990 to 2.8% in 2000 and further to 6.2% in 2008 (Figure 2).

Figure 2: Remittances as a Share of GDP in India: 1973-2008

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This indicates that remittances may have had an impact in removing people out of poverty over time in India. Given the limited comparable data on poverty indicators for India¹⁹, the poverty ratio with respect to national poverty line is used. The existing trends on poverty indicators reveal that, there has been a fall in poverty ratio in India from 54.9% in 1973-74 to 19.3% in 2006-07 (Table 14). To capture the extent of inequality, Lorenz ratio is used, as reported by Ministry of Rural Development, Government of India (10895) (INDIASTAT). Lorenz ratio is estimated from NSS consumption expenditure distribution of the respective years.

With respect to India, estimates of poverty and inequality indicators are available only after a gap of some years. However, to estimate the impact of share of remittances in GDP on poverty, we assume that the decline in poverty and inequality levels is equally distributed between the gap years.

Table 14: Poverty Ratio in India:1973-74 to 2006-07

Indices of Poverty and Inequality in terms of Poverty Ratio & Lorenz Ratio in India (1973-1974, 1977-1978, 1983-1984, 1987-1988 ,1993-1994 and 2004-05)			
Year	Poverty Ratio	Lorenz Ratio	
	Total	Rural	Urban
1973-74	54.9	0.27	0.301
1977-78	51.3	0.33	0.345
1983-84	44.5	0.29	0.33
1987-88	38.9	0.29	0.354
1993-94	36	0.28	0.339
1999-2000	26.1		
2004-05		0.3	0.376
2006-07	19.3		

Source: Ministry of Rural Development, Government of India (10895), INDIASTAT

5.1. Testing the Causality between Remittances and Poverty Indicators

Impact of remittances as a share of GDP on poverty indicators is undertaken by estimating equation 1, as reported in section 4, for the period 1973-74 to 2006-07.

$$\text{Log (POV}_{it}) = \alpha_1 + \alpha_2 \text{ log (PCY}_{it}) + \alpha_3 \text{ log (INEQ}_{it}) + \alpha_4 \text{ log (REM}_{it}) + \varepsilon_{it} \dots\dots\dots(1)$$

(Where, i = 1.....N, t = 1....T_i),

Where POV_{it} is poverty ratio in India at time t; α₁ is the intercept; PCY is per capita income; INEQ is income inequality as measured by the Lorenz ratio; and REM is remittances to GDP ratio. Given low number of observations, three-stage Least Squares

¹⁹ World Development indicators, World Bank have very few observations for India.

may not be right to estimate. To have indicative results, only equation 1 is estimated. The results are reported in Table 15.

Table 15: Time Series Estimates: Dependent Variables- Remittances as a Share of GDP in India; 1973-2005)

Independent Variables	DEPENDENT VARIABLE- Poverty Headcount Ratio at \$1.25 a Day (PPP) (% of Population)
Remittances as a Share of GDP	-0.17*** (-6.52)
Lorenz Ratio	1.20*** (7.76)
Per Capita Income (PCY)	-0.23** (-2.23)
Constant	6.95*** (16.43)
Observations	32
Chi 2	1615.87

Source: UNCTAD India Project estimation. The data source for the variables is World Development Indicators, 2009.

The results show that in India, remittances have a negative impact on poverty ratio, as defined by National Poverty Line. A 10% increase in remittances as a share of GDP will lead to a fall of 1.7% in poverty ratio. This is much lower than the impact estimated for the developing countries and for the Asian developing countries. As expected, inequality is found to be positively associated with poverty ratio, while higher per capita income reduces poverty ratio. However, these results should be taken only as indicative due to the paucity of data on poverty ratio and the assumption adopted thereby.

Given the limitations of the above methodology, we undertake Granger causality tests between remittances and some indicators of poverty, e.g., private consumption expenditure, gross fixed capital formation (GFCF) and personal disposable income. In order to do this, we need to perform the standard stationarity tests. The prime purpose of these tests is to avoid any spurious result. The results of stationarity tests are reported in Appendix 1.

5.2. Granger Causality Test

For the period 1970-71 to 2007-08, the Granger Causality test (1969) is used to find out if the change in remittances causes change in poverty related indicators like per capita income, private consumption expenditure, gross fixed capital formation (GFCG) and personal disposable income. Given the lag with which poverty estimates are made available for India, a direct Granger causality test between remittances and poverty ratio is not undertaken.

The main idea of causality is quite simple, if A causes B, then changes in A should precede changes in B (Pindyck and Rubinfeld, 1998). To show this, the Granger causality

test critically depends on the number of lagged terms introduced in the model. The results of the test are presented in Table 16. In each case the null hypothesis is that the remittances does not (Granger) cause the explanatory variables, which are private final consumption expenditure, GFCF and Personal Disposable income and vice versa.

Table 16: Pair wise Granger Causality between the Remittances and other Macro Variables

Direction of Causality/ Null Hypothesis	Number of Lags	Observations (No. of years)	F- Value	Significance	Decision
Remittances Does not granger cause PCY	2	34	3.379	Sign at 5%	Reject
PCY does not Granger Cause Remittances	2	34	3.413	Sign at 5%	Reject
Remittance does not Granger Causes Pvt. Consumption Expenditure	2	34	3.379	Sign. At 5%	Reject
Pvt. Consumption Expenditure does not Granger Causes Remittances	2	34	3.413	Sign. At 5%	Reject
GFCF Does not Granger Cause Remittances	4	31	1.40	Not Sign	Do Not Reject
Remittance does not Granger Causes GFCF	4	31	2.267	Sign at 10%.	Reject
Disposable Income Does not Granger Cause Remittances	2	34	4.674	Sign at 5%	Reject
Remittance does not Granger Causes Pvt. Final Consumption Exp.	2	34	4.052	Sign at 5%	Reject

Source: UNCTAD India Project estimation

The bi-directional results suggest that remittances Granger causes per capita income. This implies that as remittances rise it (granger) causes per capita incomes to rise. Results also show that remittances granger cause private consumption expenditure and personal disposable income at two years lags, while it Granger causes GFCF with four years lag. These results indicate that remittances lead to an increase in per capita income, personal disposable incomes, private consumption expenditures, and private investments. However, this impact may occur after a lag of 2 to 4 years. Rise in per capita income, private disposable incomes, private consumption expenditures and private investments are indicative of decline in poverty ratio. Since remittances directly reach the poor, the probability of remittances improving the living standards of poor and pulling them out of poverty is high.

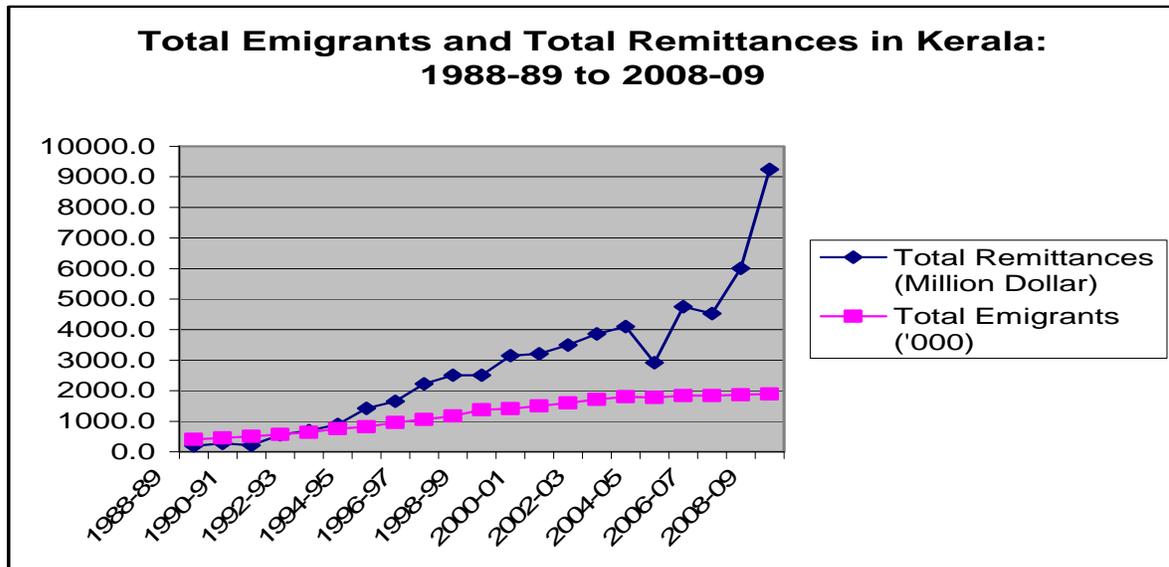
Thus, these results together strongly indicate that remittances has had an impact on reducing poverty in India. GFCF does not Granger cause remittances while per capita income, private consumption expenditure and personal disposable income Granger cause remittances. This is indicative of two-way relationship between remittances and poverty.

Given the paucity of data, though a direct relationship could not be established between remittances and poverty, the results do indicate that remittances have contributed significantly to poverty reducing indicators in India.

6. IMPACT OF REMITTANCES ON POVERTY IN KERALA

Kerala is one of the top remittance receiving states of India. In 2008-09, 20% of total emigrants from India were from Kerala. The state has witnessed a steadily growing trend in terms of emigrants (Figure 3). However, the growth in inward remittances is much higher than the growth in emigrants. This indicates that more remittances are being sent per emigrant over time.

Figure 3: Trends in Emigrants and Remittances in Kerala: 1988-89 to 2008-09



Source: Total emigrants till 2002 is taken from "Gulf Revisited Sept. 2004", CDS working paper no= 363 and the year after that is derived by adding the number of emigrants clearance data given by Ministry of Overseas Indian Affairs.

The movement of Keralites to almost all countries in the world has received much attention by the economists and the planners ever since large-scale emigration to the Gulf countries began in 1970's as a consequent of oil boom. Though it would be interesting to examine the reasons for such high migration from this state and the rise in per capita remittances, we concentrate on the overall impact of remittances on the poverty indicators in the state.

Around 20% of total officially recorded remittances in India are received by Kerala. Many studies have pointed out that the dependence of people on remittances is very high in Kerala (e.g. Kannan and Hari, 2002). In absolute terms, while the per capita Net State Domestic Product (NSDP) rose by two times in the last two decades (1988 to 2008), the per capita remittances increased nearly 6 times during the same period. Comparison of

remittances received by Kerala with all India shows that the trend growth of remittances during the period 1988-2008 registered 18.2 % in Kerala as compared to 15.7 % for All India

Remittances also seem to affect per capita consumption directly. This can be supported on the grounds that the per-capita consumption in Kerala since 1977-78 has grown much faster as compared to the national average without a corresponding increase in income. During the period 1988 to 2008 Kerala has witnessed an increase in annual average per-capita NSDP by 5.8% against 14.7 % increase of per capita remittances. At more disaggregate level, during 1990s the growth of remittances was much faster than the growth of Kerala's NSDP. The same holds true during the post 1990s too.

To assess the impact of remittances on poverty and its indicators in Kerala we undertake Granger causality tests between remittances and per capita income and private consumption expenditure in Kerala. Given the paucity of data with respect to poverty ratio in the state (which is available with very long gaps) the direct relationship cannot be tested.

6.1. Causality between Remittances and Poverty Related Indicators in Kerala

Looking at high migration from Kerala over the last few decades, this section empirically estimates the impact of remittances on some key variables that affect poverty, namely per capita income and private consumption expenditure in the state.

Using Granger Causality test we attempt to analyse, how the remittances granger cause poverty related indicators in the period 1990-2008. However, the limitation of the analysis is the low number of observations, which is 14 years. As explained earlier, this test critically depends on the number of lagged terms introduced in the model. The result is presented in Table 17. The null hypothesis considered is that remittances does not Granger cause the explanatory variables and vice versa.

Table 17: Pair wise Granger Causality between the Remittances and some Poverty Related Indicators in Kerala

Direction of Causality/ Null Hypothesis	Number of Lags	Observations (No. of years)	F- Value	Significance	Decision
Remittance does not Granger Causes Per capita NSDP	4	14	27.883	Sign at 5%	Reject
Per capita NSDP Does not Granger Cause Remittances	4	14	7.101	Not Sign	Do Not Reject
Remittance does not Granger Causes GFCF	2	13	4.669	Sign. At 5%	Reject

GFCF does not Granger Causes Remittances	2	13	0.903	Not Sign.	Do not Reject
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Source: UNCTAD India Project estimation from the dataset

The results show that remittances granger cause per capita income in the state. The results also show that per capita income does not granger cause remittances. This result is similar to that arrived for remittances and per capita income at All India level. Undertaking the test for remittances and gross fixed capital formation (GFCF), it is found that remittances granger cause GFCF while GFCF does not Granger cause remittances. The results therefore indicate that higher remittances in Kerala have led to higher per capita income and higher investments. These indicators are closely linked with poverty. Similar results are found by other studies on Kerala. For example, Srivastava (2003) highlighted that in Kerala remittances constituted 21% of state income in the 1990s. This flow appears to have increased wealth; although the average per capita consumption in Kerala was below the national average until 1978–79, by 1999–2000 consumer expenditure in Kerala exceeded the national average by around 41%.

Empirical evidence therefore suggests that remittances have played a significant role in Kerala’s economy by increasing per capita income and investments and to that extent may have contributed in reducing poverty levels.

7. CONCLUSIONS AND POLICY RECOMMENDATIONS

The benefits of remittances, as private financial flows to households in developing countries, are well documented in the literature. Remittances are more stable and predictable as compared to other financial flows and more importantly, they are counter-cyclical providing buffer against economic shocks. In conflict or post–conflict situations, remittances can be crucial to survival, sustenance, rehabilitation, and reconstruction. In providing primarily for household livelihoods, remittances are spent on general consumption items in local communities that contribute to local economies by supporting small businesses. A fair share of these expenditures is directed to the construction of homes, health care and education, alongside savings in financial institutions, thereby generating employment in these critical services sectors. Moreover, in contributing to foreign exchange earnings, remittances can spur economic growth by improving sending countries’ creditworthiness and expanding their access to international capital markets. Remittances represent one of the largest sources of external private finance for developing countries. However, the impact of remittances on poverty has led to a considerable debate. Studies that argue against remittances having poverty reducing effect, point out that given the high transaction costs of migrating, ‘truly poor’ do not migrate. While this argument has some merit, it has little evidential support as a stream of studies from different countries has shown that ‘very poor’ and ‘poor’ do migrate²⁰. Further, the average annual growth of remittances to low income countries in the period 2004-2008 was 22%, which was higher than to middle-income countries (18.9%).

²⁰ Sabates Wheeler, Sabates and Castaldo (2005);

Apart from the debate on whether poor migrate or not, there is a growing debate, with little empirical evidence, on whether remittances is able to effectively reduce poverty levels in the recipient country or not. To address this issue, this study empirically estimates the impact of share of remittances in GDP in 77 developing countries on three measures of poverty, namely Poverty Headcount Ratio at \$1.25 a day; Poverty Gap (at \$ 1.25 a day); and Poverty Gap (at \$ 2 a day). Similar analysis is undertaken for Asian developing countries with more than 5% share of remittances in their GDP. Case study on India, which was top recipient of remittances in 2008, has been undertaken and impact of remittances on poverty measures has been estimated. Further, the impact of remittances on poverty, in top remittances receiving state of India, namely Kerala, has also been estimated.

The results of the study, using data of 77 developing countries; 29 developing and 21 Asian developing countries with remittances greater than 5% of GDP, consistently show that remittances significantly reduce poverty in recipient countries but the results are more reliable for countries with remittances greater than 5% of GDP. For the given level of GDP, a 10% average increase in remittances is found to reduce the poverty headcount ratio by about 3.1% and poverty gap by about 3- 5% in developing countries, depending on how poverty gap is measured. On an average, for the given level of GDP, a 10% rise in remittances leads to a reduction of 3.9% in poverty headcount ratio and around 3-3.5% reduction in poverty gap in developing countries which have above 5% share of remittances in GDP.

With respect to India, empirical estimates show that a 10% rise in remittances as a share of GDP leads to 1.7% reduction in poverty ratio. The Granger causality tests indicate that remittances have affected some key variables that are directly linked with poverty. These are per capita income, private consumption expenditure, personal disposable income and gross fixed capital formation or investments. For Kerala, (where remittances constitute 21% of state domestic product), Granger causality tests show that remittances Granger cause rise in per capita income and investments.

Though the empirical evidence indicates that remittances can reduce poverty in the recipient countries, but what makes remittances work for poverty reduction is not clear. There are many factors affecting this channel. To begin with, remittances are a function of the numbers of migrants, the amount of money they earn, and their propensity to remit. However, migrants may have large propensity to remit but the home and host country policies may not be conducive to remittances. Even if the policies are conducive, due to absence of appropriate channels of sending remittances, these may reach the poor only after a long gap (when the migrant decides to carry the remittances personally or sent it through someone). This may not be very effective in terms of reducing poverty. Even if poor receive the remittances, proper use of remittances is important for sustainable reduction in poverty.

Given the number of facilitating factors required for remittances to work for poor, it is unlikely for it to happen on its own. Sustained policy intervention at each stage is

required. To begin with, migration has to be accepted as a win-win situation by origin and destination countries. The contribution of migration to development and towards the achievement of MDGs has become significant as flows and the stock of global migrants continue to rise. Migration contributes to economic growth and development by serving as a channel for remittances, the transfer of skills and ideas, and the establishment of commercial and cultural networks. Migrants contribute to the development of home country in a number of ways including remittances and to development of host country by filling the labour demand and supply gap. It is therefore important to view migration as pro-development by all. Maximizing the benefits and minimizing the costs associated with migration are central national and international policy challenges, and this is particularly the case at the time of the global crisis and the nascent recovery. Progress is needed at the national and international levels – bilateral, regional and multilateral – including between sending, transit and receiving countries, in promoting greater labour mobility that better manage migration flows and promote circular migration to help prevent brain drain and maximize the benefits of temporary migration.²¹

Higher social security of migrants is likely to increase their propensity to remit. However, a substantial part of remittances depends on informal channels like physical carriage by trustworthy relatives, friends, or migrants themselves. Reasons for preferring informal channels for remittances include considerations of cost, speed, ease of making and receiving the transfer, coverage within the home country, and greater confidence and trust in the service provided. However, these channels are slow, cumbersome, costly, and not entirely risk free. The ability to remit money at one node of an existing national network and receiving the money at another node can make huge difference in improving the cost efficiency and ease of sending remittances. National networks like post offices, which are present throughout the country, in both origin and destination countries, can be used and special networks can be developed for remittances.

A key area worth exploring for encouraging remittances is the development potential of migrant diasporas²². Almost all developing countries, including very poor ones, have diasporas, where the members of diasporas are spread out in different countries, pursuing different occupations. Diaspora communities can be involved in discussions especially on temporary movement of persons in regard to recruitment, remittances and return such as on encouragement and settlement of migrants; voluntary remittance schemes; and sustainable return and possible investment of remittances. Also, policy interventions - through national policies and international cooperative mechanisms can be critical in increasing beneficial effects of temporary migration and associated remittances.

It is important for the governments of both origin and destination countries to facilitate easy and speedy flow of remittances. Special schemes can be devised for this purpose along with financial instruments targeted at overseas migrant workers. The International Development Committee (2003-04) has outlined a number of schemes offered by

²¹ UNCTAD, 2009b.

²² Diaspora may be defined as people sharing a common origin (country, ethnic group, or area within a country) who are dispersed amongst diverse destinations outside their home country (Nyberg, *et al.*, 2002a)

different developing countries to encourage remittances. Some of these schemes include, higher interest rates for foreign currency accounts like those offered by India, Pakistan and Bangladesh; “three plus one” matching funds scheme offered by the Zacatecas State Government in Mexico in which every dollar remitted by a Mexican migrant worker to their Home Town Association is matched with three more, one from the municipality, one from the state, and one from the federal government; and use of bonds issued with future flows of migrants’ remittances used as collateral as done by Brazil.

Efforts to increase the volume of remittances should also be supported by efforts in channeling the remittances to more productive uses for sustainable reduction in poverty. Apart from providing food security to the households, if remittances are used for improving skills and productivity of the recipients they will have more sustainable impact on improvements of standard of living. Families receiving remittances should be allowed to use future remittances as collateral for procuring loans for education, house building or other activities like procuring fertilizers, machinery, etc for farms.

References:

1. Adams, Jr., Richard. (2005) "Remittances, Selection Bias and Poverty in Guatemala." Unpublished Manuscript. World Bank, Washington, DC.
2. Adams, Jr., Richard. (2005a) "Remittances, Household Expenditure and Investment in Guatemala." Policy Research Working Paper 3532. World Bank, Washington, DC.
3. Adelman, Irma, and J. Edward Taylor. 1990. "Is Structural Adjustment with a Human Face Possible? The Case of Mexico." *Journal of Development Studies*. 26(3): 387-407.
4. Chami, Ralph, Adolfo Barajas, Thomas Cosimano, Connel Fullenkamp, Michael Gapsen, and Peter Montiel, (2008), *Macroeconomic Consequences of Remittances*, IMF Occasional Paper No. 259 (Washington: International Monetary Fund).
5. Chami, Ralph, Connel Fullenkamp, and Samir Jahjah. 2005. "Are Immigrant Remittance Flows a Source of Capital for Development." *IMF Staff Papers*. Vol 52. No1.
6. Dean Yang, 2004. "International Migration, Human Capital, and Entrepreneurship: Evidence from Philippine Migrants' Exchange Rate Shocks," Working Papers 531, Research Seminar in International Economics, University of Michigan.
7. Durand, Jorge, Emilio A. Parrado, and Douglas S. Massey, 1996, "Migradollars and Development: A Reconsideration of the Mexican Case." *International Migration Review*, Vol. 30, No. 2, pp. 423-44
8. Ekanayake, E.M., Halkides, Mihalis (2008) "Do remittances and foreign direct investment promote growth? Evidence from developing countries". *Journal of International Business and Economics*, Jan-1.
9. Faini, Riccardo, 2002. "Development, Trade, and Migration," *Revue d'Économie et du Développement*, proceedings from the ABCDE Europe Conference, 1-2, pp. 85-116.
10. Faini, Riccardo, 2003. "The Brain Drain: An Unmitigated Blessing?". Centro Studi Luca d'Agliano Development Studies Working Paper No. 173.
11. Gupta, Punam (2005) *Macroeconomic Determinants of Remittances: Evidence from India* IMF Working Paper, WP/05/224, December.
12. Lopez Cordova, J. Ernesto (2005) *Globalization, Migration, and Development: The Role of Mexican Migrant Remittances*, *Economía - Volume 6, Number 1*, pp. 217-256.
13. Mani, Sunil (2009) *High Skilled Migration from India, an Analysis of Its Economic Implications*, September, Working Paper No- 416, (www.cds.edu).
14. Mashayekhi, Mina (2009) *Contribution of migrants to development: Trade, investment and development linkages* (powerpoint presentation to the Ad-hoc Expert meeting on "Contribution of Migrants to Development: Trade, Investment and Development Linkages" Geneva, 29 July 2009).
15. McCormick, Barry and Jackline Wahba (2001), "Overseas work experiences, Saving and Entrepreneurship Amongst Return Migrants to LCDs" *Scottish Journal of Political Economy*, 48, 164-178.

16. Nagaraj (2003), FDI in India in the 1990's: Trends and Issues, Economic and Political Weekly, April 26, 2003.
17. Pant Bhubanesh (2008) "Mobilizing Remittances for Productive Use: A Policy-oriented Approach, Nepal Rastra Bank, working paper Serial Number: NRB/WP/4, Dec 2008.
18. Chami, Ralph et al (2008) "Macroeconomic Consequences of Remittances", International Monetary Fund, Occasional Paper, 259.
19. Hatton, T. and J. Williamson (1998) "*The age of mass migration: Causes and economic impact*", Oxford University Press, New York.
20. Massy, D (1988), "International Migration and Economic Development in comparative Perspectives," Population and Development Review 14: 383-414.
21. Chami, Ralph, Connel Fullenkamp and Samir Jahjah (2003). "Are Immigrant Remittance Flows a Source of Capital for Development?" International Monetary Fund (IMF) Working Paper 03/189. Washington, DC.
22. Bouhga-Hagbe, Jacques (2004), "A theory of workers remittance with an application to Morocco," IMF Working Paper No 04/194 (Washington D.C.)
23. Rajan, Raghuram G and Arvind Subramanyam (2005), "What Undermines Growth Impact on Growth?" IMF Working Paper No. 05/126 (Washington D.C.).
24. Frank, Robert. (2001) "Philippine Town Plies a Road to Riches via Monthly Stipends: But are Pozorrubians turning into Slakers as Relatives Abroad Send Home Cash?" Wall Street Journal, May 22.
25. Rodriguez E.R and Tiongson E.R (2001). Temporary migration overseas and household labour supply: evidence from urban Philippines. *International Migration Review*, 35:3.
26. Stahl, C. (1982), 'Labour Emigration and Economic Development', *International Migration Review*, Vol. 16: 868-99.
27. IMF (2005) *World Economic Outlook*, International Monetary Fund, Washington DC.
28. UNCTAD (2008), UNCTAD XII: Accra Accord (United Nations, New York and Geneva).
29. UNCTAD (2009a), Contribution of migrants to development: trade, investment and development linkages.
30. UNCTAD (2009b), Report of the Ad-hoc expert meeting on contribution of migrants to development: trade, investment and development linkages, Palais des Nations, 29 July 2009.
31. Adams, R and J. Page (2005), 'Do International Migration and Remittances Reduce Poverty in Developing Countries?', *World Development*, Vol. 33 (10): 1645-69.
32. Hoti Erudita (2009) Remittances and Poverty in Albania. Nationalekonomiska Institutionen Vid Lunds Universitet Minor Field Study Series No. 192, April.
33. Rapoport, Hillel and Frederic Docquier (2006) "The Economics of Migrants' Remittances", pp. 1135-1199 in S.C. Kolm and J.M. Ythier (eds.) *Handbook of the Economics of Giving, Altruism and Reciprocity: Volume 2*, North-Holland: Amsterdam.
34. Hildebrandt, Nicole and David McKenzie (2005) "The effects of migration on child health in Mexico", *Economica*, 6(1): 257-289.

35. Yang, D. (2003) "Financing constraints, economic shocks, and international labor migration: Understanding the departure and return of Philippine overseas workers." Harvard University, dissertation chapter.
36. Woodruff, C., and R. Zenteno. (2001), "Remittances and Micro-enterprises in Mexico. In *Global Economic Prospects*. Washington, DC: World Bank.
37. Ratha, Dilip, (2003), "Workers' Remittances: An Important and Stable Source of External Development Finance," in *Global Development Finance 2003*, (Washington: World Bank).
38. Report of the working group On cost of NRI remittances (2006), RBI, May.
39. Rivera Campos and Anabella Lardé de Palomo (2002) "Invirtamos en Educación para Desafiar el Crecimiento Económico y la Pobreza," Fundación Salvadoreña para el Desarrollo Económico y Social, San Salvador (May).
40. Singh, Bhupal (2006) Cross-border workers' remittances: Transmission channels and measurement issues in India. International Monetary Fund (<http://mpr.ub.uni-muenchen.de/12145/> MPR Paper No. 12145).
41. Spatafora, Nikola. 2005. "Two Current Issues Facing Developing Countries." In World economic outlook: a survey by the staff of the International Monetary Fund. Chapter Two.
42. Taylor, J. Edgar, Jorge Mora and Richard Adams, 2005. "Remittances, inequality and Poverty: Evidence from Rural Mexico." Unpublished Manuscript. University of California, Davis, CA, USA.
43. "International Migration 2002", United Nations population Division, October, 2002.
44. Kannan K. P. and Hari (2002) "KERALA'S GULF CONNECTION Emigration, Remittances and their Macroeconomic Impact 1972-2000", Working Paper No. 328, CDS, Kerala, March.
45. Working Paper No. 297, *Impact of Migration on Kerala's Economy and Society*, July 1999, published in International Migration, Vol. 39, No.1, pp. 63-88.

APPENDIX 1

Using time series data from 1973-74 to 2007-08, the unit root test is undertaken to examine the stationarity of the dataset. The stationarity of variables such as, remittances, GDP, poverty ratio, GFCF, personal disposable income and private final consumption expenditure has been checked for the available 28 years dataset. For the said purpose the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test is used. The ADF is conducted by adding the lagged values of the dependent variables. The idea is to include enough lag terms so that the error term in the equation is serially uncorrelated. Here, while testing the ADF and the PP test the null and the alternative hypothesis is that, when $b_0 = 0$, the series is non stationary and when $b_0 < 0$ then the series is stationary.

The ADF test is obtained by using the following format of the equation

$$\delta x_t = a_0 + b_0 x_{t-1} + \sum_{i=1}^k C_0 \delta x_{t-1} + w_t$$

Where, δ is the difference operator, a_0 , b_0 and c_0 are the coefficient to be estimated, x is the variables whose time series operators are examined and w is the white noise error term. The results are reported in following tables.

Appendix-1.1: Stationary test of the following Variables: ADF Test and Phillips Perron (Kerala)

Variables	Aug. Dickey Fuller Test		Remarks
		t- statistics	
Per Capita NSDP	ADF test Statistics	-4.522***	Per Capita NSDP was not stationary at level and first difference. It is observed stationary at second difference
	1% Level	-3.887	
	5% Level	-3.052	
	10 % Level	-2.667	
Remittances	ADF test Statistics	-4.299**	Remittances were found stationary at level.
	1% Level	-4.533	
	5% Level	-3.674	
	10 % Level	-3.277	
Per Capita NSDP	Phillips Perron Test		Per Capita NSDP was not stationary at level and first difference. It is observed stationary at second difference
	Phil. P Statistics	-18.567***	
	1% Level	-3.959	
	5% Level	-3.081	
	10 % Level	-2.681	
Remittances	Phil. P Statistics	-4.299**	Remittances were found stationary at level.
	1% Level	-4.533	
	5% Level	-3.674	
	10 % Level	-3.277	

Appendix-1.2. Stationary test of the following Variables: ADF Test (All India)

Variables	Aug. Dickey Fuller Test		Remarks
		t- statistics	
Remittances	ADF test Statistics	-8.2695***	FDI was not stationary at level, first difference. It is observed stationary at second difference
	1% Level	-4.3561	
	5% Level	-3.595	

	10 % Level	-3.2335	
GDP	ADF test Statistics	-3.3917*	GDP was not stationary at level, but observed stationary at first difference.
	1% Level	-4.324	
	5% Level	-3.5806	
	10 % Level	-3.2253	
GFCF	ADF test Statistics	-6.3119***	GFCF was not stationary at level, first difference. It is observed stationary at second difference
	1% Level	-4.3561	
	5% Level	-3.595	
	10 % Level	-3.2335	
Disp. Income	ADF test Statistics	-5.8736***	Disposable Income was not stationary at level, first difference. It is observed stationary at second difference
	1% Level	-4.3743	
	5% Level	-3.6032	
	10 % Level	-3.2381	
Pvt. Final Consumption Exp	ADF test Statistics	-4.4596***	Disposable Income was not stationary at level but it found stationary at first difference.
	1% Level	-4.3393	
	5% Level	-3.5875	
	10 % Level	-3.2292	

Note: * and *** represents the significance level at 10 and 1 percentage level.

Interestingly all the variables under consideration are found non-stationary at levels. In other words, it shows that the past results cannot be used to predict future results of any variables. This is because the non-stationary in the data reveals that the mean and the variance do not remain constant over time. However, the variables such as GDP and Private final consumption expenditure are found stationary when they are first differenced, whereas all other variables become stationary at second difference. The level of significance for ADF statistics for all variables is at one percentage level except the exception of GDP (at 10 percent level). Table 2.2 reports results of Phillips-Perron (PP) test.

Appendix-1.3. Stationary test of the following Variables: Phillips- Perron Test (All India)

Variables	Phillips-Perron		Remarks
	Phil-Perron test Stat	t- statistics	
Remittances	Phil-Perron test Stat	-8.8452***	FDI was not stationary at level, first difference. It is observed stationary at second difference
	1% Level	-4.3561	
	5% Level	-3.595	
	10 % Level	-3.2335	
GDP	Phil-Perron test Stat	-3.37*	GDP was not stationary at level, but observed stationary at first difference.
	1% Level	-4.324	
	5% Level	-3.5806	
	10 % Level	-3.2253	
GFCF	Phil-Perron test Stat	-6.6006***	GFCF was not stationary at level, first difference. It is

	1% Level	-4.3561	observed stationary at second difference
	5% Level	-3.595	
	10 % Level	-3.2335	
Disp. Income	Phil-Perron test Stat	-4.5374***	Disposable Income was not stationary at level but it found stationary at first difference.
	1% Level	-4.3393	
	5% Level	-3.5875	
	10 % Level	-3.2292	
Pvt Final Consumption Exp	Phil-Perron test Stat	-4.4997***	Disposable Income was not stationary at level but it found stationary at first difference.
	1% Level	-4.3393	
	5% Level	-3.5875	
	10 % Level	-3.2292	

Note: * and *** represents the significance level at 10 and 1 percentage level.

The results show that, on using the Phillips-Perron (PP) test the variables such as GDP, Personal disposable income and Private final consumption expenditure are found stationary when they are first differenced, whereas other variables become stationary at second difference.