

# **RELATIONSHIP BETWEEN REMITTANCES AND HDI IN SAARC COUNTRIES**

**A thesis**

Submitted to the

Central Department of Economics

Faculty of Humanities and Social Sciences

Tribhuvan University, Kirtipur, Kathmandu, Nepal

in Partial Fulfillment of the Requirements of the Degree of

**MASTER OF ARTS**

**in**

**ECONOMICS**

**By**

**Nabin Neupane**

Roll No: 32/074

TU Regd. No.: 6-2-0040-0044-2013

Central Department of Economics

Kirtipur, Kathmandu, Nepal

October 2020

## DECLARATION

I, NABIN NEUPANE, declare that this is my own original work except where otherwise indicated or acknowledged in the thesis. The thesis doesn't contain materials which has been accepted or submitted for any other degree at the University or other institution.

.....

Nabin Neupane

Roll No: 32/074

Reg. No: 6-2-0040-0044-2013

Central Department of Economics

Kirtipur, Kathmandu, Nepal

Date: 2077/06/16

(October 2, 2020)

## LETTER OF RECOMMENDATION

This thesis entitled “RELATIONSHIP BETWEEN REMITTANCES AND HDI IN SAARC COUNTRIES” has been prepared by MR. NABIN NEUPANE under my guidance and supervision. I hereby recommend this thesis for examination by thesis committee as a partial fulfillment of the requirements for the Degree of MASTER OF ARTS IN ECONOMICS.

.....  
Asst. Prof. Naveen Adhikari

Thesis Supervisor

Date: 2077/06/16

(October 2, 2020)

## APPROVAL LETTER

This is to certify that the thesis entitled “RELATIONSHIP BETWEEN REMITTANCES AND HDI IN SAARC COUNTRIES” submitted by MR. NABIN NEUPANE to the Central Department of Economics, Faculty of Humanities and Social Science, Tribhuvan University, in partial fulfillment of the requirements for the Degree of MASTER OF ARTS IN ECONOMICS has been found satisfactory in Scope and quality. Therefore, we accept this thesis as a part of the degree.

### Thesis Committee:

.....  
Prof. Sohan Kumar Karna, Ph.D.  
Head of the Department

.....  
Assoc. Prof. Binod Joshi, Ph.D.  
External Examiner

.....  
Asst. Prof. Naveen Adhikari  
Thesis Supervisor

Date: 2077/06/27  
(October 13, 2020)

## ACKNOWLEDGEMENT

I would like to acknowledge and appreciate all sorts of help and support that I received from several people and the organizations through formal and informal channel in the path of my study. This research would not come to this shape without the cooperation and generous help of these great hands.

First of all, I would like to express my sincere gratitude to my supervisor Mr. Naveen Adhikari form Central Department of Economics (CEDECON), Tribhuvan University, for this immense help, valuable guidance, regular encouragement and balanced criticism in planning and executing the work in the time.

Similarly, I am highly grateful to Prof. Dr. Sohan Kumar Karna, the Head of the Department, for his constant and continuous support, suggestions, and encouragement. I am also indebted to Mr. Khagendra Katuwal, Mr. Babu Ram Karki, and all of the respected professors and employees at the Central Department of Economics (CEDECON).

Finally, I like to share this moment of happiness with parents, relatives, friends, colleagues and well-wishers who supported me directly and indirectly. For all the good attributes of this work, the credit goes to above mentioned personalities and limitations goes to me.

Nabin Neupane

October, 2020

## **ABSTRACT**

In order to provide an empirical insight into the role of international migrant remittance inflows in low-income countries and developing countries, this paper examines the long-run impact of international migrant remittance inflows on overall human development index in SAARC countries. The fixed-effects annual panel data estimation procedure for the period, 1990 to 2018, was used for the empirical analysis. The paper suggests that, contrary to the apprehension of the remittance-pessimistic developmental school, international migrant remittance inflows have a significant positive impact on overall human development in SAARC countries. This evidence suggests that the essential role of international migrant remittance inflows on the socioeconomic development of SAARC region should not be undervalued in formulating any contemporary economic development strategy for the sub-region. Therefore, governments of this sub region should pursue remittance-attracting policy as one of the macroeconomic policies to stimulate Human Development Index.

**Key Words:** HDI, Remittances, SAARC, Fixed-effects

# TABLE OF CONTENTS

DECLARATION.....	I
LETTER OF RECOMMENDATION.....	II
APPROVAL LETTER .....	III
ACKNOWLEDGEMENT .....	IV
ABSTRACT.....	V
LIST OF TABLES .....	VIII
LIST OF FIGURES.....	IX
ABBREVIATIONS AND ACRONYMS.....	X
<b>CHAPTER-I: INTRODUCTION .....</b>	<b>1</b>
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	4
1.3 Objectives of the Study .....	5
1.4 Hypothesis of the Study .....	5
1.5 Significance of the Study .....	5
1.6 Limitations of the Study.....	6
1.7 Organization of the Study .....	7
<b>CHAPTER-II: LITERATURE REVIEW .....</b>	<b>8</b>
2.1 Theoretical Review.....	8
2.2 Empirical Review .....	11
2.3 Research Gap.....	19

<b>CHAPTER-III: RESEARCH METHODOLOGY.....</b>	<b>20</b>
3.1 Conceptual Framework.....	20
3.2 Research Design.....	21
3.3 Study Period and Sources of Data.....	21
3.4 Data Organization.....	21
3.5 Tools and Techniques of Data Analysis.....	22
3.6 Models Specification.....	22
<b>CHAPTER- IV: RELATIONSHIP BETWEEN REMITTANCES AND HDI IN SAARC COUNTRIES.....</b>	<b>26</b>
4.1 Situation of HDI in SAARC Country.....	26
4.2 Situation and Trend of Remittances Inflow in SAARC Countries.....	28
4.3 Regression Analysis of Relationship between Remittances and HDI.....	36
4.3.1 Descriptive Analysis of Control Variables.....	36
4.3.2 Fixed Effect vs. Random Effect.....	38
4.3.3 Regression Result (Fixed Effect Model).....	38
<b>CHAPTER-V: FINDINGS, CONCLUSION AND RECOMMENDATIONS ....</b>	<b>43</b>
5.1 Major Findings.....	43
5.2 Conclusion.....	45
5.3 Policy Recommendations.....	45
<b>REFERENCES</b>	
<b>APPENDICES</b>	



## LIST OF TABLES

Table 4. 1 Criteria for Classification of Country .....	26
Table 4. 2 Remittances Inflow`s Growth Rate in Afghanistan .....	29
Table 4. 3 Remittances Inflow`s Growth Rate in Bangladesh.....	30
Table 4. 4 Remittance Inflow`s Growth Rate in Bhutan .....	30
Table 4. 5 Remittances Inflow`s Growth Rate in India.....	31
Table 4. 6 Remittances Inflow`s Growth Rate in Maldives.....	32
Table 4. 7 Remittances Inflow`s Growth Rate in Nepal.....	33
Table 4. 8 Remittances Inflow`s Growth Rate in Pakistan.....	34
Table 4. 9 Remittances Inflow`s Growth Rate in Sri-Lanka .....	35
Table 4. 10 Descriptive Statistics .....	36
Table 4. 11 Regression Results .....	39

## LIST OF FIGURES

Figure 3.1: Conceptual Framework.....	20
Figure 4. 1 Trend of SAARC Region HDI (country-wise and overall ).....	27
Figure 4. 2 Deviation of HDI from its Mean .....	28
Figure 4. 3 Trend of Remittances Inflow in Afghanistan.....	29
Figure 4. 4 Trend of Remittances Inflow in Bangladesh.....	29
Figure 4. 5 Trend of Remittances Inflow in Bhutan.....	30
Figure 4. 6 Trend of Remittances Inflow in India.....	31
Figure 4. 7 Trend of Remittances Inflow in Maldives .....	32
Figure 4. 8 Trend of Remittances Inflow in Nepal.....	33
Figure 4. 9 Trend of Remittance Inflow in Pakistan .....	34
Figure 4. 10 Trend of Remittances Inflow in Sri- Lanka .....	35

## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
ARDL	Auto Regressive Distribution Lag
BBS	Bangladesh Bureau of Statistics
BP-test	Breusch and Pagan Lagrange Multiplier Test
CBS	Central Bureau of Statistics
COR	Capital Output Ratio
D-W	Durbin- Watson
ECM	Error Component Model
FDI	Foreign Direct Investment
FEM	Fixed Effect Model
FY	Fiscal Year
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GNI	Gross National Income
GLS	Generalized Least Square
GoN	Government of Nepal
HDI	Human Development Index
HIESB	Household Income and Expenditure Survey of Bangladesh
ILO	International Labor Organization
IMF	International Monetary Fund
INR	Indian Rupees
KNOMAD	Global Knowledge Partnership on Migration and Development
MPS	Marginal Propensity to Save
NLSS	Nepal Living Standard survey
NPR	Nepalese Rupees
NRB	Nepal Rastra Bank
OCI	Organization of Islamic Cooperation
ODA	Official Development Assistance
OLS	Ordinary Least Square
PKR	Pakistani Rupees
PPP	Purchasing Power Parity

REM	Random Effect Model
SAARC	South Asian Association for Regional Cooperation
SDGs	Sustainable Development Goals
SSA	Sub-Sahara African
UNDP	United Nation Development Program
UNO	United Nations Organization
USD	United States Dollar
WBG	World Bank Group
WEF	World Economic Forum
3D	Difficult Dirty Dangerous

# CHAPTER-I

## INTRODUCTION

### 1.1 Background of the Study

The flows of money, knowledge and universal ideas – called remittances – can have a positive effect on what is called development in the countries of emigration.

— Thomas Faist (2008: 21)

Remittances are the portion of earned income that migrant workers choose to send to the families they have left behind. Migrant workers may move to different regions in their own countries, or leave their countries of origin completely in order to earn more income. A migrant is a person who comes to a country and stays, or intends to stay, for a year or more (IMF, 2015).

While remittances can be sent to families at origin from country or outside county, there is growing interest in international transfers of funds due to its growing magnitude and socio-economic implications.

Over the past few years, remittances have begun to receive a great deal of attention, though people have been sending remittances for centuries. It has become a source of external financing for many developing economies and have been estimated to exceed other types of external funding such as foreign direct investments (FDIs) and foreign aid over the past two-and-half decades (Ratha, 2017). There are several reasons why remittances are receiving so much attention now: (i) they are becoming progressively easier to track and record; (ii) it is cheaper and safer to send remittances now, so people do not fear sending remittances through official channels; (iii) remittances are a large source of income for many nations around the world (Amuedo-Dorantes & Pozo, 2004).

Remittances generally reduce the level and severity of poverty, thus leading to positive effects such as higher human capital accumulation, improved health and educational spending, improved access to information and communication technologies, enhancing small business investment, better preparedness for adverse shocks such as economic downturn, natural disasters and also contributing to a reduction in child labor (WB, 2018). Remittances operate as a positive developmental instrument for receiving economies through its effects on savings, investment, growth and consumption

(Solimano, 2003). In its developmental dimension, it reduces the consequences of unemployment, generates greater foreign exchange earnings through remittances, increases the rate of saving and increases the social returns on investments in human resource development. A paper by ADB (2017) estimates that 1% increase in international remittances as a percentage of GDP can lead to a 22.6% decline in the poverty gap ratio and a 16.0% decline in the poverty severity ratio.

The role remittances on poverty reduction, economic growth and human capital formation is well documented in SAARC countries. The regional report of ADB (2017) and the study report of SAARC internal department of research have found out that the direct and influential role of remittances in SAARC region are rural poverty reduction and basic technological progress (access on telecommunication and subsistent level of internet). During the 1990s, decline in remittance inflows was a major contributor in increasing poverty in Pakistan (Siddique and Kamal, 2010). Similarly, the finding of study conducted by Shah and Roshan (2017) has shown that there is significant contribution of remittances in the promotion of local self-employment and economic participation of women in some SAARC countries. The significance of remittances in order to formulate human capital (health expenditure, education expenditure and women economic empowerment) in Bangladesh was studied by Asypot (2016) shown remarkably high as well as stronger in rural area but the impact over domestic migration from rural to urban is much more critical.

Azizi (2018) has shown that remittances raise per capita health expenditures and reduce undernourishment prevalence, depth of food deficit, prevalence of stunting, and child mortality rate. Remittances also raise school enrollment, school completion rate, and private school enrollment. Although there is no difference in the impact of remittances on the health outcome of boys and girls, remittances improve the educational outcome of girls more than the educational outcome of boys. Further, remittances decrease the female labor force participation rate but do not affect the male labor force participation rate.

As such there has been increasing remittance in the SAARC countries. For example, India (\$ 78.6 billion), Pakistan (\$ 21.0 billion), Bangladesh (\$ 15.5 billion), Sri-Lanka (\$ 7.5 billion) were received 33, 11, 20, 18 fold more in the fiscal year 2018 as compare with 1990 respectively (World Bank, 2018) . India has been the leading country of

origin of international migrants in 2018 with a 17.1 million strong diaspora. Top 10 countries of origin account for one-third of all international migrants. Migrants from Mexico constituted the second largest diaspora (11.8 million), followed by China (10.7 million), Russia (10.5), Syria (8.2 million), Bangladesh (7.8 million), Pakistan (6.3 million), Afghanistan (5.1 million). India hosted 5.1 million international migrants in 2018 mainly came from Bangladesh, Pakistan and Nepal (Population Division of the UN Department of Economic and Social Affairs, 2018). Likewise, Nepal registered a 16% year-on-year rise in remittance inflows in 2018 compared to USD 6,928 million 2017. Remittances in 2018 accounted for 28.0% of the country's GDP share and placing the Himalayan nation in the list of the top-5 recipient smaller economies; Tonga (35.9%), Kyrgyz (35.1%), Republic of Tajikistan and Haiti in terms of remittance to GDP ratio. In SAARC countries, the remittance to GDP ratio is quite significant; Sri-Lanka (8.1%), Pakistan (6.8%), Bangladesh (5.5%), India (2.9%), Bhutan (1.8%), Maldives (0.1%) (World Bank, 2018).

As globalization takes roots, economies based on rural, subsistence agriculture are gradually being replaced by urban, industrial and service economies. This process of economic transformation coupled with demographic dynamics will continue to generate migration flows into urban areas within Asia countries and abroad, especially in South Asia where urbanization rates are still low. From 2004 to 2017, the number of migrants from South Asia have more than doubled, with an increasing percentage of women also moving independently (ILO, 2017). The amount of remittances represents a significant flow of income to SAARC countries households (Nepal- 31.59% households, CBS 2011), (Bangladesh- 9% households, BBS 2010).

The significance of remittances for Human Capital Formation (education, health, technical training, and technology transfer) in SAARC countries has become noteworthy day by day. Higher education enrollment, primary and secondary health access, participation in vocational training, self-employment business, women participation in economic activities, women's leadership in family and society are some remarkable outcomes of remittances for human capital formation and socio-economic foundation in SAARC countries (Hass, 2007; Giuliano and Marta, 2008; Imran, Cheok, and Deradason, 2018; Arif et al., 2018).

Still SAARC countries have moderate status in HDI. Out of 189 countries; Norway (0.9505), Switzerland( 0.9415), Ireland(0.9410), Germany(0.9380), Hong Kong(0.9365) are top five HDI countries and Niger(0.2825), Central Africa Republic(0.3780), Chad(0.3980), South Sudan(0.4045), Burundi (0.4210) are bottom five HDI countries. In case of SAARC countries; Sri-Lanka (0.7740, 71<sup>th</sup> position), Maldives (0.7115, 104<sup>th</sup> position), India (0.6330, 129<sup>th</sup> position), Bhutan (0.6155, 134<sup>th</sup> position), Bangladesh (0.6085, 135<sup>th</sup> position), Nepal (0.5805, 147<sup>th</sup> position), Pakistan (0.5430, 152<sup>th</sup> position), Afghanistan (0.4895, 170<sup>th</sup> position) (UNDP, 2019).

## **1.2 Statement of the Problem**

The HDI value of SAARC country is comparatively lower than advanced and developed country. Maldives and Afghanistan are two which place top and bottom position in terms of HDI in SAARC. As stated above, Remittances in some SAARC countries; Nepal, Bangladesh, Pakistan, Sri-Lanka have significant role in GNI and remarkable to GDP ratio. Sectorial contribution of agriculture sector in GDP of SAARC countries is still high except Bhutan & Sri-Lanka and the industrial contribution ranged 15 to 43 percent among different countries. Furthermore, sectorial contribution of service sector in GDP is increasing trend and ranged 38 to 81 percent (World Bank, 2018). Huge number of semi-skilled and unskilled labor are still engaged in agriculture which has fueled for foreign employment (ADB, 2017).

While remittance has been growing in these regions and it has been crucial in reducing poverty levels in rural section of most SAARC countries. However, the large portion of remittance has been utilized for consumption purposes, purchase of house and real estate, purchase of jewelry, paying off the loan, and as bank deposits rather than productive investment and overhead capital formation (Javid, Arif and Qayyum, 2012; Kumar, 2019). Nowadays remittances are hotly discussed subject matter in the field of development economics as being a significant measure for the private capital flow in the developing economies (higher and effective than FDI & ODA), especially in SAARC countries and Sub- Sahara African countries (Ratha, 2017).

The progress of HDI and Remittance inflow from formal channel was remarkably progressive in SAARC as well as all over the world. Major contributory factors of such progress in HDI and quality of remittances in SAARC country were good focus of concern government (Local Level, Province Level, Central Level) for improvement and



strengthen the living standard of citizens and good coordination of home country with host country in order to manage labor security, inflow & outflow cycle (employees and remittances both), cost of remittances, direct connectivity, basic payment, working standard, and so on (ADB, 2017).

Given that these countries have remarkable size of remittances, it is plausible to assume that remittance might have implication to the improvement of the HDI in these countries. However, there are little studies pertaining to analyze this relationship between remittances and HDI. Bansak and Chezum (2009); Javid, Arif and Qayyum (2012); Acharya and Leon-gonzalez (2014); Imran, Cheok, and Deradason (2018); Aslm and Sivarajasingham (2019) have highlighted the relation of remittances with particular component of HDI, its influencing factors, and particular SAARC country rather than whole. So, the ocean of literature related with relationship between remittances and HDI has suffered by lack of proper empirical broad based analysis. Therefore, this study aims to answer the following questions;

- i. What is the situation of remittances and HDI in SAARC countries?
- ii. What is the relationship between remittances and HDI in SAARC countries?

### **1.3 Objectives of the Study**

The general objective of this study is to set relationship between remittance and its socio-economic effect in SAARC countries. However, the specific objectives are:

- i. To study the situation of HDI and remittances in SAARC countries.
- ii. To analyze the relationship between HDI and remittances in SAARC countries.

### **1.4 Hypothesis of the Study**

On the ground of research objectives, following hypotheses have been set:

H<sub>0</sub>: Remittances inflow in SAARC countries do not have any influence on Human Development Index.

H<sub>1</sub>: There is significant relationship between remittances inflow and HDI in SAARC countries.

### **1.5 Significance of the Study**

The results of this study show the trend; situation; and relationship between remittances and HDI in SAARC countries along with overall panel analysis and comparative

analysis. The major justification of this study is to get overall compound relationship of remittances with HDI in all SAARC country. Such results help in understanding the behavior of both proposed dependent and independent variables as well as degree of influence of remittances over HDI in different time period.

The results of this study was displayed situation of and relationship between remittances and HDI in SAARC countries. Basically, the study analyzes and presents increasing and decreasing trends and growth rate pattern of remittance variables, its relation with HDI and its structure of transfer. In case of international scenario, various researches have been conducted, explored and analyzed different dimensions of remittances in variety levels. Even the international organization like WB, UNO, IMF, ADB, AIIB have conducted researches on the topic of remittance based on the different countries as well.

Most of previous studies have focused on economic impacts of remittance in SAARC countries but, this study basically focuses on human development effects of remittances. Similarly, the finding of this study will be equally important to the others who are interested to know about this area and it will provide relevant and pertinent literature for future research on the area of remittances, HDI, and its relation.

## **1.6 Limitations of the Study**

This study is based on the following limitations:

- i. Remittance is considered only which come from formal channel and in the Cash form.
- ii. The analysis is made using table, figure, and common econometric tools rather than sophisticated technique.
- iii. The accuracy of the finding depends on the reliability of available information; since study is mainly based on the published secondary data (WB, ADB, IMF, WEF, and KNOMAD) and gathered from related source.
- iv. Due to unavailability of remittance data in NPR, INR, PKR, Euro figures of remittance have been converted into USD by using average exchange rate between United States Dollar (USD) and data available currency.
- v. Lack of proper data to set the desire relationship between remittances and HDI in case of Afghanistan, Bhutan, and Maldives.

## **1.7 Organization of the Study**

The very beginning part of the study is preliminary which consist of title, recommendation letter, approval sheet, declaration, acknowledgement, table of contents, list of table list of figure, list of abbreviation and acronyms. The first chapter deals with background at global, regional, national and local level; statement of the problem with major problems; research questions; objectives of the study; importance of the study; study limitations; and organization of the study.

The second chapter is literature review of related topic. This chapter consist of theoretical and empirical review of literature regarding international, regional, and national context covering both country case studies as well as cross-country studies.

The third chapter explains research methodology. It includes conceptual framework; research design; source of data; data organization; tools and method of data analysis; model specification.

The fourth chapter describes overall historical situation of remittance & HDI of SAARC countries and relationship between them. It deals with the presentation and analysis of relevant data and information. Various analytical tools have used to analyze and interpret the result.

The fifth chapter consists of major findings, conclusion, recommendations and recommendation for future research, researcher, and policy institution. References, and appendix are included at the end of the study.

## CHAPTER-II

### LITERATURE REVIEW

#### 2.1 Theoretical Review

According to International Monetary Fund (IMF) remittances refers to income of household from the temporary or permanent movement of people to those economies. Remittances include cash and noncash items that flow through formal channels, such as via electronic wire, or through informal channels, such as money or goods carried across borders. The largely consist of funds and noncash items or sent or given by individual who have migrated to a new economy and become residents there, and the net compensation of border, seasonal, or other short-term workers who are employed in an economy in which they are not resident”(IMF, 2006).

In theory, the cyclical effect of remittance over recipient country is related to why people remit. In a fairly broad categorization, remittance can be driven either altruism (if the motivations are altruistic, remittances would increase when the receiving economy is in a downturn and vice versa) or self- interest (Lucas and stark 1985, Amuedo-Dorantes and pozo 2006). In the former case, remittances are believed to be unreciprocated transfers without expectations of personal gain sent to relative during bad times and tend to be countercyclical. In the latter case, remittances are usually used for investment in the home country (such as buying real estates) and are likely to be pro-cyclical with respect to the business cycle of the recipient economy.

Remittances generate positive multiplier effects in output if they are consumed, and contribute to output growth in the country if they are invested. In Harrod- Domar growth model, savings (Marginal propensity to save) is considered as major source of growth and in Keynesian concept, saving as a function of level of national income.

$$\text{i.e. Growth} = \frac{\Delta Y}{Y} = \frac{1}{Y} \times \frac{dY}{dt} = \frac{1}{I} \times \frac{dI}{dt} = \frac{s}{C} \quad (\text{Harrod-Domar Growth Model})$$

Where, Y = National Income, I = Investment, s = Marginal Propensity to Save (MPS), C = Capital-Output Ratio (COR).

Similarly, in Keynesian concept of savings, savings is a function of level of National Income and effective demand helps to improve the speed of economy;

I.e.  $S = F(Y)$

S = National Savings, F = Functional Relation.

Thus, savings of country depends on the level of national income, and higher level of savings (MPS) helps to improve economic growth of country.

$Y = F(\text{GDI, NFIA})$

GDI = Gross Domestic Income, NFIA = Net Foreign Income from Abroad.

Hence, from macroeconomics analysis, remittance is a good sources of economic growth and it helps to improve economic performance of country. However, the proportion of savings out of remittance in SAARC countries is ranged 10 to 30 percent only and high portion of consumption expenditure.

In absolute income hypothesis of J. M. Keynes, the consumption of household depends on the absolute income and it injects effective demand of economy. Furthermore, to create additional employment in an economy will possible through strong effective demand. On the basis of this argument, remittance is a source of absolute income and it helps to increase effective demand as well as additional employment opportunities in homeland.

### **2.1.1 New Economics of Migration and Foreign Employment School**

This school of thought was developed in 1980s as an alternative of neoclassical and historical-structural approaches of migration and foreign employment. The major idea of this school was, migration and foreign employment is one strategy adopted by household to diversify their portfolio of income streams, reduce risk of poverty and enhance access to financial resources for the household.

### **2.1.2 Implicit Co-insurance Arrangement Theory of Remittances**

This theory of remittance was developed by O. Stark in 1991. It views migration or movement as a family strategy: the family acts as a coalition, or team to insure and maximize inter-temporal utility of different family members. There is an implicit co-insurance contract linking migrant and non-migrant members of the family group. In first, family acts as the insurer of education and training of working age group and sends them abroad (modern urban sector). Then when the migrant has secured a stable position, s/he acts as the insurer by sending remittances to the rural family, thereby

helping non-moved family members to make risky investments in agriculture and other rural activities, by securing a regular income for the rural family. The contract is self-enforcing because of family loyalty.

### **2.1.3 Implicit Family Loan Arrangement Theory of Remittance**

This theory was developed by Bernard Poirine in 1997. Major evidence of this theory has based on the empirical study of South Pacific foreign employees. Porine critically analyzed the altruistic and co-insurance theory of remittances propounded by O. Stark. The major idea of this theory is that remittances are either implicit loans or the repayment of implicit loans. Furthermore, the behavior, flows and uses of remittances varies on the basis of sources (internal and external). Remittances are probably more conducive to physical and human capital investment when they occur in the context of internal movement in a poor country. On the contrary, they are probably more conducive to supplement consumption (or housing investment) of non-moved family members, because they are sent regularly, and because they are sensitive to lending interest rate in case of legal international movement.

### **2.1.4 The Developmental Optimistic Neoclassical Theory**

The general develop-mentalist views on migration which are all affiliated to the functionalist paradigm in social theory, predict the counter-flows of capital, including remittances and knowledge from migration, to increase investment and subsequently stimulate development and modernization of an economy. In particular, remittance-developmental optimists argue that international migration leads to a North-South transfer of investment capital and accelerates the exposure of labor exporting communities to liberal, rational and democratic ideas, modern knowledge and education. In this regard, the increasing inflow of international remittances would, in the long-run, contribute positively to stimulating capital-constrained economies to effectively take-off in a sustainable fashion (Beijer, 1970).

At the macro level, remittances were considered a vital source of hard currency. At the meso and micro level, migration was supposed to lead to the economic improvement of migrants and greater freedom from local socioeconomic barriers and constraints. In the words of (Keely and Tran, 1989), migrant remittances are unique because only they have the capacity to “improve income distribution and quality of life beyond what other available development approaches could deliver”.

### **2.1.5 Developmental-Remittance Pluralist Theory**

This school emerged as a response to developmentalist and neoclassical theories (the optimists) and structuralist theory (the pessimists) which regard the earlier entrenched positions as too static and deterministic to deal with the complex realities of the international remittance-development nexus. The pluralists, thus, provide a much more dynamic insight into understanding migration and development relationship, which connects the causes and consequences of migration more explicitly, and in which all possible positive and negative development responses are taken into account.

### **2.1.6 Developmental Pessimistic Structuralist Theory**

This school of thought has argued that the international inflow of remittances in labor origin country offer dependency and other inequality problems (Lipton, 1980) rather than sustainability in the long-run. The remittance-developmental pessimists such as Almeida (1973), Lipton (1980), Rubenstein (1992), and Binford (2003) argue that the net effect of migration and remittances is only to sustain or even reinforce the problems of underdevelopment rather than promoting development. The position of this school is that migration provokes the withdrawal of human capital which then leads to the development of passive, non-productive and remittance-dependent societies in developing countries. Lipton (1980), Entzinger (1985) and Lewis (1986) still argue that there is a high tendency that remittances would be spent on conspicuous consumption and “consumptive” or non-productive investments such as acquisition of real estate and, for that matter, are rarely invested in productive enterprises. Besides weakening local economies and increasing dependency, increased consumption and land purchases by migrants were also reported to provoke inflationary pressures (Russell, 1992) and soaring land prices (Appleyard, 1989; Rubenstein, 1992). Lipton (1980) further argued that, the remittances income directly contribute to change tastes and ultimately that would increase the demands for imported goods, which further reinforces the system for continuous dependency.

## **2.2 Empirical Review**

In the area of remittance inflow and its effect over economic factors is a widely studied topic of development economics. There are some international and national studies about the effect of remittances over human development components. Some remarkable past studies are as followed.

El-Sakka and Mc- Nabb (1999) discovered that imports finance through remittances have very high elasticity, implying that remittance may have low multiplier effect. This study was conducted in Egypt on the basis of 30 years' time series data. Finding of this study suggested that, if remittance is spent on investment goods, endogenous growth model provide the channel through which remittances could promote both human capital and physical capital simultaneously.

Hass (2007) studied the relationship between social development, migration and the remittances with the conceptual framework in developing country. These relationship was tested on the basis of cross-sectional analysis and regression model. The finding of this study advocated that the remittances and the migration are the reason for enhancement and development of socio-economic factors such as, well-being and reduction in poverty. Betz and Simpson (2013) studied the effect of foreign employment on the well-being of the population of Host County. For the analysis purpose data is collected from 26 country of Europe and the data duration is about eight years from 2002 to 2010. The variables of the study are the native wages, life satisfaction, unemployment rate, tax burden and the migration. The finding of this study advocated that there is positive relationship between availability of migrated workers and welfare of natives of foreign country as well as this influence increased by the time.

Valero (2008) studied the relationship between worker's remittances and the household's expenditure on health in Mexico. This paper was considered the effect of remittances on the share of total health expenditures to total household expenditure. Data was taken from National Income Expenditure Household Survey of Mexico. This study was incorporated Tobin model and found a statistically significant effect of remittances on the proportion of health expenditures of household.

Aduntsi (2009) analyzed the long- run macroeconomic impact of international migrate remittances on the human development of SSA countries on the basis of cross country analysis. This analysis has incorporated Fixed Effect Model on the basis of fitted model;  $\ln HDV_{it} = \beta_0 + \beta_1 IMR_{it} + \beta_2 \ln Z_{it} + \beta_3 TDUM_t + \mu_{it}$ . Such that  $HDV_{it}$  represents overall human development peroxided by the marginal variations in human development index as reported by the UNDP. IMR stands for international migrant remittance inflows measured as the proportion of migrant remittance inflows to GDP in constant US dollars, Z represents a set of control variables (government spending, trade openness,



inflation, and human capital), TDUM stands for time dummy which takes the value of zero for all years preceding 2000 and 1 for all other years,  $\ln$  is the notation for natural logarithm, whilst  $\mu_{it}$  is stochastic term. The findings of this study suggest that, contrary to the apprehension of the remittance-pessimistic developmental school, international migrant remittance inflows have a significant positive long-run impact on overall human development in low-income Sub-Saharan African countries

Udah (2011) found that the effect of remittances over human capital formation and improvement is a relative rather than absolute and it is also true for causality between remittances and human capital formation. This study was conducted in Nigeria by the objective of, to analyze the relationship among remittances, human capital formation and economic performance. This study incorporated Modified Unit Root Test, Auto Regressive Distributive Lag Bounds in order to meet objective. The finding of this study strongly suggest that from remittances to accelerate the pace of human and physical development, it requires complementary factors such as government policies, technology transfer, physical capital. However, these complementary factors again influence the momentum of remittances inflow. Giuliano and Marta (2008) found that workers remittances play an important role in human capital formation in the recipient country through relaxing resource constraints.

Javid, Arif and Qayyum (2012) analyzed the direct and indirect effect and implication of remittances over poverty reduction and elimination in Pakistan. They employed Auto Regressive Distribution Lag (ARDL) model to find that relation on the basis of 1973 to 2010 data. The conclusion of this study suggested that remittances have positive effect on economy of Pakistan in terms of aggregate consumption, investment, reduction in current account deficit, external debt burden and improve education-health/ skill of the households. Furthermore, the correlation between overseas employment and percentage of population below the poverty line is significant at the 0.01 level. It means, overseas employment is making its contribution in achieving the objectives of poverty alleviation and improving the standard of living of citizens. Acosta et al. (2017) presented the household survey base estimates for 10 Latin American countries which confirmed that remittances have negative though relatively small inequality and poverty reduction effect.

Alcaraz et al. (2012) studied the effects of remittances from the U.S. on child labor and school attendance in recipient Mexican households. They used distance to the U.S. border along the 1920 rail network as an instrument for the membership in the remittance recipient group. By using the differences-in-differences method, they find that the negative shock on remittances receipts in 2008–2009 caused a significant increase in child labor and a significant reduction of school attendance.

Razmi, Abbasian and Mohammadi (2012) examined the relationship between public health expenditure and HDI. They found that the public health expenditure has positive and significant (0.17) impact on human development in case of Iran. For the analysis, this study was introduced model as  $HDI = \alpha HE_g + \beta G_r + \mu PR_r + \gamma DT_r + \phi \text{dumi}$ ;  $HE_g$  = public health expenditure;  $G_r$  = growth rate of GDP per capita;  $PR_r$  = primary school completion rate;  $DT_r$  = total mortality rate; HDI= human development index;  $\phi$  = dummy variable (represent global crisis of 2007). In order to get desire objectives this study was incorporated OLS, ADF and Granger causality on the basis of time series data. This study was also suggested the transforming mechanism of health expenditure to human resource development. In this mechanism, if health expenditure is increased then it will boost economic growth, reduce infant and child mortality rate, improve the learning ability and finally improved human capital. The conclusion of this study was, by the increasing percentage of government expenditure on health, human development increases at the level of 0.17% and D-W is 1.87, so the estimated equation isn't auto-correlated. Granger causality test result indicate that there is one way relationship between health expenditure and human development: Human development is due to Health Expenditure.

Hassan et al. (2014) got the long-run positive relationship between public health care expenditure and health outcomes (life expectancy, infant mortality, and share of elderly population) in SAARC region. However, in short-run, there was no significant relationship between infant mortality rate and health care expenditure which implies that health care expenditure do not provides significant benefits to reduce infant mortality. This study was conducted on the basis of panel data over the period 1995 – 2010. The developed panel co-integration was employed for analysis of short-run and long-run relationship. Zhunio et al. (2012) studied the effect of international remittances on aggregate educational and health outcomes using a sample of 69 low- and middle income countries. They find that remittances play an important role in improving

primary and secondary school attainment, increasing life expectancy and reducing infant mortality.

Musakwan and Odhiambo (2017) analyzed the relationship between remittance and poverty. They were incorporated ARDL model to co-integration and ECM based causality test. To improve the robustness of the result, they incorporated two poverty proxies namely; household consumption expenditure and infant mortality rate of the period 1980-2017. The econometric test of information shown that there is short-run and long-run bidirectional causal relationship between poverty and remittances when household consumption expenditure is used as a proxy for poverty. However, when poverty is measured by infant mortality rate, a unidirectional causal relationship is confirmed both in the long-run and short-run for poverty to remittances. Kumar (2019) discovered that in Bangladesh the level of poverty among remittance recipient households is notably lower than households that are not receiving remittances. Furthermore, the probability of household being poor is alleviated by 28.07% if the household receives remittances.

Okafor, Ogbonna, and Okeke (2017) studied the effect of government expenditure on human capital development in Nigeria. The objective(s) of this study was to know the relationship between government expenditure on education and human development index. In order to recognize this desire relationship, researchers were incorporated following models:  $HDI = F(EDU, HTH)$ ;  $HDI = \beta_0 + \beta_1 EDU + \beta_2 HTH + \mu$ ;  $EDU$  = government expenditure on education sector in Nigeria;  $HTH$  = government expenditure on health sector in Nigeria. In order to set this relationship, the study was incorporated Augmented Dickey Fuller Unit Root; Vector Auto-regression Test, Granger Causality Test. From empirical analysis, the study was concluded, there was no direct relationship between HDI and government expenditure on education and health; inverse relationship of HDI with EDU and HTH in the previous years and in long-run. However, this above relationship was positive in the current years. The another working paper of Chakaborty (2003) found positive relationship between per capita public expenditure on health (education) and HDI in selected developed and developing countries. This study was conducted by using fixed effect model of pooled least squares.

Haller et al. (2018) conducted a study in international migrant remittances and its effect on economic and social sustainable development of Romania – Bulgaria. In order to analyze that relation they incorporated multiple regression, correlation analysis and different statistical tests of data period 1990 to 2015. This study incorporated nine different hypotheses such as there is direct relationship between remittance received and capital growth rate, remittance received and price inflation rate, remittance received and unemployment rate, remittance received and Gini Coefficient. Study found that inflation rate, income inequality, household consumption expenditure are major forces for foreign employment in Romania - Bulgaria. Furthermore no direct relationship between remittance received and GDP growth, direct (negative) relationship between remittances received and price inflation rate in Romania though not in Bulgaria, direct relationship between remittances and unemployment rate (negative relation) in both country and household final consumption and income, inequality ( positive with high intensity and very similar for both country).

Imran, Cheok, and Deradason (2018) examined the disaggregate impact of foreign remittances on household based human development for the Punjab province of Pakistan employing the Multiple Indicators Cluster 2014/15 survey. This survey conducted HDI on the basis of three primary dimensions including education, health, and housing. To the examination of this relation of this relationship data is sourced from the MICS, a 2014/15 survey which includes the sample of 41,413 households. This analysis concluded from three region (south, north, and central) of Punjab. The overall finding of this study suggest that migrant households are better off in education, health and housing than non-migrant in all three regions.

Arif et al. (2018) studied the relationship between higher education development and remittance in eight middle income group and top remittances receiving countries namely Bangladesh, India, China, Egypt, Pakistan, the Philippine, Nigeria and Mexico. They took balance panel data from 1994 to 2013 and introduced a regression model as:  $\ln HED_{i,t} = \alpha_0 + \alpha_1 \ln REM_{i,t} + \beta_1 X_{i,t} + \epsilon_{i,t}$  where, HED (higher education development), REM (remittances), X (control variable),  $\epsilon$  (error term). The study concludes that remittances plays a significant role in education development. However the influence or degree of relationship between them depends on the structure, performance, track and other physical performance of the country. Bansak and Chezum (2009) found that the workers remittances in Nepal stimulate the educational enrollment and participation

on other technical training. This study was conducted using cross section data collected from 4629 school students. McKenzi and Rapoport (2011) expounded a model showing different channels through which worker's remittances influence investment in human capital, notably education. The first channel refers to as the remittances effect (diminishes poverty and encourages families to enroll their children in an education institution) and the second channel refers to as the substitution effect (children prefers to migrate rather than to enroll in a school or any other institution). Matano and Ramos (2013) established the link of remittances with educational attainment, and the result showed that the change of getting an education in remittances receiving families increased by 34% of an annual basis. Kroeger and Anderson (2014) studied the impacts of remittances on the human capital of children and found no correlation between schooling and remittances. Salas (2014) examined the relationship between international remittances and human capital formation and their result revealed a positive and significant impacts.

Azizi (2018) studied the impact of remittances in various human development component (overall and gender specific) in 122 developing country over 1990 to 2015. He found that, on an average, a 10% increase in per capita remittances will lead to a 1.5% increase in out-of-pocket per capita health expenditures, a 1.1% increase in total per capita health expenditures, 0.3% increase in life expectancy at birth, 1.5% decline in undernourishment prevalence, 1.9% decline in depth of food deficit, and 1% decline in prevalence of stunting. Also, remittances have a strong and statistically significant effect on reducing child mortality rates in developing countries. On average, a 10% increase in per capita remittances will lead to a 1% decline in neonatal mortality rate, 1.7% decline in infant mortality rate, and 1.9% decline in under-five mortality rate. The gender-specific results show that the effects of workers' remittances on reducing infant and under-five mortality rates are almost the same for male and female children.

Aslm and Sivarajasingham (2019) explored the effect of workers remittances on human capital formation in Sri-Lanka for the period of 1975-2017. This study was used HDI as a proxy for human capital formation in Sri-Lanka. In order to achieve objectives of study, this study employed Unit Root Test, ARDL Bound Test, Diagnostic Test, and Granger Causality Test. Constructed model of this study was;  $HDI_t = f(EDUGDP_t, HEXGDP_t, WRE_t)$  where,  $HDI_t$  = Human Capital Index which is proxy variable for human capital formation,  $EDUGDP_t$  = the Education Expenditure GDP ratio,

HEXGDP<sub>t</sub>= the Health Expenditure GDP ratio, and WRE<sub>t</sub> = Worker's Remittance. The ARDL bounded test shown that there was a long run equilibrium relationship between worker's remittances and human capital formation. Furthermore the finding of long term causality from error correlation term confined that there was long-run causality between workers remittances and human capital formation. Huay and Bani (2018) studied the relationship between worker's remittances and human capital formation in 51 developing countries using the Generalized Moment Method (GMM). This study found the worker's remittances have a negative relationship with human capital formation. Acharya and Leon-gonzalez (2014) found that the workers remittances positively stimulate human capital formation in Nepal.

Farooq et.al (2019) studied relationship between trade openness and health status in OCI member Countries. This study was incorporated 47 OCI countries under the panel format (1991-2017). The econometric results was estimated using GMM technique to avoid the endogeneity issue in panel data analysis. The finding of this study was suggested that that trade openness, public health expenditures, public education expenditures and economic growth are positively and significantly correlated with life expectancy in overall OIC countries and high income OIC countries. Similarly, Trade openness, public health expenditures, public education expenditures and GDP are negatively and significantly correlated with infant mortality rate in overall OIC countries and high income OIC countries. However, the study of impact of trade openness in the sustainable environmental aspects in the 49 high-emission countries in Belt and Road regions over the period of 1991–2014 shown that trade openness has negative impacts on environmental pollution and higher possibility of poor healthy life (Sun et.al, 2019).

Haque and khan (2019) examined role of oil production and government expenditure in improving human development index: evidence from Saudi Arabia. This study was incorporated time series data from 1990 to 2016 on the basis of model  $HDI = \beta_0 + \beta_1t$  **Government spending** + **u**. From the least square regression analysis, the study finds that both government expenditure and oil production has a positive relationship with HDI. This study was estimated that if total government expenditure is increased by 1% will increase 10% point in HDI and same change comes from education expenditure.

In order to study the relationship between domestic financial development (domestic capital formation) and human development in developing countries, Tekin, (2020) undertaken Pedroni and Kao co-integration analysis and Dumitrescu and Hurlin panel causality analysis techniques and the outcome was shown that there is long-term co-integration relationship and two-way causality between financial and human development in developing countries. Zaman et.al, (2012); Moncelli et.al, (2012); Kaya, (2017), Satrović, (2017); Cheshti, (2017) also supported the positive relationship between domestic private loan and human development but degree of such relationship depends on other politico-socio-economic factors of respective country. However, they were employed different econometric tools and techniques (ARDL, BIST, DEA, and so on) and control variables. The study conducted by Akhmat, et al. (2014); Karna, (2018) in selective SAARC countries and found out that there is a long-term relationship between financial development and economic growth and human development in the SAARC region.

### **2.3 Research Gap**

This thesis mainly focuses on the relationship between remittances and HDI in SAARC countries. Besides this, the thesis also covers the trend and situations of remittances, trend and situations of HDI in SAARC country individually and overall. Main focus of the study is impact of remittances on HDI with respect to control variable. Previous studies have related with impact of remittances on education, health, GDP growth rate, trade deficit, school enrollment, labor force participation rate, financial development, financial literacy, women empowerment, economic structure, pattern of consumption, profitability and improvement of airline companies, technology transfer, economic movement, family relationship and divorce, domestic migration (moderate rural to small town), size of real estate business (house and land) individually as well as country-wise analysis. However, this study has tried to fulfill the gap study of impact of remittances on HDI in all SAARC countries on the basis of panel data. Moreover, most of the previous studies have applied the descriptive analysis and time series data rather than empirical statistical tools and panel data.

## CHAPTER-III

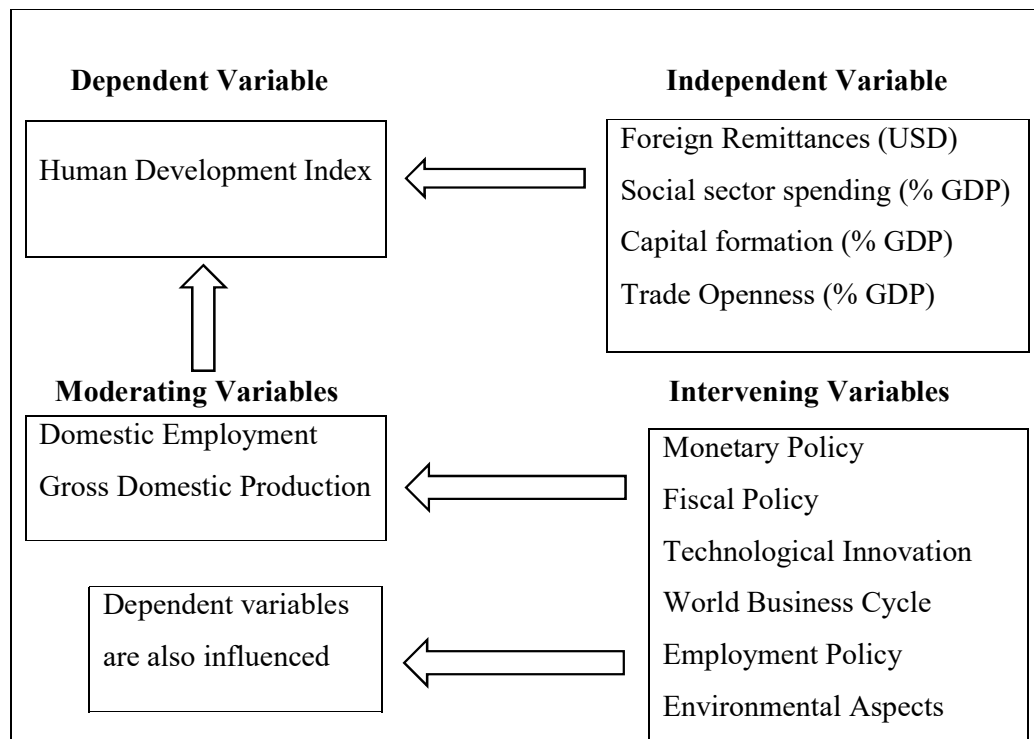
### RESEARCH METHODOLOGY

Research methodology is the systematic and planned process of getting solution of the mentioned problem which deals with the collection, analysis and interpretation of the study area. It consists of research design, sources of data, method of data collection, sampling methods, instruments of data collection, techniques of data analysis on the basis of nature of study.

#### 3.1 Conceptual Framework

A conceptual framework represents the researcher's synthesis of literature on how to explain a phenomenon. In other words, it shows the relationship between dependent, independent, moderating, and intervening variables. It maps out the actors required in the course of the study and it also considers possible influencing variables. The conceptual framework of this study is constructed as follows:

**Figure 3.1: Conceptual Framework**





This above relationship between different natures of variables has incorporated as conceptual framework in order to explain and conduct research work.

### **3.2 Research Design**

This study is presented with both the developmental and quantitative analysis. In the developmental research design, descriptive analysis and consistent time series analysis are made to show the current situation and pattern of remittance and HDI in SAARC countries. Similarly, the quantitative research design is used for regression analysis. The relationship between remittances and HDI is set by using regression model.

### **3.3 Study Period and Sources of Data**

The study has based on the secondary sources of data from 1990 to 2018 (except Afghanistan, Bhutan and Maldives). In order to meet objectives of this study, researcher has reviewed various theoretical and empirical concepts as well as the study has employed various journals, working papers, study reports, case studies, peer reviewed articles, books, among others, published by various national and international academic institutions and scholars along with unpublished theses and dissertations. Economic Bulletin of SAARC countries; relevant household surveys; Government Finance Statistics, Economic Survey Reports; Statistical Year Book of SAARC countries; International Monetary Fund and World Bank Database, UNDP HDI reports are used to fill data requirement for the study as far as possible.

### **3.4 Data Organization**

Data organization, editing, and processing are techniques of arranging and filtering of available raw data to get meaningful result, information, and track for ensuring desire objectives of research study. In this study, pooled data organization with overall foundation and trend analysis with comparative foundation techniques are followed. Similarly, data manipulation and analysis steps are incorporated for data processing from computer applications (Excel and Stata-Mp-13) as well as manual techniques. The major objectives of utilization of wide computer applications are to minimize possible error and to maximize efficiency and effectiveness of time and outcomes.

### 3.5 Tools and Techniques of Data Analysis

Tools of data analysis are required for perfect data management and calculation. This study has basically grew in Excel and Ststa-Mp-13 computer application programs as tool of data analysis. Similarly, study has consisted of both descriptive and inferential analysis. In descriptive analysis; Central Tendency, max min range, panel trend and scatter diagram and so on. Similarly, in modal selection and inferential analysis; BP-test, Hausman test, t-test, F-test,  $R^2$ / Adjusted  $R^2$  and other techniques have incorporated.

### 3.6 Models Specification

Before estimating the models, they must be completely specified and well defined. Specifying an econometric equation consists of three parts: choosing the correct explanatory variables, the correct functional form, and the correct form of the stochastic (random) error term.

The aim of this study was to explore the effects of remittances flow on Human Development Index of SAARC country. This study uses remittances as our main exogenous variables while controlling for other variables such as trade openness, social sector spending, and capital formation with remittances inflow.

#### 3.6.1 Econometric Model

The main econometric model of the study is;

$$HDI_{it} = \beta_0 + \beta_1 \ln IMR_{it} + \beta_2 SSS_{it} + \beta_3 DCF_{it} + \beta_4 ITO_{it} + \mu_{it} \dots \dots \dots (1)$$

Where,

Variable	Definition, Measurement, and Source
Human Development Index ( $HDI_{it}$ )	A composite index of Human Development (a long and healthy life, being knowledgeable, and having a decent standard of living). Source: UNDP (past and 2019)
International Migrant Remittances ( $IMR_{it}$ )	International migrant remittances computed as the sum of workers` remittances and migrant`s transfer in term of natural logarithm. Source: World Bank (2018) as well as calculation.

Social Sector Spending ( $SSS_{it}$ )	Sum of public education and health expenditure as ratio of GDP is taken as proxy of $SSS_{it}$ . Source: World Bank (2018).
Domestic Capital Formation ( $DCP_{it}$ )	Domestic credit provided by financial sector** (includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The financial sector includes monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.) as a ratio of GDP is taken as the proxy for domestic capital formation. Source: World Bank (2018).
International Trade Openness ( $ITO_{it}$ )	The sum of value of exports and imports to nominal GDP is taken as proxy of trade openness. Source: World Bank (2018).
Stochastic Error term ( $\mu_{it}$ ), $\beta_0, \beta_1, \beta_2$ = Beta coefficients and $i$ = cross section (country), $t$ = time period	

\*\* Value may be negative due to the central government are net item (claims on the central government minus central government deposits), the figure maybe negative, resulting in a negative figure for domestic credit provided by the financial sector. It means the government credit from financial sector is greater than private sector.

The above model is based on the previous empirical studies of Azizi (2018), Barro and Sala-i-Martin (1995), Barro (1996), and Guiliano and Ruiz-Arranz (2008) and some theoretical foundation of trade openness and social sector spending.

### 3.6.2 Panel Data Model

In panel data analysis, the simple form of the method is pooled OLS; it assumes a common intercept/constant for each country and the error term is not correlated with the independent variables such as remittances inflow, domestic capital formation, social sector spending of government, and an international trade openness. The function for pooled OLS is as follows:

$$\text{HDI}_{it} = \alpha_0 + \alpha_1 \ln \text{IMR}_{it} + \alpha_2 \text{SSS}_{it} + \alpha_3 \text{DCF}_{it} + \alpha_4 \text{ITO}_{it} + u_{it} \dots \dots \dots (2)$$

The pooled OLS model considers all the cross sections as homogeneous and does not consider the heterogeneity problem in the model. In other words, if there is neither significant cross-section effect nor significant temporal effects, then pool all of the data and run an ordinary least squares regression model gives meaningful result. However, the problem of heterogeneity and correlation between the error term and independent variable may produce inconsistent as well as biased results. To address the problem of endogeneity and heterogeneity, the fixed-effect model is more appropriate compared to pooled OLS and addresses the issues that remain in the pooled OLS (Asteriou et al., 2015). The functional for the fixed-effect model is given below:

$$\text{HDI}_{it} = \alpha_i + \alpha_1 \ln \text{IMR}_{it} + \alpha_2 \text{SSS}_{it} + \alpha_3 \text{DCF}_{it} + \alpha_4 \text{ITO}_{it} + u_{it} \dots (3)$$

An alternative way of estimating a linear panel data is to follow random-effects modelling which assumes that each country differs in error term rather than in constant term. However, in long panel data ( $T > N$ ) estimation, the fixed-effects estimation is expected to be more efficient than the random effects (Asteriou, 2006).

Notwithstanding this recommendation, the study makes selection between FEM and RCM on the basis of BP-test and Hausman's test.

### 3.6.3 Breusch and Pagan Lagrange Multiplier Test (BP-test)

This test is often used for identification of random effect in the panel data and selection as well as specification of model on the basis of Fixed Effect Model (FEM) and Random Effect Model (REF). This model is also known as the advance form of Correlated Random Effects- Hausman Test. The hypothesis of this technique is that there are no random effect i. e.,  $\text{var}(u_{it})$  in equation (2) is zero. Under the null hypothesis, BP follow a chi-square distribution with 1 df; there is only 1 degree of freedom because this technique test a single hypothesis that  $\text{var}(u_{it}) = 0$ .

In this test, if chi-square value is statistically significant (the  $p$  value of obtaining chi-square value or greater is about 5 percent) then the null hypothesis [ $\text{var}(u_{it})$  in equation (2) is not zero]. It means there is no random effect and the specification as well as utilization of FEM is more appropriate than REM.

In the case of rejection of null hypothesis, there exist random effect and employ of REM in this data is not gives robust estimator. In such situation, the further test (Correlated

Random Effect –Hausman Test) is required in order to identify the degree of random effect.

### 3.6.4 Random Effect-Hausman Test

Hausman test is statistical approach in order to make choice between FEM and REM (ECM). If the null hypothesis of BP-test is not rejected then there need to conduct further test to identify the degree of random effect. The null hypothesis underlying the Hausman test is that the FEM and REM (ECM) estimators do not differ substantially (or REM would be consistent and efficient) (Hausman, 1978). The test statistics developed by Hausman has an asymptotic chi-square distribution. If the null hypothesis is rejected, the conclusion is that REM is not appropriate because the random effect is probably correlated with one or more regressors. In this case FEM is preferred to REM (ECM).

$$HT = (\tilde{\alpha}^{FE} - \tilde{\alpha}^{RE})' [\text{var}(\tilde{\alpha}^{FE}) - \text{var}(\tilde{\alpha}^{RE})]^{-1} (\tilde{\alpha}^{FE} - \tilde{\alpha}^{RE}) \sim \text{chi-square (df=1)} \dots \dots \dots (3)$$

# CHAPTER- IV

## RELATIONSHIP BETWEEN REMITTANCES AND HDI IN SAARC COUNTRIES

This chapter analyzes the current trend and status of remittances and HDI in SAARC countries as well as and its statistical inferences. In order to meet desire objectives of this study, several econometric tools are incorporated and presented its results in this chapter.

### 4.1 Situation of HDI in SAARC Country

The trend and situation of HDI value in SAARC countries from 1990 to 2018 is presented in this section with the helps trend path, heterogeneity and smoothness of HDI and so on.

**Table 4. 1 Criteria for Classification of Country**

TIER	RANGE OF VALUE
Very High Development Index (VHDI)	$0.800 \leq HDI \leq 1$
High Development Index (HDI)	$0.700 \leq HDI < 0.800$
Medium Development Index (MDI)	$0.550 \leq HDI < 0.700$
Low Development Index (LDI)	$0.00 \leq HDI < 0.550$

Source: UNDP 2018

High Development Indexed Countries (2018) – Sri-Lanka, Maldives

Medium Development Indexed Countries (2018) – Nepal, India, Pakistan, Bangladesh, Bhutan.

Low Development indexed Country (2018) – Afghanistan only

The human development status of Afghanistan is comparatively poor in South Asia as well as in the world. Various reasons may responsible to produce such weakness in the human development. Internal violence and war, poor performance of government and private sectors, lack of good governance and rules of law, subsistence agriculture system and so on ( UNDP, 2019).

For the analysis of overall trend and situation of HDI in the SAARC country, the study has employed following techniques.

**Figure 4. 1 Trend of SAARC Region HDI (country-wise and overall )**

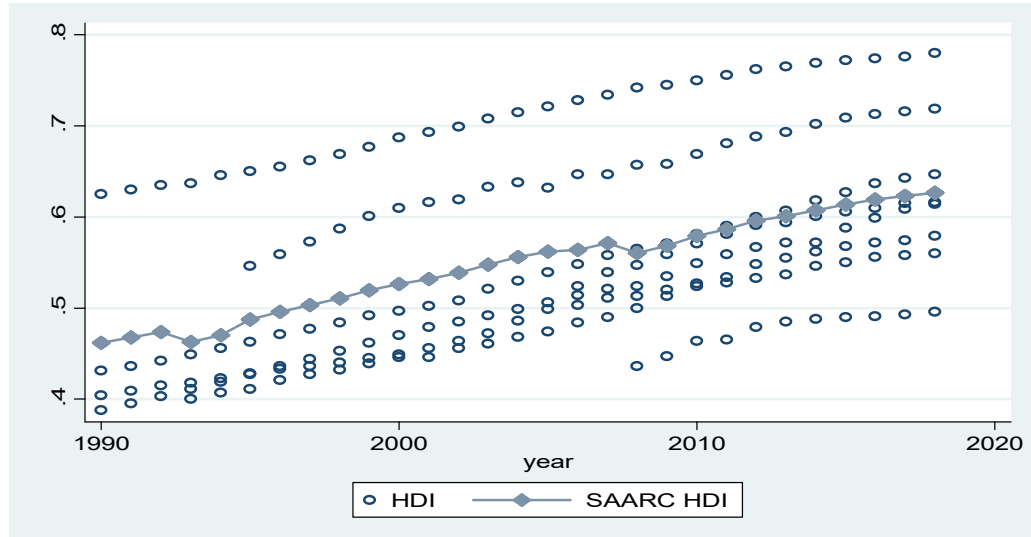
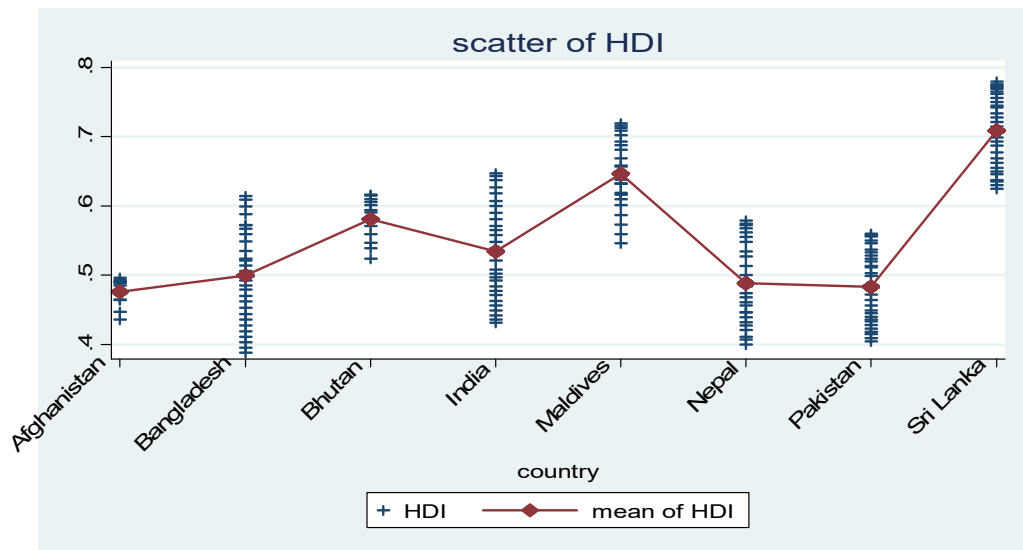


Figure 4.1 represents value of HDI in SAARC region over the study period. The average value of HDI in this region from 1990 to 2018 is 0.528849. Until 2003, the value of HDI is less than average and in 2018 it reached 0.614. In the period of 2000 to 2010, the average growth rate was 1.48. The average annual HDI growth rate South Asia is 1.35, more than Sub- Saharan African Region (1.06); Arab States (0.84); East Asian and the Pacific (1.28); Europe and Central Asia (0.64); Latina America and the Caribbean (0.68), OECD Countries but less than average of Least Developed Countries (1.48). It means, the rate of improvement in the living standard of SAARC region is higher than SSA region. However, the growth rate of HDI is not only the indicator of the living standard of citizens because it often high in the initial phase of development. In the study region, the highest average HDI within study period is placed by Maldives (0.6718) and low by Afghanistan (0.4785) as well as only two countries – Maldives and Sir-Lanka – are above and rest of other are below than overall HDI of this region. Furthermore, the trend of HDI in SAARC region is quite smooth as well as positive. It means, the improvement in the life standard of this region is growing positively and progressively.

The deviation of HDI from its mean value in the SAARC region has presented in figure 4.2 with the help of scatter diagram. The improvement of HDI in case of Bangladesh is

quite good than other country. The variance of HDI in case of India and Nepal is highly similar and improvement pace is also somehow equal. However, the strength and sustainability of human development in Maldives and Sri-Lanka is sound in SAARC region. In case of Pakistan, HDI is quite smooth and less volatile. Due to small time series of Afghanistan and Bhutan, deviation from mean is small but speed of strengthen in case of Bhutan is faster than Nepal, Bangladesh and Pakistan.

**Figure 4. 2 Deviation of HDI from its Mean**



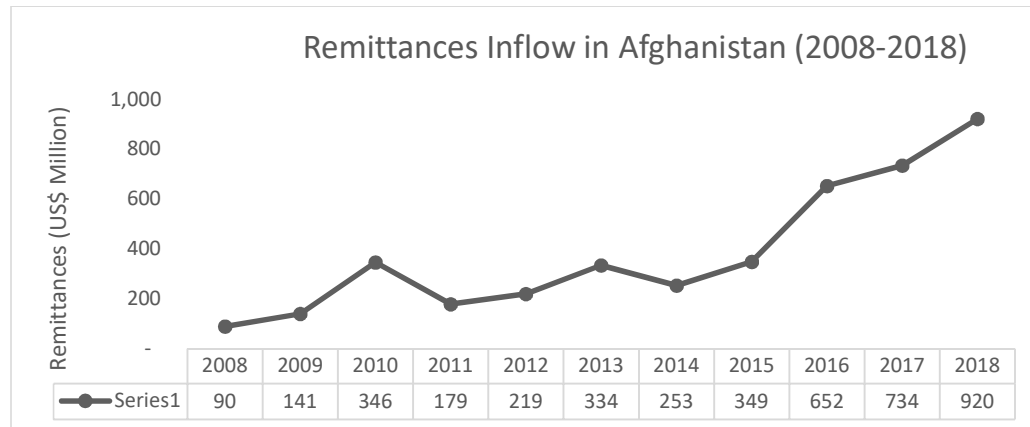
#### 4.2 Situation and Trend of Remittances Inflow in SAARC Countries

This section of the study is concentrated to analyze the trend and reality of remittances on the country-wise basis. The comparative study of growth rate as well as graphical presentation of remittances are major concern of this section.

The basic objective of this section is to make the comparative study of nature of remittances in the South Asian region and make descriptive conclusion about reality. However, within region, there is huge heterogeneity in term of remittances as well as other economic, social and political circumstances. On the one hand, some countries in South Asia have deficit remittances and on the other, some are listed top twenty remittance receiver. Thus, for proper descriptive analysis, this study obey country-wise route.



**Figure 4.3 Trend of Remittances Inflow in Afghanistan**



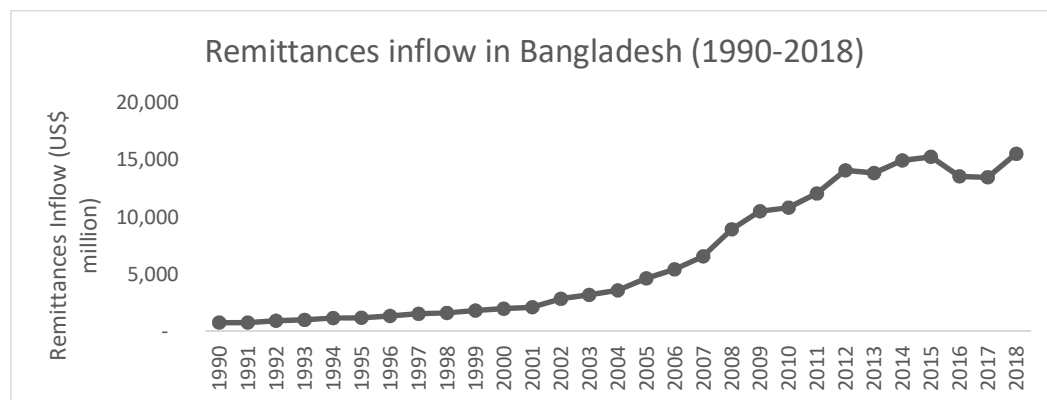
Source: World Bank (2018)

Figure 4.3 represents the situation of remittances in Afghanistan from 2008 to 2018. Remittances growth rate in Afghanistan has highly fluctuated over the study period and ranged from 145.39% to -48.26%. The major responsible factors of such fluctuation are internal political environment and insurgency, international economic composition and so on. Remittances growth rate from 2009 to 2018 has given in table 4.2

**Table 4.2 Remittances Inflow's Growth Rate in Afghanistan**

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
%	56.66	145.39	-48.26	22.34	52.51	-24.3	37.94	86.82	12.58	25.34

**Figure 4.4 Trend of Remittances Inflow in Bangladesh**



Source: World Bank (2018)

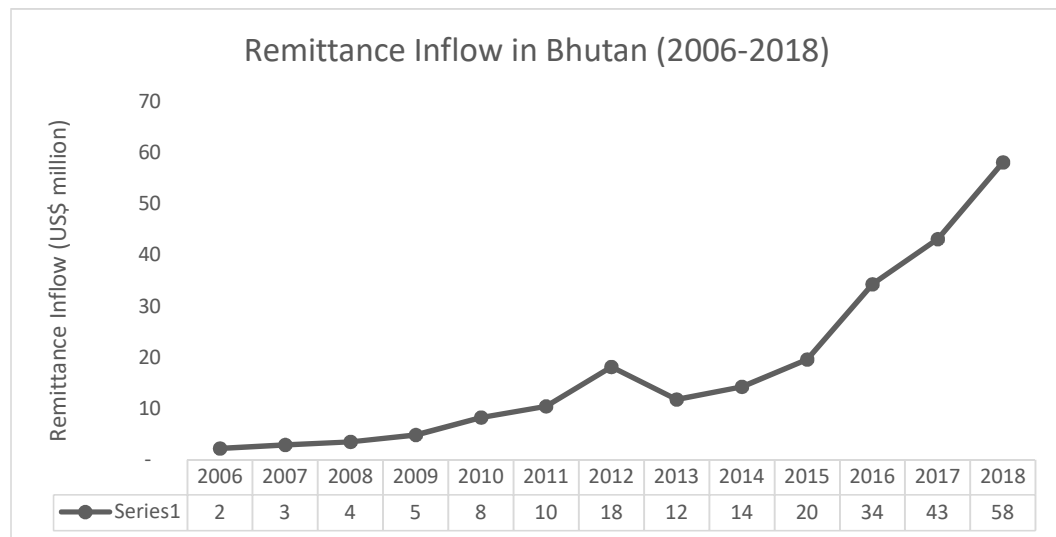
Figure 4.4 has disclosed the situation of remittances inflow in Bangladesh. The flow of remittances were smoothed from 1990 to 2012, but quite fluctuated after 2012 and

highly varied after 2015 due to inflow of foreign investor (especially Chinese Investor) and others internal policies. Remittances growth rate of Bangladesh from 1990 to 2018 has calculated as:

**Table 4.3 Remittances Inflow's Growth Rate in Bangladesh**

<b>Year</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	
Growth	-1.28	18.60	10.75	13.86	4.34	12.50	13.41	4.9	12.70	
<b>Year</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	
Growth	8.78	6.65	36.18	11.58	12.22	29.62	16.91	20.91	36.24	
<b>Year</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Growth	17.67	3.13	11.25	16.97	-1.79	8.08	2.06	-11.25	-0.53	15.16

**Figure 4.5 Trend of Remittances Inflow in Bhutan**



Source: World Bank (2018)

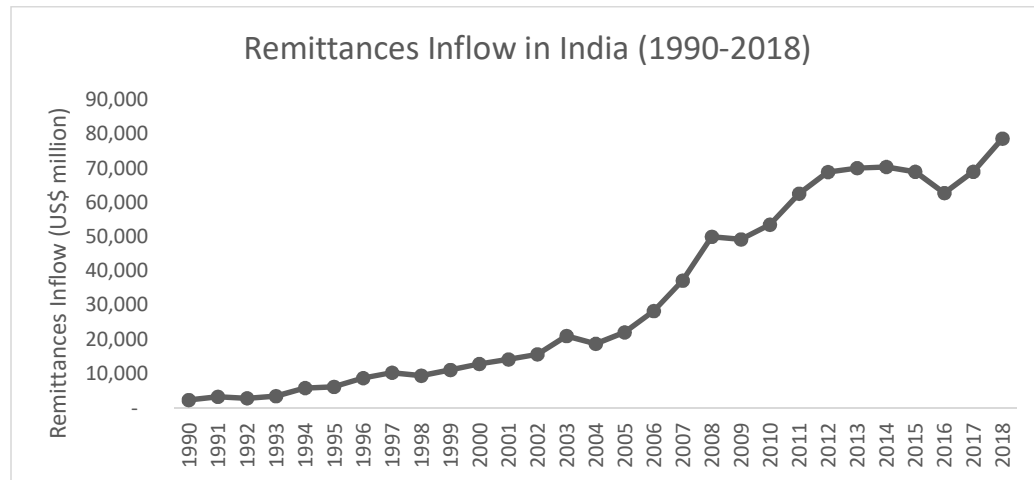
**Table 4.4 Remittance Inflow's Growth Rate in Bhutan**

<b>Year</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
%	50.00	33.33	25.00	60.00	25.0	80.00	-33.33
<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>			
16.66	42.86	70.00	26.47	34.88			

Figure 4.5 and table 4.4 is the trend and situation of remittances and its growth in Bhutan. Remittances inflow of Bhutan over the study period is quite interesting and

highly progressive. Average remittance inflow growth rate of Bhutan from 2007 to 2018 is 35.90 percent and always got more than 15 percent except 2013. Similarly, the smoothness of remittances inflow of this country is comparatively sound in SAAR region. However, the progress of domestic macroeconomic variables are quite weaker and influence of import trade is speeding up. Nevertheless, remittances income of Bhutan is a noteworthy source of foreign exchange and internal economic movement.

**Figure 4. 6 Trend of Remittances Inflow in India**



Source: World Bank (2018)

**Table 4. 5 Remittances Inflow`s Growth Rate in India**

<b>Year</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
%	-12.09	21.80	65.98	6.30	40.79	17.93	-8.30	17.36	15.49
<b>Year</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
%	10.77	10.39	33.79	-10.76	17.98	28.06	31.35	34.29	-1.55
<b>Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
%	8.69	16.86	10.11	1.67	0.60	-2.10	-8.95	9.92	13.98

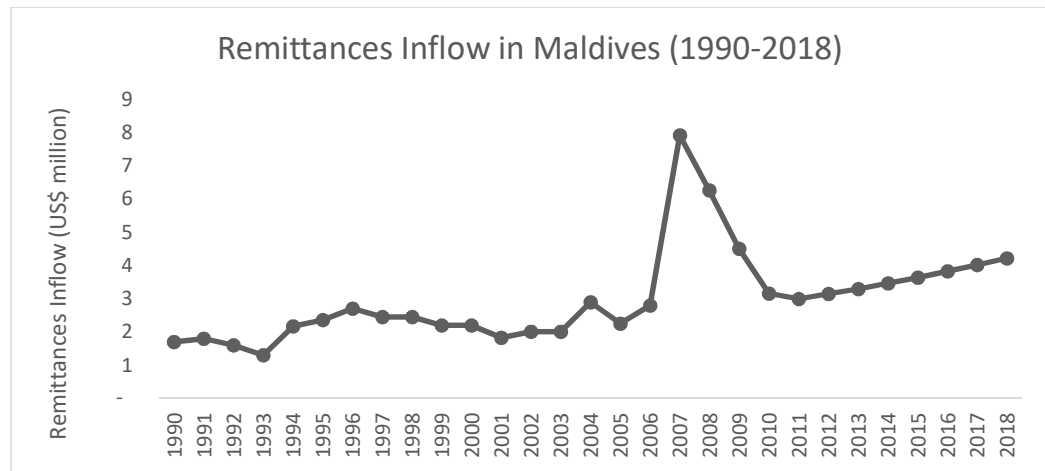
From figure 4.6, the trend and structure of remittances inflow in India over the study period has some extend volatized and remittances inflow growth rate ranged -12.09 to 65.98 percent from 1992 to 2018. In 1990, total remittances inflow had USD 2,382 million and it has reached USD 78,609 million in 2018. It means, the amount of remittances inflow has increased more than 33 times than 1990 and average annual inflow growth rate of same time is 13.72 percent. However, after 2008 the remittances

growth rate is less than average and also negative. Some major responsible factors of such downsizing are drop in oil prices and fiscal tightening in the oil producing countries in the Middle East, which has a significant Indian migrant population accounting for a large chunk of remittances.

**Table 4. 6 Remittances Inflow`s Growth Rate in Maldives**

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
%	5.88	- 11.11	- 18.75	67.20	8.84	14.46	-9.44	-0.08	10.33
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
%	- 17.01	10.37	-	44.13	- 22.17	24.04	183.21	- 20.93	- 28.07
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
%	- 29.93	-5.06	5.00	4.76	5.15	4.90	5.22	4.96	4.98

**Figure 4. 7 Trend of Remittances Inflow in Maldives**



Source: World Bank (2018)

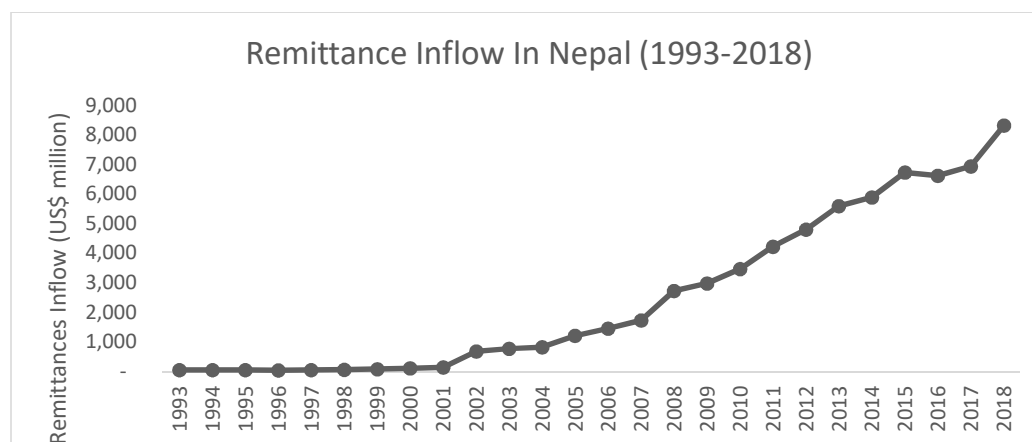
Table 4.6 and figure 4.7 are the real image of remittances inflow and its growth rate in Maldives. The flow of remittances before 2012 has highly fluctuated and ranged -29.93% to 183.21%. The major causes of such type of fluctuation are internal economic strengthen and change in USD value. In the preliminary phase of global financial crisis, the amount of remittances inflow increased by 182.21% and it started slowdown. After 2011, the growth rate of remittances has less than 6.00 percent and the major

responsible factor is rapid strengthening domestic economy. In South Asia, only two country; Bhutan and Maldives have more remittances outflow than inflow. In case of Maldives, remittances as a share of GDP in 2018 was less than 0.1% and average annual growth rate was 7.86 %.

**Table 4. 7 Remittances Inflow`s Growth Rate in Nepal**

<b>Year</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
%	13.38	-22.28	12.00	36.49	23.64	34.19	31.25	361.54
<b>Year</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
%	13.59	6.79	47.24	19.92	19.31	57.29	9.39	16.11
<b>Year</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
%	21.73	13.67	16.59	5.36	14.29	-1.75	4.78	20.03

**Figure 4. 8 Trend of Remittances Inflow in Nepal**

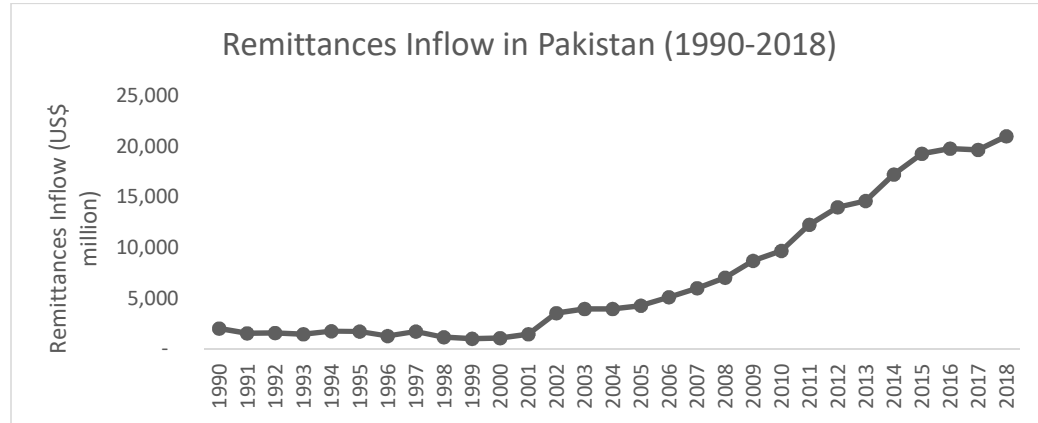


Source: World Bank (2018)

Table 4.7 and figure 4.8 has shown the situation and organization of remittances inflow in Nepal. Nepal has always positive remittances growth rate from 1995 to 2018 except 1996 and 2016. In 1993, the amount of remittances inflow in Nepal was USD 55 million and it has reached USD 8,316 million in 2018; more than 151 fold compare to since 1993. Total amount of remittance inflow from 1993 to 2018 is USD 65,585 and average annual growth rate 30.64 percent. In 2002, the total amount of remittances increased more than 3 times compare to previous, due to open government policy, internal insurgency (Maoist insurgency), and proper data policy. However, in 2016, Nepal faced negative growth rate due to higher growth rate of earthquake year 2015 and influence

of that natural calamities. In 2018, Nepal has got USD 8,316 million, more than 20.03 percent as compare with previous year.

**Figure 4.9 Trend of Remittance Inflow in Pakistan**



Source: World Bank (2018)

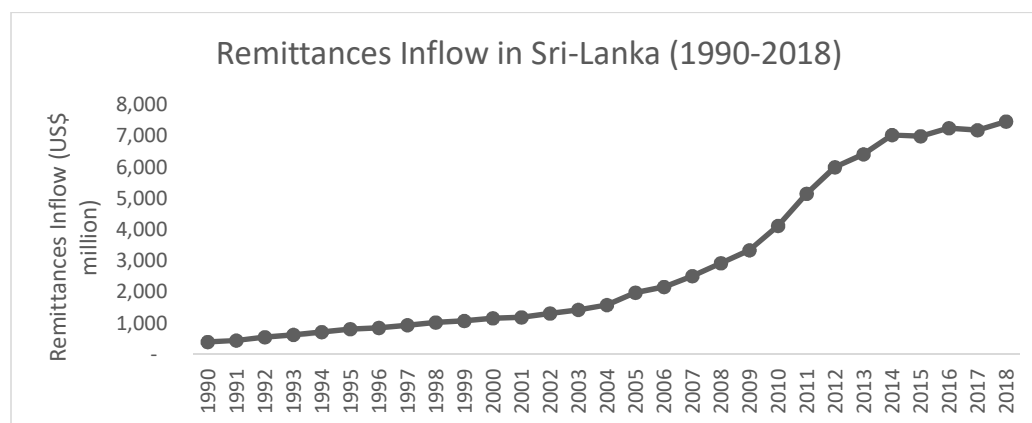
**Table 4.8 Remittances Inflow's Growth Rate in Pakistan**

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
%	-22.89	1.29	-7.64	20.69	-2.29	-25.15	33.59	-31.58	-14.87
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
%	8.43	35.19	143.15	11.58	-0.48	8.57	19.65	17.13	23.84
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
%	11.16	26.55	14.22	4.44	17.88	11.96	2.60	-0.61	6.78

On the basis of figure 4.9 and table 4.8, remittances growth rate of Pakistan over the study period is highly volatile and ranged from -31.58 to 143.15. From 1990 to 2000, the average annual remittances growth rate is negative (-7.91) due to non-liberalized foreign exchange system, and since then spreads between the official exchange rate and the curb rate was large, as a result chunk of remittances used to transfer from Informal Channel (Hawala System) rather than formal Channel. In early 2000, Pakistan government liberalized foreign exchange system which resulted positive annual remittance growth rate. Similarly, Pakistan government also has introduced Zero Remittances Cost Policy and Foreign Employment Remittances Card for formal channelization of remittances inflow. Moreover, the average annual growth rate of remittances from 1990 to 2018 is positive (11.81) and the amount of remittances inflow

has reached nearly 11 time more as compared with 1990. In 2018, the remittances as a share of GDP is 6.8 percent.

**Figure 4. 10 Trend of Remittances Inflow in Sri- Lanka**



Source: World Bank (2018)

**Table 4. 9 Remittances Inflow's Growth Rate in Sri-Lanka**

<b>Year</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
%	23.98	15.33	13.13	13.17	5.22	10.69	8.45	4.70	8.74
<b>Year</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
%	2.24	10.29	9.29	10.59	24.59	9.68	15.72	16.64	14.09
<b>Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
%	23.57	24.98	16.43	7.04	9.56	-0.52	3.74	-0.99	3.83

In table 4.9 and figure 4.10 is shown the reality and nature of remittances inflow of Sri-Lanka. The growth rate of remittances of past 28 years has always been positive and more than 2 percent except in 2015 and 2017. The average annual remittances growth rate of this country from 1990 to 2018 has been 11.23 percent with range 24.98 to -0.99 percent. The amount of remittances has increased more than 18 fold in 2018 to compare with 1990 and 8.1 percent as a share of GDP in 2018. The smoothness of remittances inflow of this country is quite interesting than situation of other SAARC countries. Some Major responsible factors of such outcomes are focus on pre-departure training and other skill improvement program, financial literacy program and so on. However, in 2015 and 2017, the remittances growth rate is negative. The Central Bank of Sri-Lanka attributed this decline to the 'geopolitical uncertainties in the Middle East region,

due to fluctuations in oil prices and sluggish global growth’ and decline in the departures for foreign employment.

Above analysis of situation of remittances inflow in all SAARC countries has conducted in order to attain first objectives of research study (to study the situation of remittances in SAARC countries). The overall trend of inward remittances amount and its growth rate in SAARC region are smooth as well as volatile in different period of time. Change in the policy (monetary policy, fiscal policy, sectorial policy), change in institutional infrastructures (political system, relation with neighbor and rest of the world), change in economic and trade factors (financial crisis, change in oil price) of home and host country are major contributor of fluctuation of remittances income. In this region, only two countries; Bhutan and Maldives are in the situation of Deficit Remittances (Outward Remittances > Inward Remittances) (World Bank, 2018).

### **4.3 Regression Analysis of Relationship between Remittances and HDI**

In this section of the study, the researcher has presented inferential outcomes and their interpretations. In order to make decision about the relationship between remittances and HDI, the study also consider control variables and it effect over the HDI. The idea behind control variables is to make robust decision about the objectives and the statistical significance in the model.

#### **4.3.1 Descriptive Analysis of Control Variables**

The nature and organization of the control variables (dependent variable except remittances) is descriptively analyze in this section. General information about these variables is presented below:

**Table 4. 10 Descriptive Statistics**

Variable	Obs	Mean	Std.Dev.	Min	Max
SSS	190	7.635	3.186	2.849	16.547
DCF	190	46.818	19.036	-5.3	101.4
ITO	190	61.602	40.361	15.506	170.766

A descriptive information of control variables (table 4.10) in overall panel shows that the standard deviation of Domestic Capital Formation (DCF) and International Trade



Openness (ITO) as ratio of GDP is very high due to the structure and economic stage heterogeneity of SAARC country. Similarly, the minimum value of DCF is negative, which mean the loans provided by financial sector to private sector is less than to the government and it is only in Afghanistan over the study period. Moreover, the minimum value of ITO is 15.506 and it is the value of India - due to large size of GDP and domestic population. The maximum value of ITO is 170.766 and it is the value of Maldives. The deviation of Social Sector Spending (SSS) from the overall mean is quite lower than remaining two. Basic causes may be study only incorporate health and education expenditures in term of GDP.

Furthermore, the country-wise average value of SSS, DCF, ITO over the study period are Afghanistan (13.39809,-0.1909091, 50.9910); Bangladesh (4.012785, 42.71724, 33.05032); Bhutan (9.218957, 45.61538, 103.5057); India (7.308717, 60.41376, 35.16252); Maldives (12.98070, 49.34167, 151.4169); Nepal (7.882806, 53.73077, 50.14252); Pakistan (5.154287, 48.1931, 32.29396); Sri-Lanka (6.52231, 46.03448, 67.08456) respectively. The average value of DCF of Afghanistan is negative due to the government credit from financial sector is greater than private sector. Similarly, the value of indicator of trade openness of Maldives is very high in this region and other two are above than regional average. The indicator of domestic capital formation of India is good as country-wise and over the region. In case of Nepal and Pakistan, the average value of variables are in the moderate level and beside the regional average. Country-wise trend path of these variables are incorporated in appendix A<sub>1</sub>. Where the trend of these three variable in case of India, Pakistan and Bangladesh is very smooth and it is quite snaky or winding in case of others.

Values of country-wise SSS with compare to regional mean is higher for Bhutan, Maldives, Afghanistan, and Nepal and rest are less than average (Appendix A<sub>2</sub>). Deviation of DCF from regional mean is very scatter and ranged -5.3 to 101.4 (Appendix A<sub>3</sub>). In case of ITO, the average value country Maldives and Bhutan is higher than hundred and above from regional average. Rest of other countries are closer to average and more convergent (Appendix A<sub>4</sub>).

From above descriptive analysis, the value of ITO, DCF and SSS is higher for those countries whose HDI is high. It means, there is a possibility of some degree of descriptive relationship between these variable but it is only proof after inferential

analysis. In case of Sri-Lanka, the values of all these three control variables are near to the regional average. In other words, Sri-Lanka whose HDI is in the top position in SAARC region, has regional level of ITO, SSS, and DCF. In case of other countries, the smoothness of all these three variables is not as good as Sri-Lanka.

Thus, from above descriptive analysis of control variables, there are some possibilities of good relationship between HDI and fluctuation of control variables. In order to make the inferential decision about the relationship between these variables, further processes are taken in the next section of this paper.

### 4.3.2 Fixed Effect vs. Random Effect

From the Breusch and Pagan Lagrange Multiplier Test of random effect (BP test). The application of the BP-test over mean –corrected values of parameters produces a chi-square value of 851.83. With 1 df, the p-value of obtaining a chi-square value of 851.83 or greater is zero. Therefore, the null hypothesis (random effect i.e., var (error) in equation 2 is not zero) is rejected. It means there is no random effect and the use of Fixed Effect Model is appropriate rather than Error Component Model (ECM) or Random Effect Model (REM). (Gujarati et al., 2012). Furthermore, the outcome of BP-test has recommended there in no further test (Random Effect- Hausman Test) is required to make choice between FEM and REM (Gujarati et. al, 2012). Systematically,

$$HDI_{it} [id, year] = \alpha_0 + \alpha_1 IMR_{it} + \alpha_2 SSS_{it} + \alpha_3 DCF_{it} + \alpha_4 ITO_{it} + \varepsilon[id] + u[id, year]$$

$$\text{Test: } \text{Var}(u) = 0, \text{chibar2}(01) = 851.83, \text{Prob} > \text{chibar2} = 0.000$$

Also the study does not consider country specific factors (religion, geo-political aspects). It means the outcomes/ inference about relationship is sounder on the basis of FEM.

The outcome of Hausman test is Chi2 =147.24 and Pro >Chi2 = 0.000 (Appendix A7). Thus, above mentioned argument about fixed effect model has been trued.

### 4.3.3 Regression Result (Fixed Effect Model)

In this portion of analysis, the researcher is analyzed the degree of relationship between dependent and independent variables with the help of panel fixed effect model. Under the fixed-effects estimation procedure, the residual is not expected to vary across the various sub-groups and the long run relationship between variables is near to the static analysis. The outcomes are as follows:

**Table 4. 11 Regression Results**

HDI	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lnIMR	0.036	0.002	15.59	0.000	0.031	0.040	***
SSS	-0.00709	0.002	-4.13	0.000	-0.010	-0.004	***
DCF	0.00114	0.000	6.30	0.000	0.001	0.002	***
ITO	0.00046	0.000	2.62	0.010	0.000	0.001	**
Constant	-0.211	0.042	-4.98	0.000	-0.295	-0.127	***
Mean dependent var		0.556	SD dependent var			0.100	
R-squared		0.841	Number of obs			190.000	
F-test		234.584	Prob > F			0.000	
Akaike crit. (AIC)		-902.011	Bayesian crit. (BIC)			-885.776	

F test that all  $u_i=0$ :  $F(7, 178) = 165.81$       Prob > F = 0.0000

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The results (table 4.11) show that the estimated regression line is a good-fit. The F-statistic of 165.81, on the assumption that variations in the error term across groups is fixed, was significant at one percent, suggesting that the explanatory variables jointly explain total variations in the human development index within the sub-region. The stochastic term is largely independent from the explanatory variables as revealed by the correlation coefficient. The adjusted R-squared suggests that, at least, 84 percent of the long-run total variations in overall human development index can be attributed to the explanatory variables included in the estimated model after taking into account the appropriate degrees of freedom.

The outcome of this study support the argument of remittances optimistic theory of human development. In other word, a one percent increase in international migrant remittance inflows partially accounts for 0.036 percent improvement in overall human development index at one percent level of significance. It means there is good relationship between the human development and remittances (Adenutsi, 2009; Udah, 2011; Matano & Ramos, 2013; Salas, 2014; Musakwan, & Odhiambo, 2017; Kumar, 2019). The major causes of such relationship may be due to the flow of remittances towards grassroots level of society. Similarly, most of remittances receiver households are low and medium in term of basic needs (Ratha, 2017) and their domestic income level. It implies, the use of remittances are highly concerned to meet the regular or basic

needs of life. Ultimately, the outcomes of such consumption helps to improve the living standard and degree of human development.

Contrary to popular opinions that trade liberalization could worsen the socioeconomic progress of small-open low-income countries, at one percent level of statistical significance, the empirical results show that international trade openness is one of the positive supporter of overall human development in SAARC during the past two and half decades. The outcome of this study is favored International Trade Theory (open market oriented industries, sectors or economies are more effective in allocating production factors among economics actors than the relatively closed ones). This inference has also been trued in case of SSA (Adenutsi, 2009), in case of OIC member countries (Farooq et. al, 2019) and medium high income level countries (Kabadayi, 2013). This is possible if the implementation of trade liberalization policy culminates in job creation, large-scale production leading optimal capacity utilization among domestic industries, and increased competition among local enterprises and their foreign counterparts which are responsible to improve in per capita income and degree of economic participation. Hamid and Amin (2013) tried to investigate the linkage between human development and trade openness in OIC countries. By looking at longevity, literacy and educational attainment they inquired either trade openness affects human development with or without income component. Trade openness was observed to be affecting human development positively and significantly only through income channels.

Similarly the study of Blouin et al. (2009) was concluded that that trade openness increases income that in return enhance the quality of health, educational and lives in case of low-income countries as compare to high income countries because poor countries required to meet their basic needs and improve their quality of life. They also found that there is good relationship between trade openness and improvement in economic as well as social technology which ultimately influence the productivity of domestic factor of production.

The empirical outcome is shown that the relationship between human development (Human Capital Formation) and domestic capital formation is positive as well as significant in the case of SAARC region (Akhmat et. al 2014; Karna, 2018). In other word, the improvement of human development in developing countries is also depends

on the degree of financial corporate governance (Azizi, 2018). It means, domestic capital formation is a good source of human development through crowding in effect, multiplier effect, reducing information asymmetry and pricing risk, facilitating entrepreneurship and increasing risk management capacity, education loan and so on ( Zaman et. al, 2012; Moncelli et. al, 2012; Sehrawat et. al 2014; Kaya, 2017, Satrovic, 2017; Cheshti, 2017; Tekin, 2020). However, the coefficient of domestic capital is somehow small. The major causes of such quite poor outcome in developing countries may be poor social overhead capital, low degree of entrepreneurship, unproductive uses of domestic loan (use in ritual ceremony, regular consumption rather than investment), most of energetic youth are out of country, twin deficit and so on (Gaudel, 2016; Azizi, 2018; Karna, 2018; Khan et. al, 2019).

The outcome of regression analysis has shown that there is negative and significant relationship between social sector spending (public health and education expenditure) and Human development in case of SAARC region. This empirical outcome is opposite from the most of past literature about relationship - there is positive relationship between government health and education expenditure and human development (Chakaborty, 2003; Farooq et. al, 2019; Haque et. al, 2019; patal, et. al, 2019). However, some studies explain the indirect route of social sector spending and its negative impact in public health. It means, if the public expenditures are increases then it forces public sector to search new source of revenue even they are damaging for society and environment (liquor industry, cigarette industry, cement and bricks factory, fast food industry). Similarly, higher public expenditure also forces adoption of free trade policy which can cause infant mortality to increase (Pham, 2016), spread of infectious diseases (Kawachi and Wamala, 2006), negative impact on environment that cause poor health conditions (Owen and Wu 2007) and through promoting income inequality which adversely affects public health and educational participation (Dreher & Gaston, 2008; Bergh and Nilsson 2010).

Similarly, the study of Swaroop and Rajkumar (2002) explored the relationship between public expenditure and health and found that in countries where there is good governance in form of low corruption and quality of bureaucracy, if public expenditures on health increased it can significantly lower down the infant mortality rate, income inequalities and so on. However, in case of SAARC region, the degree of good governance and rule of law is poor and in some country it is very pitiable. Furthermore,

the efficiency, effectiveness and economy of private education and health expenditure (services) in this region is better than that of public sector (ADB, 2017; Patal, et. al, 2019).

Furthermore, the slight change of unit of variable SSS gives positive and significant result of SSS with HDI but other variables are more volatile as well as gives contradictory results (Appendix A<sub>5</sub> and A<sub>6</sub>). Therefore, the negative and significant relationship between social sector spending and HDI may not be in-depth outcome or result but it is only the outcome of combination of variables and their units.

# **CHAPTER-V**

## **MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Major Findings**

The Inflow of remittances in SAARC region has increased by remarkably within last two decades. The situation of remittances in all SAARC countries except Bhutan and Maldives is quite interesting and rapid upward facer. Migration and remittances are having profound impact on structural transformation as well as economic base of that region and even change the economic boat of country (Nepal; agricultural based to remittance based). The country wise and overall summary of situation remittances and HDI is mentioned below;

The average annual growth rate HDI value of Afghanistan within the study periods is 185.9 basis point (1.8598 percent) and other countries – Bangladesh (162.4 basis point), Bhutan (20 basis point), India (147 basis point), Nepal (151.7 basis point), Pakistan (120.9 basis point), Sir- Lanka (79.49 basis point). It means the high growth percentage refers low value of HDI and High possibility to improve the level of human development in respective country. However, both HDI value and growth percentage of Sir-Lanka is higher than Bhutan. Similarly, only two countries – Maldives and Sir-Lanka - are above than the overall HDI of this region.

The average annual remittances growth rate of Afghanistan is 36 percent, higher than average annual growth rate of SAARC region of that period (20.3125 percent) but the bound of fluctuation is very high and ranged between 145.39 percent to -48.26 percent.

Bangladesh has been third highest remittances receiving country of SAARC region in 2018 with inflow of 15.9 billion USD. The average annual growth rate of remittances over the study period is 11.77 percent; only around half of SAARC region average annual growth.

The Bhutan is a SAARC country whose remittances outflow is higher than inflow. The average growth rate of remittances of this country over the study period is 35.90583 percent and it ranged -33.33 percent to 80.00 percent.

In the world remittances receiving market, India has become the first positioned remittances receiver in 2018 by receiving 79.5 billion USD and followed by China, Philippines, Mexico, and Egypt. The average annual growth rate of remittances inflow of this country is 13.71.

Maldives is also one of the remittances deficit (outflow-inflow) country of SAARC region and the remittances inflow is less than 0.1 percent in term of GDP in 2018. The average annual growth rate of remittances inflow of this country is 9.26 percent with several years negative growth rate. The comparatively lower remittances growth rated country of SAARC region over the study period is also Maldives.

Nepal has been the world fourth remittances receiving country in term of percentage of GDP in 2018. The average annual growth rate of remittances of this country is 32.27 percent and highly fluctuated growth rate over the study period.

In the SAARC region, Pakistan has become second remittances receiver country in 2018 with amount 20.9 billion USD. The average annual growth rate of remittances of this country is 11.60 percent (less than regional annual average growth rate) with high fluctuation in rate.

Sri-Lanka has placed as fifth remittances receiver country of SAARC region in 2018 with amount 7.6 billion USD. The past annual growth rate of remittances of this country is 11.26 (less than regional annual average growth rate) percent with often positive growth rate.

The overall scenario of remittances in the SAARC region is good as well as remarkable rate of growth. Nepal and Afghanistan have very high remittances inflow rate but the degree of productive uses is quite low. Similarly, the growth of twin deficit is high in those countries whose remittances growth is high. It refers that the productive uses of remittances is comparatively lower than consumption expenditure.

In the SAARC region, there is positive as well as significant relationship between international migrant's remittances and HDI. It means the null hypothesis –  $H_0$ : there is no relationship between remittances and HDI – is not accepted. In other words, one percent increase in remittances helps to increase 0.036 percent (3.6 basis point) and it is also significant in one percent level of significance. Selection of model is based on BP test which suggests Fixed Effect model is good than Random Effect Model.



The relationship between HDI and DCF is also positive as well as significant. This relationship is also true in case of ITO. But the empirical outcome of the relationship between HDI and SSS is negative. This later result is quite different from the available literature but some study has pointed out that it may be possible through indirect route (environmental aspect, efficiency of government, influence of private sector and so on).

## **5.2 Conclusion**

This study concludes the positive and significant relationship between remittances and HDI in SAARC region. It means, the null hypothesis, there is no significant relationship between remittances and HDI in the SAARC region is not accepted. The result of the regression analysis and other statistical test outcome clarifies the remittance inflow into SAARC countries increases the value of HDI and the influence of remittances over HDI is strong over the study period. Fundamentally, this study explores the relationship of remittance inflow and value of HDI using the data from 1990 to 2018, it shows the positive effect of remittance to increase the value of HDI. However, in some SAARC country, the portion of remittances inflow is very little but the value of HDI is high. It means, in those country whose HDI is high even low amount of remittances inflow is guided by the strong domestic economy and the dependency over remittances inflow is substituted by domestic employment and economic soundness. This study also concludes that the sustainability of domestic economy guided HDI is more than that of remittances guided HDI. The inferential conclusion about HDI and DCF, ITO is positive. It means, to increase human development of country is possible through financial sector and trade sector governance. The interesting but quite conflicting outcome of this study is that Social Sector Spending (% of GDP) has negative relationship with HDI.

## **5.3 Policy Recommendations**

The analysis, findings, and conclusion of this study paper shows that there is a significant connection between remittances and HDI in the SAARC countries. However, the growth rate of remittances in this region is highly fluctuate and volatile. It means, the remittances inflow become uncertain source of domestic fund despite high significance for the improvement of ground level economy. Remittances is playing heroic role in order to get high economic performance and human development as well as improvement of distribution of resources in the SAARC region. Thus, on the basis

of empirical findings, this paper recommends the following macroeconomic policy options to stimulate overall human development and remittances mobilization in SAARC region:

- Correction of cost of remittances is a good technique to reduce the gap between total sent and received by foreign employee family and ultimately formalization of remittances inflow. Thus, to increase connection between remittances and socio-politico-economic development, the responsible organization and authority should need to talk on this issue.
- Some SAARC member countries have introduced remittances schemes for productive utilization and formalization of remittances. Some example are Costless Remittances Transfer Scheme and Foreign Employment Remittances Card (Pakistan), Diaspora Bond (India), Wage Earners' Development Bond (Bangladesh), Foreign Employment Bond and Remit Hydro Limited (Nepal) and so on. However, the basic purposes of these schemes have not attained. Thus, SAARC member countries should need to make joint effort rather than individual for mobilization of gained resources.
- Finding of this study shows that domestic capital formation and international trade openness are positive and significant influential factors of HDI. Thus, the financial sector policy of this region should need to make more liberal and intra-regional trade should need to make more organized.

## REFERENCES

- Acharya, C. P., & Leon-Gogzaleg, R. (2014). How do migration and remittances affect human capital investment: The effects of relaxing information and liquidity constraints? *Journal of Development Study*, 50(3), 444-460.
- ADB, (2017) *International remittances and poverty reduction: evidence from Asian Developing Country*, No.759.
- Adenutsi, D. E. (2009). Long-run macroeconomic impact of international migrant remittances on human development in low-income countries: A panel analysis of sub-Saharan Africa. *Munich Personal RePEc Archive*, No. 37115.
- Akhmat, G., Zaman, K., & Shukui, T. (2014). Impact of financial development on SAARC'S human development. *Quality & Quantity*, 48(5), 2801-2816.
- Alcaraz, C., Chiquiar, D., & Salcedo, A. (2012). Remittances, schooling, and child labor in Mexico. *Journal of Development and Economics*, 97 (1), 156-165.
- Almeida, C. C. (1973). Emigration, espace et sous-développement. *International Migration*, 11(3), 112–117.
- Amuedo- Dorantes, C., & Pozo, S. (2004). Workers remittances and the real exchange rate: A paradox of gifts. *World Development*, 32(8), 1407-1417.
- Appleyard, R. (1989) Migration and development: Myths and reality. *International Migration Review*, 23(3), 486–499.
- Arif, I., Raza, S.A. Ivkovi, A.F., & Suleman, T. (2018). Role of remittances in the development of higher education in top remittances receiving countries. *Journal of Socio-economic Indicator*. doi: 10.1007/s11205-018 –1857-8.
- Aslm, A. L. M., & Sivarajasingham, S. (2019). Dynamic relationship between workers' remittances and human capital formation in Sir-Lanka. *International Journal of Applied Social science*, 6(7).

Asteriou, D. (2006). *Applied econometrics: A modern approach using EViews and Microfit*. Houndmills. Palgrave Macmillan.

Asteriou, D., & Hall, S. G. (2015). *Applied econometrics (3rd ed.)*. Macmillan International Higher Education.

Asypot, T. (2016). Relationship between remittances and human capital in Bangladesh. *Journal of Development Economics*, 108(1), 44–52.

Azizi, S. (2018). The impacts of workers' remittances on the human capital and labor supply in developing countries. *Journal of ELSEVIER*, 75, 377-396. [www.journals.elsevier.com/economic-modeling](http://www.journals.elsevier.com/economic-modeling).

Bansak, C., & Chezum, B. (2009). How to remittances affect human capital formation of school age boys and girls? *American Economic Review*, 99(2), 145-148.

Barro, R. (1996). Determinants of economic growth: Across-country empirical study. *NBER Working Paper 5698*, National Bureau of Economic Research.

Barro, R., Sala-i-Martin, X. (1995). *Economic growth*. Cambridge: McGraw-Hill.

BBS, (2010). *Household income and expenditure survey of Bangladesh*. Bangladesh Bureau of Statistics, Dhaka, Bangladesh.

Beijer, G. (1970). International and national migratory movements. *International Migration*, 8(3) 93–109.

Bergh, A., & Nilsson, T. (2010). Good for living? On the relationship between globalization and life expectancy. *World Development*, 38(9), 1191-1203.

Betz, W., & Simpson, N. B. (2018). The effects of international migration on the wellbeing of native population in Europe. *IJA Journal of Migration*, 2(1), 1-44.

Binford, L. (2003). Migrant remittances and (under) development in Mexico. *Critique of Anthropology*, 23(3), 305–336.

Blouin, C., Chopra, M., & van der Hoeven, R. (2009). Trade and social determinants of health. *The Lancet*, 502–507.

CBS (2011). *Nepal living standard survey III (NLSS-III)*. Central Bureau of Statistics (CBS), Kathmandu, Nepal.

Chakaborty, L. S. (2003). Public expenditure and human development: An empirical investigation. *Wider International Conference on Inequality, Poverty and Human Wellbeing, Helsinki*.

Cheshti, S. (2017). Financial development as an agent of the human development: An economic perspective and prospects of human excellence. *International Journal of Advanced Research and Development*, 2(4), 212-216.

Dreher, A., & Gaston, N. (2008). Has globalization increased inequality? *Review of International Economics*, 16(3), 516–536.

El-Sakka, M., & Mc-Nabb, R. (1999). Macroeconomic determinants of emigrants' remittances. *World Development*, 27, 1493-1502.

Entzinger, H. (1985). Return migration in Western Europe: Current policy trends and their implications, in particular for the second generation. *International Migration*, 23(2), 263–290.

Farooq, F., Yusop, Z., & Chaudhary, I. S. (2019). How do trade openness and public expenditures affect health status in OIC member countries? An empirical analysis. *Pakistan Journal of Commerce and Social Sciences*, 13(4), 1041-1056.

Gaudel, S. (2016). Nexusr between remittances inflow and human development in Nepal. *International Journal of Research in Commerce and Management*, 7(1).

Giuliano, P., & Ruiz-Arranz, M. (2008). Remittances, financial development, and growth. *Journal of Development Economics*, 90(1), 144–152.

Gujarati, D. N.; Porter, D. C., & Gunasekar, S. (2012). *Basic econometrics* (5<sup>th</sup> edition). Chennai, India: McGraw Hill Education Private Limited.

Haller, A. P., Butnar, R.C. and Butnar, G. I. (2018). International migrant remittances in the context of economic and social sustainable development: A comparative study of Romania –Bulgaria. *Sustainability (MDPI)*, No. 1156.

Hamid, Z., & Amin, R. M. (2013). Trade and human development in OIC countries : A panel data analysis. *Islamic Economic Studies*, 21(2), 55–70.

Haque, M. I., & Khan, M. R. (2019). Role of oil production and government expenditure in improving human development index: Evidence from Saudi Arabia. *International Journal of Energy Economics and Policy*, 9(2), 251-256. doi: <http://doi.org/10.32479/ijEEP.7404>.

Hass, H. D. (2007). Remittances, migration and social development. *United Nations Research Institution for Social Development*, 34 (1), 1-46.

Hassan, S. A., Zaman, K., Zaman, S., & Shabir, M. (2014). Measuring health expenditure and outcomes in SAARC region: Health is a luxury? *Quality and Quantity*, No. 4813, 1421-1437.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251-1271.

Huay, C. S., & Bani, Y. (2018). Remittances, poverty and human capital: Evidence for developing countries. *International Journal of Social Economics*, 45(8), 1227-123.

IMF (2006). *Foreign employment and remittances*. Washington, D.C., USA

IMF (2015). *A study paper on remittances and its mobilization*. Washington, D.C., USA.

ILO, (2017). *Labor migration in Asia and Asia Pacific*. Geneva, Switzerland.

Imran, K., Cheek, C. K., & Deradason, E.S. (2018). Foreign remittances and household-base human development: A regional analysis of Punjab, Pakistan. *Academy of Accounting and Financial Studies Journal*, 22(2), 1-8.

- Javid, M., Arif, U., & Qayyum, A. (2012). Impact of remittances on economic growth and poverty. *Academic Research International*, 2(1).
- Kabadayi, B. (2013). Human development and trade openness: A case study on developing countries. *Advances in Management & Applied Economics*, 3(3), 193-199
- Kawachi, I., & Wamala, S. (Eds.). (2006). *Globalization and health*. Oxford University Press.
- Karna, P. (2018). Relationship between human capital formation and domestic private loans from financial institutions: a case study of selective SAARC countries. *Journal of Management and Applied Economics*, 7(2), 126-135.
- Kaya, A. (2017). Finansal piyasalardaki gelişmelerin İnsani gelişmişlik Üzerine etkisi: Türkiye Örneği. *Uluslararası İktisadi ve İdari İncelemeler Dergisi*, (20), 169-180.
- Keely, C.B., & Tran, B.N. (1989). Remittances from labor migration: evaluations, performance and implications. *International Migration Review*, 23(3), 500-525.
- Khan, Z., Rabbi, F., Ahmad, M., & Siqun, Y. (2019). Remittances inflow and private investment: a case study of South Asian economies via panel data analysis. *ECONOMIC RESEARCH-EKONOMSKA ISTRAZIVANJA*, 32(1), 2723-2742 <https://doi.org/10.1080/1331677X.2019.1655464>
- Kroeger, A., & Anderson, K. H. (2014). Remittances and human capital of the children: new evidence for from Kyrgyzstan during revolution and financial crisis, 2005 to 2009. *Journal of Competitive Economics*, 42(3), 770-785.
- Kumar, B. (2019). The impact of international; remittances on poverty alleviation in Bangladesh. *Remittance Review*, 4(1), 67-86. doi: <http://doi.org/10.33182/rr.v4i1.665>.
- Lewis, J.R. (1986). International labor migration and uneven regional development in labor exporting countries. *Tijdschrift voor Economische en Sociale Geografie*, 77(1), 27-41.
- Lipton, M. (1980). Migration from the rural areas of poor countries: The impact on rural productivity and income distribution. *World Development*, 8(1), 1-24.

Lucas, R., & Stark, o. (1985). Motivation to remit. *Journal of international Political Economy*. 93(5), 901-918.

Matano, A., & Ramos, R. (2013). Remittances and educational outcomes: Evidence for Moldova. *International Migration Review*, 35(4), 1205-1231

McKenzi, D. J., & Rapoport, H. (2011). Can migration reduce educational attainment? Evidence of Mexico. *Journal of Population Economics*, 24(4), 1331-1358.

Monacelli, T., Iovino, L., & Pascucci, F. (2012). Financial development and human development index. Retrieved from <https://www.semanticscholar.org>

Musakwan, M. T., & Odhiambo, N. M. (2017). Remittances and poverty nexus in Botswana: A multivariate approach. *UNISA Economic Research Working Papers*, 27(4), 23-33.

Okafor, C. N., Ogbonna, K. S. & Okeke, C. I. (2017). Effect of government expenditure on human capital development in Nigeria. *ARD International Journal of Banking and Financial Research*, 3(2).

Owen, A. L., & Wu, S. (2007). Is trade good for your health? *Review of International Economics*, 15(4), 660–682.

Patel. G., & Annapoorna, M. S. (2019). Public education expenditure and its impacts on human resources development in India: An empirical analysis. *South Asian Journal of Human Resource Management*, Issue-13.

Pham, N.T.A. (2016). Trade and economic development: Evidence from less developed countries. (Unpublished doctoral dissertation). University of Adelaide, Australia.

Ratha, D. (2007). Leveraging remittance for development. *Migration Policy Institution*: Washington D. C.

Ratha, D. (2017). Migration and remittances: recent development and outlooks. *Migration and Development Brief (KNOMAD, WBG)*.



- Razmi, M. J., Abbasian, E., & Mohammadi, S. (2012). Investigating the effect of government health expenditure on HDI in Iran. *Journal of Knowledge Management, Economics and Informational Technology*, Issue-5.
- Rubenstein, H. (1992). Migration, development and remittances in rural Mexico. *International Migration*, 30(2), 485-512.
- Russell, S. S. (1992). Migrant remittances and development. *International Migration*, 30(3/4), 267–288.
- Salas, V. B. (2014). International remittances and human capital formation. *Journal of World Development Economics*, 59(1), 224-237.
- Sehrawat, M., & Giri, A. K. (2014). The relationship between financial development indicators and human development in India. *International Journal of Social Economics*, 41(12), 1194-1208.
- Shah, P., & Roshan, T. (2017). Nexus between remittances and self-employment of women: Evidence of SAARC region. *Journal of Economics and Sustainable Development*, 6(2), 81-86.
- Siddique, A., & Kamal, P. (2010). Workers` migration and remittances in Pakistan. Seminar Paper, Department of Economics and Finance, Sacred Heart University: USA
- Solimano, R. (2003). Remittances and its macroeconomic performance. *The International Journal of Macroeconomics*, 11(1), 210-220.
- Satrovic, E. (2017). Financial development and human capital in Turkey: ARDL Approach. *Cappadocia Academic Review*, 1(2), 1-15.
- Sun, H., Clottey, S. A., Geng, Y., Fang, K., & Amissah, J. C. K. (2019). Trade openness and carbon emissions: Evidence from Belt and Road countries. *Sustainability*, doi: 10.3390/su11092682.
- Swaroop, V., & Rajkumar, S. A. (2002). Public spending and outcomes: does governance matter? Retrieved from <https://elibrary.worldbank.org>.

Trekin, B. (2020). The nexus between financial development and human development: The case of developing countries. *Journal of Emerging Economies & Islamic Research*, 8(2), 73 – 87.

Udah, E. B. (2011). Remittances, human capital and economic performance in Nigeria. *International Journal of Human Development and Sustainability*, 4(1).

UNDP, (2019). *World human development report*. New York, USA.

Valero, J. (2008). Remittances and the household's expenditure on health in Mexico. Retrieved From <http://www.researchgate.net/publication/21411-6503>.

World Bank, (2018). *Migration and remittance fact book*. Washington D. C., USA

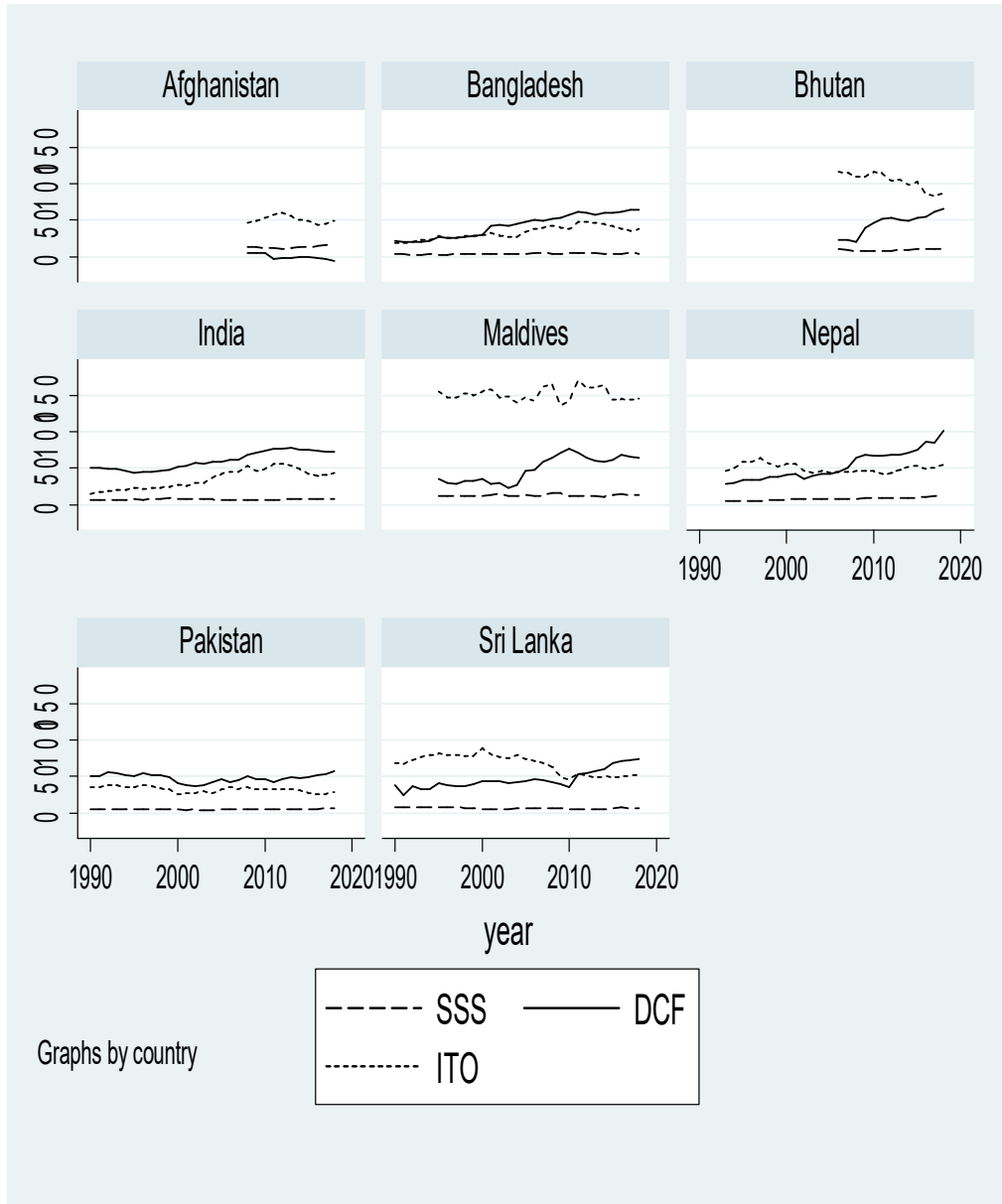
World Bank, (2018). *World Development Indicators*. Washington, D. C., USA

Zaman, K., Izhar, Z., Khan, M. M., & Ahmad, M. (2012). The relationship between financial indicators and human development in Pakistan. *Economic Modelling*, 5(29), 1515-1523.

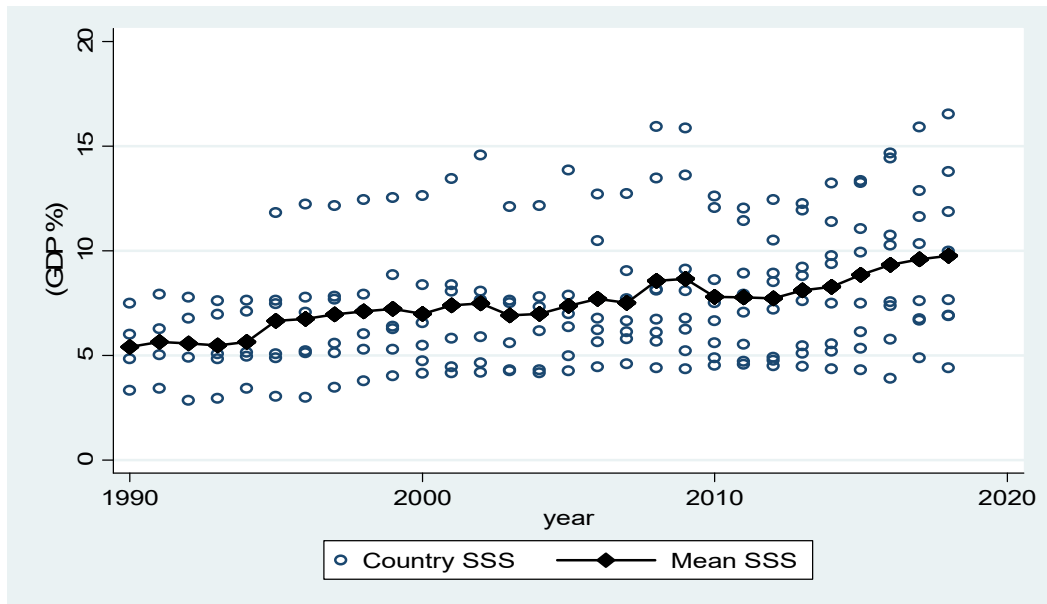
Zhunio, M. C., Vishwasrao, S., & Ching, E. P. (2012). The influence of remittances on education and health outcomes: a cross country study. *Applied Economics*, 44(35), 4605- 4616.

# APPENDICES

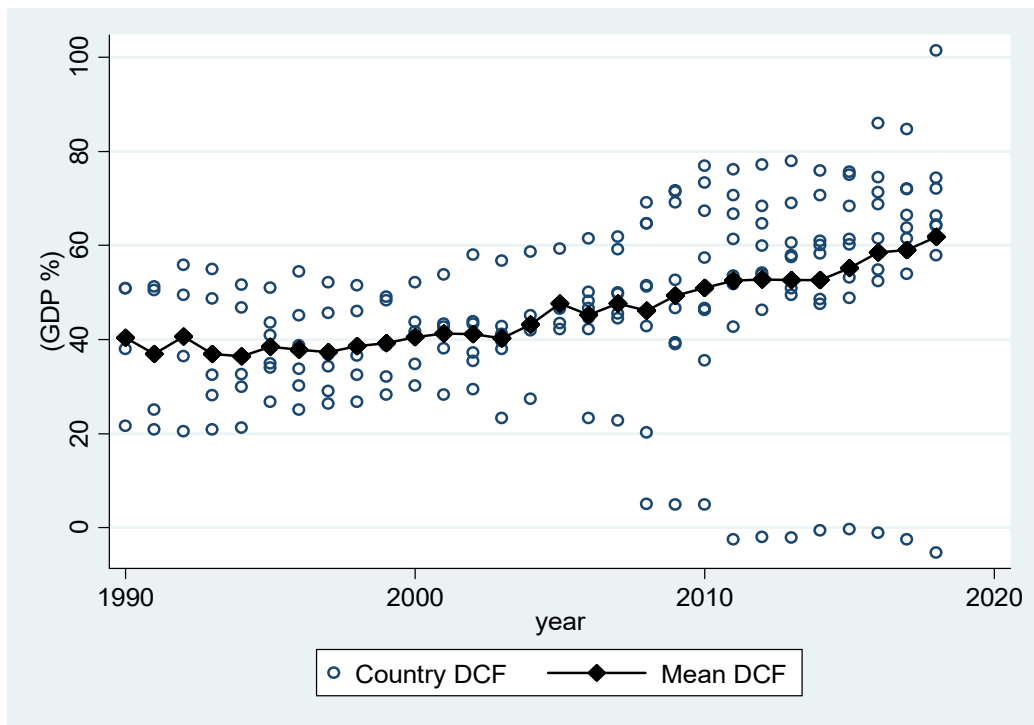
## Appendix A1: Country-wise trend of SSS, DCF, and ITO



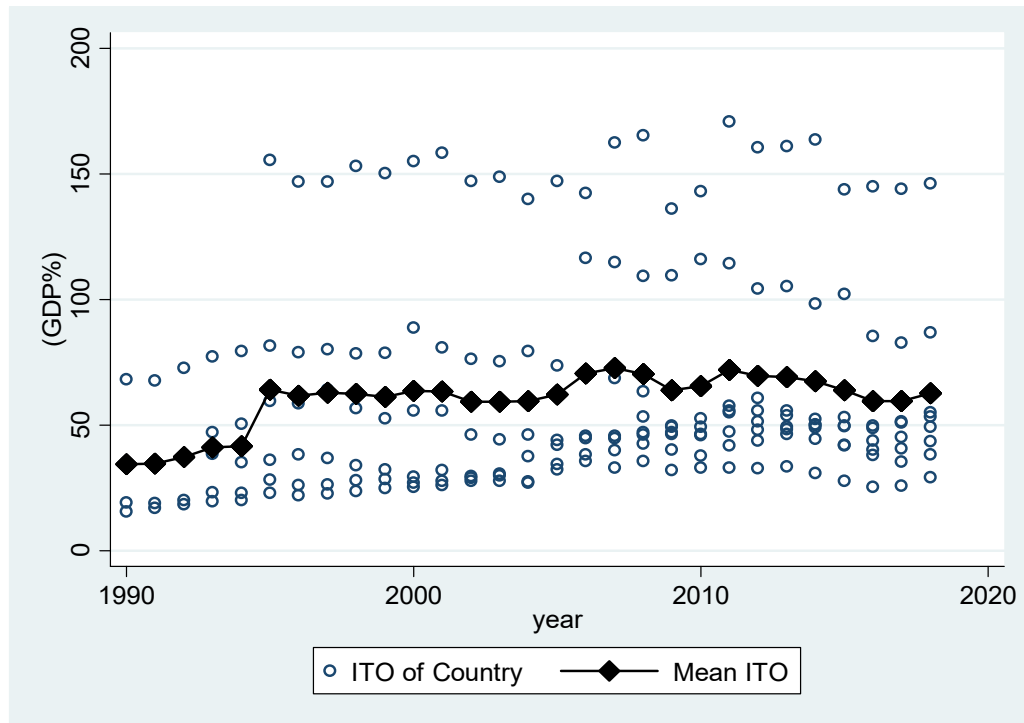
### Appendix A2: Deviation of SSS from Regional Mean



### Appendix A3: Deviation of DCF from Regional Mean



### Appendix A4: Deviation of ITO from Regional Mean



### Appendix A5: Outcome of Model: $HDI_{it} = \alpha_0 + \alpha_1 \ln IMR_{it} + \alpha_2 \ln SSSV_{it} + \alpha_3 DCF_{it} + \alpha_4 ITO_{it} + u_{it}$

#### Regression results

HDI	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lnIMR	0.007	0.002	4.24	0.000	0.004	0.010	***
lnSSS	0.067	0.003	23.76	0.000	0.061	0.072	***
DCF	0.000	0.000	-2.33	0.021	0.000	0.000	**
ITO	0.001	0.000	6.40	0.000	0.000	0.001	***
Constant	-1.040	0.041	-25.34	0.000	-1.121	-0.959	***
Mean dependent var		0.556	SD dependent var		0.100		
R-squared		0.958	Number of obs		190.000		
F-test		1017.606	Prob > F		0.000		
Akaike crit. (AIC)		-1155.945	Bayesian crit. (BIC)		-1139.710		

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Appendix A6: Outcome of Model:**  $HDI_{it} = \alpha_0 + \alpha_1 IMR_{it} + \alpha_2 \ln SSSV_{it} + \alpha_3 DCF_{it} + \alpha_4 ITO_{it} + u_{it}$

**Regression Results**

HDI	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
IMR	0.000	0.000	0.06	0.953	0.000	0.001	
LnSSS	0.075	0.002	35.01	0.000	0.071	0.079	***
DCF	0.000	0.000	-1.77	0.079	0.000	0.000	*
ITO	0.001	0.000	5.75	0.000	0.000	0.001	***
Constant	-1.080	0.043	-	0.000	-1.165	-0.996	***
			25.27				
Mean dependent var		0.556	SD dependent var			0.100	
R-squared		0.954	Number of obs			190.000	
F-test		920.283	Prob > F			0.000	
Akaike crit. (AIC)		-1137.685	Bayesian crit. (BIC)			-1121.450	

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Appendix A7: Hausman Test**

	(b)	(B)	(b-B)
Variables	Fixed	Random	Difference
lnIMR	.0358837	.0317675	.0041163
SSS	-.0070963	-.003884	-.0032123
DCF	.001149	.0012434	-.0000944
ITO	.0004644	.000819	-.0003547

b = consistent under Ho and Ha; obtained from panel regression

B = inconsistent under Ha, efficient under Ho; obtained from panel regression

Test: Ho: difference in coefficients not systematic

Hausman (1978) specification test result

	Coef.
Chi-square value	147.238
P-value	0