**University of Rajshahi** **Rajshahi-6205** **Bangladesh.**

**RUCL Institutional Repository** **http://rulrepository.ru.ac.bd**

Institute of Bangladesh Studies (IBS) PhD thesis

2015

# Migration, Remittances and Economic Growth in South Asian Countries: A Macroeconomic Study

Rahman, S M Atiar

University of Rajshahi

http://rulrepository.ru.ac.bd/handle/123456789/271

*Copyright to the University of Rajshahi. All rights reserved. Downloaded from RUCL Institutional Repository.*

# Migration, Remittances and Economic Growth in South Asian Countries: A Macroeconomic Study

**Ph.D. Dissertation**

**S M Atiar Rahman**
**Session: 2011-2012**

**Institute of Bangladesh Studies**
**University of Rajshahi**
**Rajshahi, Bangladesh**

**February 2015**

# Migration, Remittances and Economic Growth in South Asian Countries: A Macroeconomic Study

Ph.D. Dissertation

*Submitted to the Institute of Bangladesh Studies, University of Rajshahi*

*for the Degree of*

*Doctor of Philosophy*

*in*

*Economics*

**S M Atiar Rahman**

## Supervisor

**Professor Md. Abdul Wadud**

Ph.D. (Newcastle, United Kingdom)

Department of Economics

University of Rajshahi

Rajshahi, Bangladesh

# Declaration

I do hereby declare that this thesis titled **"Migration, Remittances and Economic Growth in South Asian Countries: A Macroeconomic study"** submitted to the Institute of Bangladesh studies, University of Rajshahi, Bangladesh for the degree of Doctor of Philosophy in Economic is my own and original work.

I do also declare that this thesis or any part of it has not been submitted to any other university/institute/organization for achieving any degree or diploma.

**S M Atiar Rahman**

# Certification

I have the pleasure to certify that the thesis titled **"Migration, Remittances and Economic Growth in South Asian Countries: A Macroeconomic Study"** is an original research work carried out by **S M Atiar Rahman** for the requirement of the degree of Doctor of Philosophy in Economics. To the best of my knowledge, this is the researcher's own achievement and not a conjoint work. The thesis or thereof the part of it has not been submitted to any other university/institute/organization for any degree.

I also certify that the research work has been carried out under my direct supervision and the thesis is found satisfactory. I gladly recommend him to submit the thesis to the Institute of Bangladesh Studies (IBS), University of Rajshahi for the degree of Doctor of Philosophy.

Supervisor

February, 2015

**(Dr. Md. Abdul Wadud)**

*To*

*My Parents & My Lovely Wife*

# Acknowledgement

All thanks and praises to ALMIGHTY ALLAH (SWTH), the Merciful, the Compassionate, Who provides me the opportunity and give me the strength, courage, patience, endurance and ability to complete this research work within stipulated time and all praises for HIS HOLLY PROPHET HAZARAT MUHAMMAD (P.B.U.H), the city of knowledge and torch of guidance for humanity as a whole.

The whole journey to obtain a Ph.D. is really difficult and tiresome but great experience for me. This difficult journey is made easy for me by many people. A number of people contribute to the realization of this study. In this regard, I want to thank all those people who have extended their hands to bring this thesis into light successfully.

I express my profound gratitude, indebtness and sincere appreciation to my supervisor Dr. Md. Abdul Wadud, Professor, Department of Economics, University of Rajshahi for his profound encouragement, keen interests, constant guidance, innovative suggestions, constructive criticism and immense help throughout the tenure of this research work. It is all due to his full cooperation from beginning to end that I have completed this research successfully. I have learnt the art of hard work from the personality of my supervisor. I am also thankful and grateful to my supervisor for giving me an unconditional opportunity to work and use logistics in his personal university chamber.

The Institute of Bangladesh Studies (IBS) is a great institution of the University of Rajshahi, a supreme educational institute in Bangladesh. Therefore, I like to acknowledge services and guidance provided by this Institute. The IBS appears to be a very congenial and inspiring environment to carry out my research. I wish to thank all teachers and staff of IBS, for their help and encouragement during my study. I would thank to the former Director of IBS, Professor Dr. Mahbubur Rahman and present Director, Professor Dr. Md. Shahidullah. I zestfully would like to express my deepest sense of gratitude, sincere appreciation and heart-felt admiration to all other teachers of this institute specially Professor Dr. M Zainul Abedin, Professor Dr. Swarochish Sarkar, Dr. Mostofa Kamal, Dr. Jakir Hossain, Dr. Mohammad Najimul Hoque and Dr. Md. Kamruzzaman for their constant guidance, effective teaching, excellent cooperation, continuous encouragement and inspiration accorded to me throughout the entire period of my work.

I would like to thank various researchers and economists for their contribution towards writing valuable research material about different aspects of remittances and migration. I recognize contribution of various national and international institutions for publishing and making available data. I am highly grateful to the IBS and University Grants Commission (UGC) Bangladesh for awarding fellowship to conduct my research work.

I express my thanks and indebtness to my friends of IBS including Md Nasir Uddin Goni, Mohammad Monirul Islam, Md. Muniruzzaman, Abdullah-Al Mamun, Abu Rusho Mohhammad Toab Hossain, Md. Wahiduzzaman, Md. Nur Alam, Masuma Pervin, Md Zamirul Islam, Abdul Matin, Farzana Kaium Keya, Atikus Samad and Mahabubul Islam.

I am thankful to Dr. Md Khaleduzzaman of Institute of Education and Research (IER), University of Rajshahi, and Farid Uddin Khan and Md Fazlul Haque of Department of Economics, University of Rajshahi for their kind cooperation and encouragement. I would like to mention names of Md. Zahirul Islam Sikder, Mamun Ahmed, Dr. Nurrunnabi Miah and Mirza Md. Moyen Uddin with great pleasure.

It is impossible to express my gratitude and indebtedness to my lovely wife Nusrat Zerin for her patience and encouragement during the course of this study. Her continuous support for carrying on my study, and affectionate attitude inspired me to complete the research. My words of gratitude go to the most important people in my life. I would like to thank my parents and parents in laws for their love, support and encouragement for completing this research work. My brother, sister, friends and relatives always inquire about the progress of my research work, and they give me suggestions and inspirations for completion of my dissertation. I express my gratitude to all M. Phil. / Ph. D. fellows of IBS for their cooperation.

Finally, I remember those names, which have not been mentioned here due to lack of space, but I have received generous help from them in my day-to-day work.

# List of Acronyms

| | |
|---|---|
| 2SLS | Two Stage Least Squares |
| ARDL | Auto Regressive Distributive Lag |
| BBS | Bangladesh Bureau of Statistics |
| BMET | Bureau of Manpower Employment and Training |
| CBS | Central Bureau of Statistics |
| DCPS | Domestic Credit to Private Sector |
| DSE | Dhaka Stock Exchange |
| EAP | Economically Active Population |
| ECM | Error Component Model |
| ENCR | Emigration Check Not Required |
| EU | European Union |
| EXR | Official Exchange Rate |
| FDI | Foreign Direct Investment |
| FE2SLS | Fixed Effects Two Stage Least Squares |
| FEM | Fixed Effects Model |
| FMOLS | Fully Modified Ordinary Least Squares |
| GATS | General Agreement on Trade in Services |
| GCC | Gulf Cooperation Council |
| GDP | Gross Domestic Product |
| GFCE | Government Final Consumption Expenditure |
| GFMD | Global Forum on Migration and Development |
| GLS | Generalized Least Squares |
| GMM | Generalized Method of Moments |
| GMM-IV | Generalized Method of Moments-Instrumental Variable |
| GNI | Gross National Income |
| GNP | Gross National Product |
| HDI | Human Development Index |
| HTAs | Home Town Associations |
| ILO | International Labor Organization |
| INF | Inflation Rate |
| IOM | International Organization of Migration |
| IV-2SLS | Instrumental Variable- Two Stage Least Squares |
| KSA | Kingdom of Saudi Arabia |

| | |
|---|---|
| LAC | Latin American Countries |
| LSDV | Least Squares Dummy Variable |
| M2 | Broad Money |
| MDGs | Millennium Development Goals |
| MENA | Middle East and North Africa |
| MFN | Most Favored Nation |
| MOIA | Ministry of Overseas Indian Affairs |
| NELM | New Economics of Labor Migration |
| NGO | Non-Government Organization |
| NIDS | National Institute of Development Studies, Nepal |
| ODA | Official Development Assistance |
| OECD | Organization of Economic Cooperation and Development |
| OLS | Ordinary Least Squares |
| PCI | Per Capita Income |
| PR | Political Rights |
| PSR | Potential Support Ratio |
| R&D | Research & Development |
| REM | Random Effects Model |
| SAR | South Asian Region |
| SGMM | System Generalized Method of Moments |
| SLBFE | Sri Lanka Bureau of Foreign Employment |
| SSA | Sub-Saharan Africa |
| TFP | Total Factor Productivity |
| TRAD | Trade GDP Ratio |
| UAE | United Arab Emirates |
| UK | United Kingdom |
| UN | United Nations |
| UNDESA | United Nations Department of Economic and Social Affairs |
| UNDP | United nations Development program |
| USA | United States of America |
| VAR | Vector Auto Regression |
| VECM | Vector Error Correction Model |
| WDI | World Development Indicators |
| WTO | World Trade Organization |

# Abstract

The study examines the macroeconomic relationship among migration, remittances and economic growth in South Asian countries using dynamic panel data ranging from 1976 to 2012. It applies Blundell-Bond system Generalized Method of Moments (SGMM) techniques along with pooled Ordinary Least Squares (OLS) model, Fixed Effects model (FEM) and Random Effects Model (REM) estimation techniques. The study addresses two basic hypotheses to explore the relationship among migration, remittances and economic growth.

To test the first hypothesis which states that remittances in South Asia are mostly determined by home and host country's economic conditions, number of emigrants and macroeconomic variables of home country, we empirically estimate the model of the macroeconomic determinants of remittances within the framework of additive utility function of representative migrants. Empirical results of the macroeconomic determinants of remittances model indicate that remittance inflows in South Asian countries are positively related with the ratio of migrants to population, financial development and political rights index of home countries; and negatively related with economic condition and inflation rate of home countries. Though host countries' economic condition show a positive determinant and home countries' official exchange rate a negative determinants, their coefficients are found to be statistically insignificant. The negative and statistically significant coefficient of home countries' economic condition implies that remittances in South Asian countries are compensatory in nature and they are altruistically motivated. Positive and significant coefficient of migrant population ratio implies that the more the countries send its migrants abroad the more remittances it receives. So, intensive cooperation is needed between the origin and destination countries to reap the maximum benefits from international migration.

The second hypothesis of this study states that remittances do not promote economic growth in South Asian countries. We test this hypothesis with the model of remittances - growth nexus within the framework of neo-classical growth model. Empirical results from the remittances-growth model reveal the evidence of statistically significant positive growth effects of remittances in South Asian countries. This implies that increasing volume of remittances contribute positively to economic growth in this region. Among the

set of other control variables of the model of macroeconomic impact of remittances on economic growth, we find that gross fixed capital formation, official development assistance, government final consumption expenditure and official exchange rate show positive impact; and inflation rate and foreign direct investment show negative impact on economic growth in South Asian countries.

On the basis of our empirical results, we can conclude that there exist a significant relationship among migration, remittances and economic growth in South Asian countries. The macroeconomic determinants of remittance model confirm that migration is a significant factor of remittance inflows and the remittance-economic growth model shows that remittances significantly and positively impact economic growth in this region. This confirms that migration, remittances and economic growth are statistically and significantly interlinked with each other and the most visible outcome of migration which impact on economic growth is remittances. Therefore, right and effective policies are very important to accelerate the pace migration from South Asian countries to the rest of the world so that more remittances can promote economic growth in this region. In this context, migration friendly policy formulation by reducing migration cost and remittance transfer cost, building vibrant financial system in the home country, and creating conducive investment environment for the migrants and their families can increase the development potential in South Asian countries.

# Table of Contents


| Chapter/Section | Content | Page |
|---|---|---|
| Title Page | | ii |
| Declaration | | iii |
| Certification | | iv |
| Dedication | | v |
| Acknowledgement | | vi |
| List of Acronyms | | viii |
| Abstract | | x |
| Table of Contents | | xii |
| List of Tables | | Xvii |
| List of Figures | | xix |
| List of Appendix | | xx |
| **Chapter 1** | **Introduction** | 1-15 |
| 1.1 | Introduction | 1 |
| 1.2 | Background of the Study | 2 |
| 1.3 | Statement of the problem | 5 |
| 1.4 | Research Question | 11 |
| 1.5 | Research Objectives | 12 |
| 1.6 | Statement of Research Hypothesis | 12 |
| 1.7 | Study Rationale | 13 |
| 1.8 | Data | 14 |
| 1.9 | Organization of the Thesis | 14 |
| **Chapter 2** | **Review of Literature** | 16-42 |
| 2.1 | Introduction | 16 |
| 2.2 | Review of Literature on Determinants of Remittances | 16 |
| 2.3 | Review of Literature on Growth Effects of Remittances | 22 |
| 2.4 | Review of Literature on Migration and Economic Growth | 32 |
| 2.5 | Review of Literatures on Different Issues of Migration, Remittances and Growth | 36 |
| 2.7 | Conclusion and Research Gap | 41 |

| | | |
|---|---|---|
| **Chapter 3** | **Theories of Migration, Remittances and Economic Growth** | 43-75 |
| **3.1** | Introduction | 43 |
| **3.2** | Theories of Migration | 43 |
| **3.2.1** | Classical Theory of Migration | 49 |
| **3.2.2** | Neoclassical Theory of Migration | 50 |
| **3.2.3** | Behavioral Model of Migration | 52 |
| **3.2.4** | The Value-Expectancy Model | 53 |
| **3.2.5** | Migration as a Theory of Social Systems | 53 |
| **3.2.6** | Keynesian Migration Theory | 54 |
| **3.2.7** | Push-Pull Theory of Migration | 54 |
| **3.2.8** | Dual /Segmented Labor Market Theory | 55 |
| **3.2.9** | Marxist Theory of Migration | 57 |
| **3.2.10** | Historical Structural Theory of Migration | 57 |
| **3.2.11** | World Systems Theory of Migration | 57 |
| **3.2.12** | Network Theory of Migration | 58 |
| **3.2.13** | Institutional Theory of Migration | 59 |
| **3.2.14** | Cumulative Causation Theory of Migration | 59 |
| **3.2.15** | Migration Systems Theory | 60 |
| **3.2.16** | New Economics of Labor Migration (NELM) | 61 |
| **3.2.17** | Transnational Theory of Migration | 62 |
| **3.2.18** | Roy's Theory of Migration | 62 |
| **3.2.19** | Mobility Transition Theory of Migration | 62 |
| **3.2.20** | Heckscher-Ohlin Migration Model | 64 |
| **3.2.21** | A General Framework of Migration Decision Making | 64 |
| **3.3** | Theory of Remittance | 66 |
| **3.3.1** | Theory of Pure Altruism | 66 |
| **3.3.2** | Theory of Self Interest/ Self Interest Motive | 67 |
| **3.3.3** | Tempered Altruism or Enlightened Self Interest | 68 |
| **3.3.4** | Exchange Motive | 68 |
| **3.3.5** | Insurance Motive | 69 |
| **3.3.6** | Investment Motives | 70 |
| **3.3.7** | Loan Repayment Motive | 70 |

| | | |
|---|---|---|
| **3.3.8** | Inheritance and Enforcement Motive | 70 |
| **3.3.9** | Strategic Motive | 71 |
| **3.4** | Theory of Economic Growth | 71 |
| **3.4.1** | Classical Growth Model | 72 |
| **3.4.2** | Marxian Theory of Growth | 72 |
| **3.4.3** | Rostow's Stages of Growth Theory | 72 |
| **3.4.4** | Keynesian Growth Model | 73 |
| **3.4.5** | Neo-Classical Growth Model | 73 |
| **3.4.6** | Endogenous Growth Model | 74 |
| **3.5** | Conclusion | 74 |
| **Chapter 4** | **Trends and Patterns of Migration, Remittances and Economic Growth in South Asia** | 76-111 |
| **4.1** | Introduction | 76 |
| **4.2** | Trends of Global Migration | 76 |
| **4.2.1** | Patterns of Global Migration | 78 |
| **4.2.2** | Trends of Global Remittances | 80 |
| **4.3** | Trends of South Asian Migration | 81 |
| **4.3.1** | Skills and Age Group of Migrant Workers in South Asia | 85 |
| **4.3.2** | Remittance to South Asia | 85 |
| **4.3.3** | Trend of GDP Growth Rate in South Asia | 88 |
| **4.4** | Country Specific Description of Migration, Remittances and Economic Growth | 89 |
| **4.4.1** | The Case of Bangladesh | 89 |
| **4.4.1.1** | Patterns of Migration in Bangladesh | 90 |
| **4.4.1.2** | Trends of Migration, Remittances and Economic Growth in Bangladesh | 91 |
| **4.4.1.3** | Summary Statistics of Data of Bangladesh | 92 |
| **4.4.2** | The Case of India | 94 |
| **4.4.2.1** | Patterns of Migration in India | 95 |
| **4.4.2.2** | Trends of International Migration, Remittances and Economic Growth in India | 95 |
| **4.4.2.3** | Summary Statistics of Data of India | 97 |
| **4.4.3** | The Case of Nepal | 98 |

| | | |
|---|---|---|
| **4.4.3.1** | Trends of International Migration, Remittances and Economic Growth in Nepal | 99 |
| **4.4.3.2** | Summary Statistics of Data of Nepal | 101 |
| **4.4.4** | The Case of Pakistan | 103 |
| **4.4.4.1** | Trends of International Migration, Remittances and Economic Growth in Pakistan | 103 |
| **4.4.4.2** | Summary Statistics of Data of Pakistan | 105 |
| **4.4.5** | The Case of Sri Lanka | 106 |
| **4.4.5.1** | Trends of International Migration, Remittances and Economic Growth in Sri Lanka | 107 |
| **4.4.4.2** | Summary Statistics of Sri Lankan Data | 109 |
| **4.5** | Conclusion | 110 |
| **Chapter 5** | **Conceptual Framework of the Study** | 112-124 |
| **5.1** | Introduction | 112 |
| **5.2** | Explanation of Key Concepts | 112 |
| **5.3** | Conceptual Framework | 115 |
| **5.4** | Conceptual Models | 117 |
| **5.4.1** | Theoretical Model of Macroeconomic Determinants of Remittances | 118 |
| **5.4.2** | Theoretical Model of Remittances-Economic Growth | 121 |
| **5.5** | Conclusion | 124 |
| **Chapter 6** | **Empirical Framework of the Study** | 125-148 |
| **6.1** | Introduction | 125 |
| **6.2** | Determinants of Remittances | 126 |
| **6.3** | Empirical and Methodological Issues of Remittances Determination Model | 129 |
| **6.4** | Definitions and Expected Signs of the Variables Used in the Determinants of Remittances Model | 131 |
| **6.5** | Impact of Remittances on Economic Growth | 135 |
| **6.6** | Empirical Model of Remittances-Economic Growth Model | 143 |
| **6.7** | Description of Variables and Their Expected Signs in Remittances-Growth Model | 145 |
| **6.8** | Conclusion | 148 |
| **Chapter 7** | **Econometric Methodology of the Study** | 149-162 |

| | | |
|---|---|---|
| **7.1** | Introduction | 149 |
| **7.2** | Advantages of Panel Data | 150 |
| **7.3** | The Panel Data Model | 150 |
| **7.3.1** | Pooled OLS Regression Model | 151 |
| **7.3.2** | Fixed Effects Model | 151 |
| **7.3.3** | Random Effects Model | 153 |
| **7.3.4** | Fixed Effects Model (FEM) versus Random Effects Model (REM) | 154 |
| **7.4** | Dynamic Panel Data Model | 155 |
| **7.4.1** | The Arellano-Bond Estimation Technique | 156 |
| **7.4.2** | The Blundell-Bond Estimation Technique | 158 |
| **7.5** | Empirical Estimation Issues | 159 |
| **7.6** | Conclusion | 162 |
| **Chapter 8** | **Empirical Results of the Study** | 163-181 |
| **8.1** | Introduction | 163 |
| **8.2** | Statistical Characteristics of the Variables Used in the Models | 164 |
| **8.2.1** | Results of Summary Statistics of the Variables Used in the Empirical Models | 164 |
| **8.2.2** | Results of Correlation Coefficients of the Variables Used in the Models | 166 |
| **8.3** | Empirical Results of the Model of Macroeconomic Determinants of Remittances | 168 |
| **8.4** | Empirical Results of the Remittances-Growth Model | 174 |
| **8.5** | Conclusion | 181 |
| **Chapter 9** | **Summary, Conclusion and Policy Implication** | 182-194 |
| **9.1** | Introduction | 182 |
| **9.2** | Summary of the Chapters | 182 |
| **9.3** | Conclusion | 188 |
| **9.4** | Implication of Results | 189 |
| **9.5** | Policy Implications for Bangladesh | 191 |
| **9.5** | Policy Suggestions | 192 |
| **9.6** | Scope of Further Research | 194 |
| **Bibliography** | | 195-216 |
| **Appendix** | | 217-226 |

# List of Tables


| Tables | Title of the Table | Page |
|---|---|---|
| Table 1.1 | Migration from South Asian Countries to other Countries | 2 |
| Table 1.2 | South Asian Countries' Socioeconomic Profiles | 3 |
| Table 1.3 | Demographic and Economic Profile: South Asian countries | 4 |
| Table 1.4 | Migration Status – Selected South Asian Countries | 5 |
| Table3.1 | Theories of Migration Defined by Level of Analysis | 44 |
| Table 3.2 | Theories of Migration Defined by Initiation or Perpetuation of Migration | 45 |
| Table 4.1 | Trends and Projection of International Migrants | 77 |
| Table 4.2 | Number of Emigrants in South Asian Countries | 82 |
| Table 4.3 | Bilateral Remittance Matrix in South Asian Countries in 2013 (in US$ Million) | 88 |
| Table 4.4 | Summary Statistics of Data of Bangladesh in Remittance Determinants model | 92 |
| Table 4.5 | Summary Statistics of Data of Bangladesh in Remittances-Growth Model | 93 |
| Table 4.6 | Summary Statistics of Data of India in Remittance Determinants model | 97 |
| Table 4.7 | Summary Statistics of data of India in Remittances-Growth Model | 98 |
| Table 4.8 | Summary Statistics of Data of Nepal in Remittance Determinants Model | 101 |
| Table 4.9 | Summary Statistics of Data of Nepal in Remittances-Growth Model | 102 |
| Table 4.10 | Summary Statistics of Data of Pakistan in Remittance Determinants model | 105 |
| Table 4.11 | Summary Statistics of Data of Pakistan in Remittances-Growth Model | 106 |

| | | |
|---|---|---|
| Table 4.12 | Summary Statistics of Data of Sri Lanka in Remittance Determinants model | 109 |
| Table 4.13 | Summary Statistics of Data of Sri Lanka in Remittances-Growth Model | 110 |
| Table 6.1 | List of Variables, Definition and Expected Signs | 133 |
| Table 6.2 | Possible Positive and Negative Impacts of Remittances | 138 |
| Table 8.1 | Summary Statistics for Variables Used in the Macroeconomic Determinants Remittances Model | 165 |
| Table 8.2 | Summary Statistics of Variables Used in Remittances-Growth Model | 166 |
| Table 8.3 | Bivariate Correlation among Variables used in the Remittances Determinants Model | 167 |
| Table 8.4 | Bivariate Correlations among Variables used in the Remittances-Growth Model | 168 |
| Table 8.5 | Results of Pooled OLS Estimation of Remittances Determinants Model | 169 |
| Table 8.6 | Empirical Results of FEM and REM on Remittances Determinants Model | 171 |
| Table 8.7 | Results of SGMM Estimation on Remittances Determinants Model | 172 |
| Table 8.8 | Results of Pooled OLS Estimation Technique on Remittances-Growth Model | 175 |
| Table 8.9 | Results of FEM and REM on Remittances-Growth Model | 177 |
| Table 8.10 | Results of SGMM Methods on Remittances-Growth Model | 178 |

# List of Figures


| Figures | Figure Title | Page |
|---|---|---|
| Figure 3.1 | Selected Migration Theories Offered by Various Disciplines of Science | 46 |
| Figure 3.2 | Impact of International Migration on Real Wage | 52 |
| Figure 3.3 | General Framework of Migration Decision Making | 65 |
| Figure 4.1 | Four Migration Pathways | 79 |
| Figure 4.2 | Trends of Global Remittances, ODA, FDI and Private Debt and Equity | 80 |
| Figure 4.3 | Top 10 Recipients of Remittances in the World (US$ billion, 2013) | 81 |
| Figure 4.4 | Top 10 Recipients of Remittances in the World (% of GDP) | 81 |
| Figure 4.5 | Amounts of Remittance Inflows (US$ billion) in South Asian Countries | 86 |
| Figure 4.6 | Amounts of Remittance Inflows (% of GDP) in South Asian Countries | 86 |
| Figure 4.7 | Remittances and Reserves in South Asia | 87 |
| Figure 4.8 | Trends of International Financial Flows in South Asia | 87 |
| Figure 4.9 | Trend of GDP Growth Rate in South Asia | 89 |
| Figure 4.10 | Trends of International migration and Remittances in Bangladesh | 91 |
| Figure 4.11 | Trends of GDP Growth Rate in Bangladesh | 92 |
| Figure 4.12 | Trends of International Migration and Remittances in India | 96 |
| Figure 4.13 | Trends of GDP Growth in India | 96 |
| Figure 4.14 | Trends of International Migration and Remittances in Nepal | 100 |
| Figure 4.15 | Trends of GDP Growth in Nepal | 100 |
| Figure 4.16 | Trends of International Migration and Remittances in Pakistan | 104 |
| Figure 4.17 | Trends of GDP Growth in Pakistan | 104 |
| Figure 4.18 | Trends of International Migration and Remittances in Sri Lanka | 108 |
| Figure 4.19 | Trends of GDP Growth in Sri Lanka | 108 |
| Figure 5.1 | Schematic Frameworks of Migration, Remittances and Economic Growth | 116 |

# List of Appendices


| Appendices | Appendix Title | Page |
|---|---|---|
| Appendix 1 | Bangladesh's Data for Remittance Determinants Model | 217 |
| Appendix 2 | Bangladesh's Data for Remittance-Growth Model | 218 |
| Appendix 3 | Data of India for Remittance Determinants Model | 219 |
| Appendix 4 | Data of India for Remittance-Growth Model | 220 |
| Appendix 5 | Data of Nepal for Remittance Determinants Model | 221 |
| Appendix 6 | Data of Nepal for Remittance-Growth Model | 222 |
| Appendix 7 | Data of Pakistan for Remittance Determinants Model | 223 |
| Appendix 8 | Data of Pakistan for Remittance-Growth Model | 224 |
| Appendix 9 | Data of Sri Lanka for Remittance Determinants Model | 225 |
| Appendix 10 | Data of Sri Lanka for Remittance-Growth Model | 226 |

# Chapter 1

# Introduction

## 1.1 Introduction

The relationship among migration, remittances and economic growth is complex and multidimensional. These three variables are linked in many ways- through the livelihood and survival strategies of individuals, households and communities, through well targeted remittances, through investment and advocacy by Diasporas and transnational communities, through international mobility associated with global integration, inequality and insecurity, and through economic growth and development of the labor sending and receiving countries. International migration, remittances and economic growth have been traditionally treated as separate policy portfolios, for example, the best known economic model of migration decisions ( Lewis,1954; and Harris and Todaro,1970) has no place for income remittances from migrants to their areas of origin. However, today they are increasingly viewed as interlinked. While the growth and development status of a country could determine migration flows, i.e., remittance flows, migration and remittance flows in turn, contribute positively to national growth and development, including economic, social and cultural progress. Therefore, it is seen that there is an explicit relationship among migration, remittances and economic growth. The most common measure for determining the significance of international migration on national growth and development is the remittances that migrants often send to their friends and families in their country of origin. So, partnership through greater networking between countries of origin and destination is needed to fully utilize the development potential of migration and remittances. International migration and remittances remains a vital ingredient in economic and social development in South Asian countries. International migration and remittances have made a paramount contribution to the welfare of this region. With limited natural and financial resources and large human resources for the growth and development of its economy, South Asian countries are caught between its aspirations for development and its ability about the kind of development, which is equally beneficial to the whole population.

South Asia is a remittance economy. Every year, South Asian countries send out a significant number of migrant workers, and remittances sent by migrant workers become an important source of funds for economic development of these countries (Ozaki, 2012). In 2014, South Asia receives, $117 billion remittances and its growth rate is found to 5.5% (World Bank, 2014).

This Chapter is organized as follows: Section 1.2 gives the background of the study, statement of the problem is presented in Section 1.3, research question of the study is given in Section 1.4, Section 1.5 describes the research objectives, statement of the research hypothesis is provided in Section 1.6, study rationale is presented in Section 1.7, data issues of the study are given in Section 1.8, and Section 1.9 describes the organization of the thesis.

## 1.2 Background of the Study

Migration, remittances and economic growth affect, and are affected by, each other. Traditionally, people migrate when they are both pushed by lack of opportunities at home and pulled by the hope of economic gains elsewhere. In this context, international migration offers offshore employment opportunities and alternative development options to South Asian countries. That is why, thousands of South Asian workers with relevant skill endowments leave their home country every year to pursue better economic prospects within or outside South Asia. Table 1.1 reveals that Bangladesh, India and Pakistan are sharing a large stock of migrants with each other as they were in previous time known as British India.

**Table 1.1: Migration from South Asian Countries to Other Countries**

| Sources countries | Bangladesh | India | Sri Lanka | Bhutan | Maldives | Nepal | Pakistan |
|---|---|---|---|---|---|---|---|
| Host countries | India (3805844) | UAE (1299439) | India (186264) | India (7977) | India (239) | India (651642) | India (1327671) |
| | Pakistan (1508256) | Saudi Arabia (1045985) | Saudi Arabia (114981) | Pakistan (3153) | UK (201) | Pakistan (256125) | Saudi Arabia (661383) |
| | Saudi Arabia ( 379207) | USA (1037360) | Canada (91942) | Nepal (426) | Australia (175) | Saudi Arabia (14026) | UK (322178) |

Source: Version_4, Parsons et al. (2007) (cited in Choudhury, 2011) N.B. Figures in the parenthesis give number of migrants

However, the economic significance of this intra-region migration in terms of earning remittance income is very low. Rather, the Gulf boom in the early 1970s and emerging economies of South East Asia trigger a different type of labor movement from South Asia to the Middle East and Malaysia, Singapore, South Korea, and this type of migration is economically most important for remittance earning. Table 1.2 captures the socioeconomic profile of South Asia as a whole. Table 1.2 also provides some indication of the role of migration for the sub region.

**Table 1.2: South Asian Countries' Socioeconomic Profiles**

| | | |
|---|---|---|
| Population (million) 2013 | 1671 | |
| Surface area (Square kilometer) 2006 | 5140 | |
| Population growth rate - annual average % (2000-2013) | 1.0 | |
| GNI per capita (in US$ 2013) | 1474 | |
| Labor force (million) | 607 | |
| Poverty headcount ratio 2004 % | 30.8 | |
| Stock of emigrants | 26.7 million (1.6% of population | |
| Stock of immigrants | 12.2 million (0.7% of population) | |
| Emigration rate of tertiary educated – 2000 | Sri Lanka | 29.7% |
| | Afghanistan | 23.3% |
| | Pakistan | 12.6% |
| | Bangladesh | 4.3% |
| | India | 4.2% |
| | Nepal | 3.0% |
| Inward remittance flows (in US$ billion, 2009) | 74.9 | 4.8% of GDP |
| Remittances received, 2013 (in US$ billions) | India | 70 |
| | Bangladesh | 14 |
| | Pakistan | 15 |
| | Sri Lanka | 7 |
| | Nepal | 5 |
| Remittances received (percentage of GDP), 2012 | Nepal | 25% |
| | Bangladesh | 12% |
| | Pakistan | 6% |
| | Sri Lanka | 10% |
| | India | 4% |
| International migrants stock percentage of total population,2010 | Nepal | 3.2% |
| | Bangladesh | 0.7% |
| | Pakistan | 2.4% |
| | Sri Lanka | 1.7% |
| | India | 0.5% |
| | South Asia | 0.8% |

Source: Migration and Remittances Fact book 2014, Migration and Remittances Team, Development Prospects Group, World Bank.(cited in Wickramasekara, 2011).

South Asia holds 1671 million people, 607 million labor force and half the world's poor. Its stock of emigrants is 26.7 million which is 1.6% of its total population, and in 2009, it receives US$ 74.9 billion remittances which are 4.8% of this region's GDP. In absolute term (measured in US$ billion), India receives highest amount of remittances followed by Bangladesh, Pakistan, Sri Lanka and Nepal. But in relative sense (measured as a % of GDP), Nepal (25% of its GDP) is in strongest position in earning remittance followed by Bangladesh (12%), Sri Lanka (10%), Pakistan (6%) and India (only 4%). Table 1.3 provides an economic and demographic profile of South Asian countries.

**Table 1.3: Demographic and Economic Profile of South Asian Countries**

| Country | Population Millions 2013) | Population Growth (2000-2013) | Land Area (1000 sq. km) | GDP Growth rate, (2002-2006) | GNI per Capita, 2006 | Human development index | HDI ranking among total 182 countries | Population density per sq. km | Per capita remittance in 2008($) |
|---|---|---|---|---|---|---|---|---|---|
| Bangladesh | 156.6 | 1.0 | 144 | 5.7 | 480 | 0.543 | 146 | 1000 | 34.73 |
| India | 1252.1 | 1.0 | 3287 | 7.8 | 820 | 0.612 | 134 | 338 | 22.62 |
| Nepal | 27.8 | 1.0 | 147 | 2.2 | 290 | 0.553 | 144 | 190 | 89.30 |
| Pakistan | 182.1 | 2.0 | 796 | 5.8 | 770 | 0.572 | 141 | 200 | 32.16 |
| Sri Lanka | 20.5 | 1.0 | 66 | 5.8 | 1300 | 0.759 | 102 | 303 | 144 |

Source: Migration and Remittances Fact book, Migration and Remittances Team, Development Prospects Group, World Bank (cited in Wickramasekara, 2011).

Table 1.3 indicates some of the factors which may lead to higher migration pressures in South Asian countries. It shows that this region is endowed with low incomes, high population growth & densities, low Human Development Index (HDI) rankings and very low per capita remittances.

Table 1.4 summarizes the migration situation based on some indicators relating to migration trends. Table 1.4 also reveals that India has highest migrant stock followed by Pakistan, Bangladesh, Sri Lanka and Nepal. Similarly India has highest stock of migrants abroad followed by Bangladesh, Pakistan, Sri Lanka and Nepal.

**Table 1.4: Migration Status – Selected South Asian Countries**

| Country | Outflow (annual) | Stock inside in 2005 | Stock inside in 2010 | Stock abroad in 2005 | Remittance US$ million 2009 | Remittance -GDP ratio 2009 |
|---|---|---|---|---|---|---|
| Bangladesh | 696393 | 1031886 | 1085345 | 4885704 | 10523 | 11.8 |
| India | 778322 | 5886870 | 5436012 | 9987129 | 49256 | 3.9 |
| Nepal | 211760 | 818702 | 945865 | 733662 | 2986 | 22.9 |
| Pakistan | 204655 | 3554009 | 4233592 | 3415952 | 8720 | 6.0 |
| Sri Lanka | 218609 | 366390 | 339915 | 1642455 | 3363 | 7.9 |

Source: World Bank, Migration and Remittances Factbook 2011, Migration and Remittances Team, Development Prospects Group, World Bank (cited in Wickramasekara, 2011).

If we ascertain the status of migration of South Asian countries, we see that both India and Pakistan are considered as countries of origin, transit and destination in this sub region; Bangladesh and Sri Lanka are countries of origin and transit; and Nepal is only country of origin.

From this analysis, it clear that the issue of migration, remittances and economic growth in South Asia is very important and it demands special attention. For this reason, this research conducts a macroeconomic study on migration, remittances and economic growth in South Asian countries, thus, giving increasing emphasize on promoting migration and development linkages through remittances.

## 1.3 Statement of the problem

The main focus of the study is to determine the macroeconomic relationship among migration, remittances and economic growth in South Asian countries. There is so far no conclusive answer in secondary literature to the question of whether migration and remittances constitute, at the aggregate level, an important and vital source of development finance to the developing countries of South Asian region. Literature on the potential developmental impact of migration and remittances in an economy is vast but mixed. Migration is now increasingly viewed as linked with issues of economic development (Okodua, 2010). Migration, in general, provides solutions to two problems.

Firstly, migration meets labor shortage of receiving countries which are normally the developed countries of the North or rich countries. On the other hand, many countries of the world are facing problems like unemployment, high poverty and low investment. In this case, migration offers alternative employment opportunities to developing countries. In the host country, migrants provide scarce labor at an affordable price, much needed skills, business investments, innovation and entrepreneurship, pay taxes, purchase goods and services and bring diversity. In the home country, the benefits accrue in the form of remittances, reduced unemployment and underemployment pressures, trade, investments, philanthropy, skills, knowledge and technology transfers, tourism, values and advocacy. Migration though not the only means (de Hass, 2005), provide a solution to this problem through labor outflow and remittances inflow. Migration is, therefore, receiving attention from governments and international bodies like United Nations (UN), Organization for Economic Cooperation and Development (OECD) and International Organization of Migration (IOM) as a vehicle of fulfilling the development objectives.

In a globalized world, it is important to recognize migration as a key enabler for equitable, inclusive and sustainable, social and economic development. However, to fully realize the potential of migration for the creation of wealth, trade, jobs and social empowerment, we need policies that recognize the positive contribution of migrants, protect their human rights and better manage their movements. The benefits of migration do not come automatically. In this context, policies matter a great deal. In the same way, we can remember the remarks of UN secretary general in Global Forum on Migration and Development (GFMD) in 2012 that 'with the right policies, migration can promote development'. International migration is a complex issue that calls for comprehensive and collaborative solutions. No government can address this issue alone. It affects every region, with South-to-South movements as significant as those from South to North. Migration touches on issues of human rights, development, population, children, family, education, gender and health including reproductive rights and access to reproductive health, environment, trade, labor, economics, social protection, security and social cohesion etc. Economic globalization (Castle and Miller, 2003) has put a new spin on international migration, making the flow of people across borders much easier, faster and more frequent on a scale that is not previously possible.

Migration contributes significantly to achieving the Millennium Development Goals (MDGs) by raising incomes, funding investment in human capital, supporting the creation of business and jobs, contributing to the transfer of knowledge, skills, and ideas, and promoting investments and trade flows between countries of origin and destination. By improving the quality of migration and mobility as well as factoring migration into development plans and strategies, the international community can profoundly improve human development outcomes for migrants, their families, local communities and states. In the same vein, the absence of effective governance, migration may enhance vulnerability and undermine progress towards sustainable development. Governments can help unlock the potential of migration for inclusive development in the country of origin and destination and provide migrants with the fitting key in each context by an adequate policy mix, comprehensive legal frameworks and cooperation. The United Nation (UN) System task team is preparing the Post-2015 (MDG) Development Agenda named 'Realizing the Future We Want for All'. It lays the foundations for the UN's effort to develop a new framework to build on the Millennium Development Goals and identifies four core dimensions where comprehensive work is needed. The dimensions include inclusive economic development, inclusive social development, peace and security and environmental sustainability. The UN task team also introduces the importance of a number of enablers or means to achieve this development. Migration, which is a concrete expression of globalization, is identified as one of the enablers of development. This enabler has huge development potentials for the individual migrants and their families, for their countries of origin and for the countries of destination.

International migration is now increasingly viewed as a multilateral phenomenon which involves a large number of countries. Though, traditionally, it is viewed as a unilateral or bilateral matter. In this respect, special importance is given to the Mode 4 of General Agreement for Trade in Services (GATS). GATS is in fact the only genuine global agreement relating to migration (Hatton, 2006). GATS is one of the outcomes of Uruguay round negotiation leading to formation of WTO in 1995. GATS defines four ways through which services can be traded and regulated. They are also known as mode of supply. Mode 1 is known as cross border supply (services supplied from one country to another e.g. international telephone call); Mode 2 as consumption abroad (consumers from one country making use of a service in another country, e.g., tourism); Mode 3 as commercial presence

(a company from one country setting up subsidiaries or branches to provide services in another country, e.g., a bank from one country setting up operations in another country) and Mode 4, as Movement of Natural Persons. It is important to note that the 'Movement of Natural Persons' or Mode 4 does not cover permanent migration or self employed people seeking employment in foreign country or staying in foreign country. Mode 4 of GATS provides a unique opportunity for more effective management of temporary movement of workers across borders for the supply of needed services in another country (Katseli, 2006). The progress of Mode 4 in international labor movement is still negligible. The reliable estimates are still unavailable, but as appears, estimated Mode 4 trade accounts to only about 5 percent of total services trade. The reason for the slow progress of Mode 4 trade is the unwillingness of countries to open borders for services trade. It is argued that Mode 4 is unworkable because it is not flexible enough. In the recent WTO rounds it is observed that both developed and developing countries are reluctant to open up their borders for Mode 4 trade (Winters, 2005). The developing countries are increasingly seeking access to developed countries labor market under Mode 4. However, trade negotiators and politicians from USA and EU argue that Mode 4 is unworkable, particularly, for semi-skilled and unskilled service providers, as source countries cannot guarantee return and hence temporariness (Friedman and Ahmed, 2008). On the other hand, developing countries are also nervous to offer boldly under Mode 4. Along with social and racial concerns, as they also fear resistance of unskilled workers to immigration (Winters, 2005). There are also divisions of interests among the developing world which explains why strong coalition is not growing up. For example, commonwealth citizens receive favorable treatments in several temporary migration schemes. Applying MFN (Most Favored Nations) clause would increase competition thereby would reduce benefit. Though the progress of Mode 4 negotiation is still not very encouraging to make this Mode effective, it requires uniform consensus from all parties involved in multilateral trade in services.

The phenomenon of international labor migration is a very important development issue for many countries of the world like South Asian countries. South Asia has traditionally had a comparative advantage in the export of low-skilled labor at low cost. This is reflected in the fact that unskilled workers continue to form the bulk of migrant labor from South Asia. In addition to financial benefits to the sending countries, migration provides

opportunities to build their human capital, physical capital and social assets. Migration provides possible tool to promote development and reduce poverty and help to reap the maximum benefits of demographic dividends[1] of countries that Bangladesh and Pakistan are now enjoying as these countries fail to provide employment opportunities for its active labor force. The demographic dividend translates to growth in several ways. It holds the promise of an expanding middle class, affordable labor force, productivity growth, thereby, giving rise to greater economic growth. However, the same demographics can prove to be a curse: where youth fail to find jobs, unemployment can lead to social unrest and have a destabilizing effect on an economy. Migration does not provide solution to all problems and not all the time it has positive effects. Migrants can be subject to exploitation and abuse, and the loss of highly skilled personnel through migration may hinder development. Migration may have negative impacts on an economy in terms of the concept of brain drain and lost labor effects. However, migration is now an indistinguishable element of the world economy. Hence, international bodies are emphasizing on initiatives to make maximum use of migration and remittances to meet the development needs.

Remittances are one of the visible and tangible outcomes of international migration. At the macro level, remittances have a potential positive impact as a development tool for the recipient countries. The development effects of remittances can be decomposed into its impact on savings, investments, growth, consumption, poverty and income distribution. Remittances augment the recipient's disposable income and increase the recipient country's foreign exchange reserves and can also be beneficial to the recipient country through improving its creditworthiness and thereby, enhance its access to international capital market. Remittances act as insurance against adverse shocks during crisis and natural disasters and contribute to improving current account sustainability and creditworthiness (Ratha, 2012). If remittances are saved and invested, they contribute directly to output growth, and if they are consumed, then, they also generate positive multiplier effects. With remittances an economy can spend more than it produces, import more than it exports, invest more than it saves and this might be more relevant for

[1] The potential economic benefits offered by the age structure of the population, during demographic transition, when there is an increase in working-age population and associated decline in the dependent age population.

countries like South Asia (Connel and Conway, 2000). However, remittances may generate negative effects in terms of Dutch diseases effect[2] and dependency syndrome.

The role of migration and remittances in economic growth and development continues to be an important issue for researchers and policymakers. One strand of policymakers focuses on the facts and figures of migration, remittances and economic growth by following qualitative research method. Another strand (few researchers included in this category) concentrates on the macroeconometric approach to study migration, remittances and economic growth. Thus, this limited research effort does not give due attention to South Asian region. These realities create an exploratory research field to study on this subject.

Numbers of literatures have been reviewed to develop a macroeconomic study on migration, remittances and economic growth and to identify research gap in this field. Most of the study is performed on the topic either separately or qualitatively though the three variables are highly interlinked. There are extensive literatures on either migration & development or migration and remittances or remittances and economic growth. Few studies are found that conduct researches on macroeconometric study of migration, remittances and economic growth. So the study thinks this a virgin field of research. Recent literature posits that there exist positive relationship between remittance and economic growth of the recipient countries. But, various studies on the effect of remittances to economic growth have shown mixed results:

- (Chami et al., 2003), and (Karagoz, 2009) find that remittances have a negative effect on economic growth.
- A study conducted by IMF (2005) finds no statistical link between remittances and per capita output growth. Moreover, (Barjas et al., 2009), and (Rao and Hasan, 2009) claim that remittances have no impact on economic growth of recipient countries.

[2] Dutch disease is the negative impact on an economy of anything that gives rise to a sharp inflow of foreign currency, such as, large remittance inflows. The currency inflows lead to currency appreciation, making the country's other products less price competitive on the export market. The term "Dutch disease" originates from a crisis in the Netherlands in the 1960s that resulted from discoveries of vast natural gas deposits in the North Sea. The wealth obtained from the Dutch guilder to rise, making exports of all non-oil products less competitive on the world market.

- Faini (2002), (Fayissa and Nsiah, 2008), (de Hass, 2005), (Dos Santos and Vinay, 2003) find that remittances have a positive effect on economic growth.
- Glytsos (2002) concludes that the impact of remittances on output varies overtime and across countries.

As a result of the contested literature, it is difficult for one to conclude on the growth effects of remittances in a region like South Asia. As far we know, there is no region specific macroeconometric study to find the relationship among migration, remittances and economic growth. The overall understanding of migration, remittances and economic growth is inadequate given the importance of this economic phenomenon. The debate on the growth and development impact of migration and remittances is inconclusive and empirical one. South Asia has unfortunately, been grossly under researched in this respect. So there remains a major gap in the development literature. This study attempts to fill this identified gap. The study, therefore, contributes to the inconclusive debate on the growth and development role of migration and remittances, and provides empirical evidence based on data from South Asian countries.

## 1.4 Research Question

Given the various issues relating to the concept of macroeconomic study of migration, remittances and economic growth in South Asian countries a number of research questions arise as follows:

1) What are the patterns and trends of migration, remittances and economic growth in south Asian countries?
2) What are the macroeconomic determinants of remittances in South Asian countries?
3) Is there any macroeconomic relationship between remittances and economic growth in South Asian countries?
4) What are the policy options for the policy makers to manage the macroeconomic impacts of migration and remittances effectively?

Any research effort that provides satisfactory answers or at least, shed some meaningful insights into the above questions represents a valuable guide to the understanding of the macroeconomic study of migration, remittances and economic growth in South Asian countries.

## 1.5 Research Objectives

The main objective of this study is to examine the macroeconomic relationship among migration, remittances and economic growth in South Asian Countries.

The specific objectives are-

1. To focus on all about migration and remittances issues in South Asian Countries.
2. To find the macroeconomic determinants of remittances to understand the dynamics of remittances in South Asian Countries.
3. To form and apply an empirical framework to show the macroeconomic relationship between remittances and economic growth in south Asian Countries.
4. To suggest the better policy options that can be adopted to better manage the macroeconomic effects of migration and remittances.

## 1.6 Statement of Research Hypothesis

The following testable hypotheses which are implied in the research questions are considered appropriate for this study and are, therefore, subjected to empirical investigation. These hypotheses are stated as follows:

- $H_1$: Remittances in South Asia are mostly determined by home and host country's economic conditions, number of emigrants and macroeconomic factors of home country.

- $H_2$: Remittances do not significantly promote economic growth in South Asian countries, i.e., there is no relationship between workers' remittances and economic growth in South Asian countries.

Addressing hypothesis two, a negative and statistically significant coefficient of remittances indicates that remittances have a negative impact on economic growth. An increase in remittances results in lower economic growth. A positive and statistically significant coefficient of remittances implies that remittances have positive growth effects. An increase in the volume of remittances results in increased economic growth. A statistically insignificant coefficient of remittances implies that remittances do not have significant direct growth effects.

## 1.7 Study Rationale

A common theme motivating much of the research on migration, remittances is the better understanding of their role as promoter of economic growth. Bangladesh and other South Asian Countries are suffering from the problem of severe unemployment and underemployment. The region has abundant human resources but it lacks sufficient physical, natural and financial resources. Resource gap, labor force- employment gap and foreign exchange gap are the critical determinants that draw especial emphasis on migration and remittances in South Asian countries. The Economist Intelligence Unit report-2014 reveals that South Asia represents about one-quarter of the world's population. Beyond just sheer strength in numbers, the region is also encouragingly youthful. For example, average age of India's population will be 29 years in 2020; in China, it will be 37 years and Japan 48 years. Youth unemployment is a concern almost everywhere in the world, but the sheer scale of a potential missed opportunity is especially stark in South Asia: globally about 25 percent of all 15-24 year olds are unemployed or not in education. But in South Asia, the proportion is 31.1 percent. It is estimated that 40 percent of growth in the world's working age population (aged 15-64) over the next few decades comes from South Asia. In absolute numbers, there are about 1million-1.2million new South Asians entering into the labor market every month for the next twenty years, a growth rate 20-50 percent higher than the average between 1990 and 2010. However, at the current rate of job creation, as many as 400,000 South Asians per month may not find suitable employment. It is, thus, imperative that the right jobs are created to ensure labor force competitiveness and continued economic growth. Not only has the governments faced problems with providing employment opportunities for its semi-skilled and unskilled population, it has struggled to employ skilled labor as well. In recent years, there have been an increasing number of young tertiary graduates who are not able to secure employment in the government or private sector after completing their government funded education. It is found that graduate unemployment in Bangladesh is 47 percent, in India 33 per cent, in Nepal 20 per cent, in Pakistan 28 percent and in Sri Lanka 7.8 percent. The share of vulnerable employment (defined as unpaid family workers and own-account workers) in total employment is estimated to range from about 40 per cent in Sri Lanka to about 60 per cent in Pakistan and 80 per cent in Bangladesh and India. Given that economic growth,

South Asia is expected to remain below potential and the labor force will increase rapidly, the labor market pressures are likely to further intensify in the years ahead (UN, 2014).

Offshore employment, short and long term, is an alternative solution that can provide employment opportunities for these regions and a source of income for many grassroots families. Currently, there is a keen interest in how South Asia devises development policies to improve the lives of its people. Migration opportunities can be seen as an alternative solution to provide a better livelihood not only for migrants but also for their families back in their countries. There is, however, need to build sound migration policies between home and host countries and properly maintained channel to send remittances which can foster economic growth and development. For the above mentioned reasons, this study is a very fruitful and time demanded study for this region and especially for labor surplus country like Bangladesh.

## 1.8 Data

The study is completely based on secondary data. It uses annual time series data covering the 1976-2012 periods for India, Bangladesh, Nepal, Pakistan and Sri Lanka. Most of the data are obtained from secondary sources. We form an unbalanced panel data series on the basis of availability of data. We do not consider the remaining other countries of South Asia due to unavailability of data. The main source of data is World Development Indicators-2013. But migration data are collected from the national sources namely, Bangladesh Bureau of Employment and Manpower (BMET), Ministry of Overseas Indian Affairs (MOIA), Department of foreign Employment of Nepal, Bureau of Emigration of Government of Pakistan and Sri Lankan Bureau of Foreign Employment (SLBFE). Per capita GDP of host country is calculated by averaging the top five remittance sending countries. Political Rights data are collected from the data base of Freedom House Foundation.

## 1.9 Organization of the Thesis

The main aim of this thesis is to examine the macroeconomic relationship among migration, remittances and economic growth in South Asian countries. The thesis is organized as follows:

Chapter 2 reviews previous literatures related to macroeconomic analysis of migration, remittances and economic growth. In this chapter we have tried to review some of the related literature in critical ways to identify research gap and make understand that there is a scope to do such research in Bangladesh at the present time.

Chapter 3 discusses the theoretical aspects of our macroeconomic analysis. It provides the brief description of main theories of migration, remittances and economic growth. Elaboration of these theories help to identify relationship among the variables.

Chapter 4 describes trends and patterns of international migration, remittances and economic growth in South Asian countries from 1976 to 2012. It gives the contextual background of our macroeconomic analysis of migration remittances and economic growth.

Chapter 5 presents the conceptual framework of our study. It explains the key concepts used in the study. Through the conceptual framework, this chapter establishes the linkages among migration, remittances and economic growth. In this chapter, we give two economic models on the basis of the conceptual framework.

Chapter 6 gives the empirical framework of the macroeconomic determinants of remittances model and remittances-growth model. This Chapter also provides descriptions and expected signs of variables used in the empirical models.

Chapter 7 provides econometric methodology of our study. Detail descriptions of the panel data model, pooled OLS model, FEM, REM, dynamic panel data model and SGMM model are given in this chapter.

Chapter 8 reports the estimated empirical results of macroeconomic determinants of remittances and impacts of remittances on economic growth in South Asian countries using the econometric methods described in chapter six.

Chapter 9 presents the summary and main results. It provides some conclusions and policy implications and finally we identify some issues, where further research is needed. This Chapter also mentions policy implications for Bangladesh on the basis of discussion and empirical results.

Finally, this thesis contains bibliography and appendix.

# Chapter 2

## Review of Literature

### 2.1 Introduction

This Chapter reviews literatures on migration, remittances and economic growth to acquaint with previous related research work about the macroeconomic study of migration, remittances and economic growth in South Asia and different broad aspects of migration, remittances and economic growth at national as well as at international level. The review of literature about the macroeconomic relationship among the variables has united different factors having impact on the economy of South Asian region. The literature survey has also provided help to develop the theoretical framework and to formulate a number of hypotheses that are tested in this research. Testability and reliability of the findings of this research about the macroeconomic relationship among migration, remittances and economic growth in South Asia provide comparison with other studies elsewhere. Different results based upon the types of data and econometric techniques are drawn by different researchers. Therefore, keeping in view the importance of literature relevant to research topic, the literature is surveyed about the macroeconomic relationship among the variables at national as well as at international level.

This Chapter is organized as follows: Section 2.2 reviews literatures on determinants of remittances, review of literatures on growth effects of remittances are given in Section 2.3, Section 2.4 provides review of literatures on migration and economic growth, Section 2.5 presents review of literatures on different issues related to migration, remittances and economic growth and Section 2.6 concludes the Chapter mentioning research gap.

### 2.2 Review of Literature on Determinants of Remittances

Literature on the determinants of remittance may be grouped into three main categories depending on the approaches. One category uses ‘altruism approach’, which deals with the variables relating to the economics of the family including the length of stay in the host country, household’s income, employment of other household members, migrant’s marital

status, migrant's education level, severity of family needs, etc. The second category, 'portfolio approach' views remittance as similar to capital flows. In this approach, variables typically of macroeconomic nature, such as, GDP of home and host countries, rate of inflation, interest rate differential, exchange rate etc., are hypothesized as determining factors of remittances. Literatures of the third category, on the other hand, include a mix of two approaches in their analysis.

Begum and Sutradhar (2012) study the behavior of remittance inflows and its macroeconomic determinants in Bangladesh over the period of 1980-2011 by applying Ordinary Least Squares (OLS) method. Results show that there exists a positive relationship between domestic exchange rate and remittances in the short run, and that unskilled labor migration are the principal source of remittances in Bangladesh. It is also observed that the wage rate for Bangladeshi unskilled workers are low compared to the wage rate of skilled or semi-skilled migrants. Moreover, the study finds that domestic inflation and host country's GDP have significant positive impact on remittance inflows in Bangladesh.

Barua et al. (2007) analyze the macroeconomic determinants of remittances in Bangladesh over the period from 1993 to 2005 by following a balanced panel data set of bilateral remittance flows from 10 major host countries of Bangladeshi migrants to Bangladesh using feasible Generalized Least Squares (GLS) method. Results show that income differential between host and home country is positively correlated while inflation differential is negatively correlated with remittances. Furthermore, the devaluation of domestic currency appears to be positively correlated with the inflow of remittances in Bangladesh.

Shah and Amir (2011) use national accounts data to analyze movements of remittance flows to Bangladesh from 1975 to 2010 by applying unit root, cointegration and Error Correction Mechanism (ECM) techniques. The study finds that GDP at current price, oil price, foreign exchange rate and number of migrants are significant for macroeconomic determinants of remittances in Bangladesh.

Ali (2012) examines the influence of few selected macroeconomic factor on remittance inflows in Bangladesh over the period of 1976 to 2011 by using multivariate time series regression model. This research finds that professional and unskilled migrant have very

low negative but significant impact while semi-skilled migrants have a positive significant impact on remittance inflows. Deposit interest rate and foreign exchange rate are also found to have a statistically significant effect. Test of Granger causality reveals that foreign remittances have bidirectional causality with semi-skilled and unskilled migrants and have uni-directional causality from professional migrants to remittances and remittances to Dhaka Stock Exchange (DSE) all share price index.

World Bank (2012) investigates the correlates of aggregate remittance inflows in Bangladesh over the 1976-2011 periods. Result report that the stock of migrants is a robust estimator of remittances, each additional migrant increases annual remittance by $1540 to $3650. Moreover, GDP per capita, exchange rate, oil prices are also significant determinants of remittances in Bangladesh.

Hasan (2008) examines the macroeconomic determinants of workers' remittances in Bangladesh by using various regressions. This paper uses inflation rate, interest rate, exchange rate and GDP of five remittances sending countries as determinants of remittances and finds that inflation rate of Bangladesh has had negative relationship while interest rate, exchange rate, and host countries GDP have positive relationship with remittances. Results indicate that if domestic interest rate goes up by 1%, on average, remittances increase by 1.94%. If the GDP of the rest of the five host countries increases by 1%, then, remittances increase by 3.06%.

Nabi (2012) analyzes the macroeconomic determinants of remittances in Bangladesh over the period of 1981-2007 applying Ordinary Least Square (OLS) method. The study finds that home and host country income, exchange rate, financial sector development and inflation have significant impact on remittance inflows in Bangladesh.

Hussain and Nayeem (2009) postulate that the determinants of remittances in Bangladesh are employment in abroad, GDP growth, exchange rate and oil price. They point out the following things: each additional migrant worker brings in $816 remittances annually, every dollar increase in oil price increases annual remittances by $15 million, depreciation of exchange rate by one taka increases annual remittances by $18 million, and remittances are higher during periods of low economic growth.

Gupta (2005) analyzes the determinants of remittances to India and finds that the growth of remittances over time can be explained by the increase in migration and total earnings of the migrants. Remittance inflows are also affected by the economic environment in source countries and appear to be countercyclical, that is, higher during periods of low economic growth in India and vice versa. It is found that political uncertainty, interest rate or exchange rate depreciation do not affect remittances in India significantly.

Kock and Sun (2011) analyze the forces that drive remittance flows to Pakistan in recent years. This study find that the growth in the inflow of workers' remittances to Pakistan is in large part due to an increase in worker migration, and higher skill levels of migrating workers have helped to boost remittances. This research also finds that agricultural output and relative yield on investments in the host and home countries are important determinants of remittances to Pakistan.

Ahmed (2008) investigates the economic determinants of remittances and migration in Pakistan using time series data from 1973 to 2005. The study finds that the real remittances in Pakistan are positively related with real GDP, real growth rate and unemployment rate, and negatively related with real wage rate, literacy rate and spread rate of banks in Pakistan. He also finds that migration from Pakistan is positively related with real remittances, inflation and unemployment rate, and negatively related with real wage rate in the country.

Lueth and Ruiz-Arranz (2007) estimate a vector error correction model for Sri Lanka to determine the response of remittance receipts to shocks in macroeconomic variables over the period of 1996 to 2004 on a quarterly basis. This paper finds that remittance receipts decline as oil prices soften, increase as the Sri Lankan economy grows, that is, remittances are pro-cyclical, declines as the currency weakens and increases as domestic price level rises.

Singh et al. (2010) investigate the determinants and macroeconomic role of remittances in 36 Sub Saharan African countries over the period of 1990 to 2008 by using a panel fixed effect and two stage least square (2SLS) estimation technique. The study finds that the coefficient of host country income and stock of expatriates are positive and robust implying that the wealthier the country where expatriates are located, the higher the remittances, they send back home and countries with a large diaspora attract more

remittances. The study also finds that remittances play a shock-absorbing role as the coefficient of real per capita GDP in the home country is found to be negative, meaning that when adverse economic shocks decrease incomes in their country, migrants remit more to protect their family from those shocks. Results also indicate that remittances do not react significantly to a real appreciation of the exchange rate. The coefficient of institutional quality is significantly positive meaning that countries with better institutions or a more stable political system would receive more remittances relative to GDP. Remittances are associated negatively and significantly with interest rate differentials meaning that a high interest rate in the home country is likely to reflect instability in the home country, i.e., migrants are reluctant to send more remittances home for investment. Furthermore, remittances are estimated to be positively correlated with financial deepening. Countries with more developed financial markets attract more remittances relative to GDP, as it ease the process of money transfers and reduce the fee associated with transferring remittances through competition.

Bouhga-Hagbe (2006) investigates the potential evidence of altruistic motives behind worker's decisions to remit to selected countries in the Middle-East and Central Asia. Using Johansen cointegration technique for individual countries, the study finds that in the long run, remittances tend to be negatively correlated with agricultural GDP reflecting the dominance of the role of altruism in workers' decision to remit.

Alleyne, Kirton and Figueroa (2008) examine the macroeconomic factors influencing the flow of remittances to selected Caribbean countries by using balanced two way fixed effects, random effects and adjusted fully modified ordinary least squares (FMOLS) model over the period of 1986 to 2000. They find that remittances are influenced not only by altruistic motive but also by the investment motive, and that adjusted fully modified ordinary least square model is preferred and fixed effect model may be biased. In the FMOLS model, the coefficient on the interest rate is found significantly positive indicating that interest rate policy can influence migrants' decisions on whether to invest in financial savings in their home country. Again, the negative sign on the coefficient for domestic income support a strong consumption motive.

Mouhoud, Oudient and Unan (2008) estimate the macroeconomic determinants of remittances for Turkey, Algeria, Morocco, Tunisia and Egypt by using separate error

correction models. Results show that remitting decision within family contracts (insurance motivation) dominates remitting decision with purely altruistic motivations.

Coulibaly (2009) examines the macroeconomic determinants of migrants' remittances dynamics for 14 Latin and Caribbean countries over the period of 1990 to 2007 by using panel Vector Auto Regression (VAR) method. Results show that host economic conditions are an important factor explaining remittances dynamics while home economic conditions do not have a significant influence on remittances.

Alleyne (2006) employ a dynamic unbalanced panel data model to determine the macroeconomic factors of remittance dynamism to 9 Caribbean countries by using Arellano and Bond Generalized Method of Moment (GMM) estimation technique. The study reports that host countries GDP and interest rate differentials positively affect remittance inflows.

Niimi and Ozden (2006) empirically examine the determinants of remittance flows at the cross country level, covering 85 countries and concentrating their analysis on a single point in time, 2000. From this study, the migration level is found to be the main driver of remittance flows after controlling for endogeneity bias through instrumental variable estimation implying that migration seems to provide an important source of foreign exchange much needed for economic development. They also find that the education level of migrants relative to the population in home countries adversely affects remittance flows implying that migrant from less well-off families seem to be remitting more to their families. Moreover, the size of the economy and the level of economic development of recipient countries adversely affect remittances implying that poorer countries are found to be receiving more remittances.

Veeramoothoo (2009) performs a regression analysis to identify the macroeconomic factors of workers' remittances for thirty Latin American and Caribbean countries over the period of 1979 to 2008. He finds that age dependency ratio, land area, net migration, labor force, population and unemployment are significant predictors of remittances.

Audenutsi (2014) identifies the macroeconomic determinants of migrants remittances for 36 Sub Saharan African (SSA) countries at the disaggregate level over the period of 1980 to 2009 by using GMM approach. The study assumes that permanent and temporary

migrants are likely to respond differently to macroeconomic conditions in home and host countries. The study also finds that the inflows of compensation of employees and workers' remittances to SSA are influenced by host country's macroeconomic conditions, whereas, these two forms of remittances are driven by contrasting home country's macroeconomic conditions. Results show that remittances from temporary migrants are relatively more altruistically driven whereas those from permanent migrants are more self-interest or investment driven.

## 2.3 Review of Literature on Growth Effects of Remittances

Glytsos (2002) builds a Keynesian type economic model with a dynamic perspective and sound theoretical basis, for investigating the impact of remittances on consumption, investment, imports and outputs for five Mediterranean countries over the period of 1969-1998. The study estimates short and long run multiplier effects of exogenous shocks of remittances. The analysis reveals a uniform country performance of instability and uncertainty, with great temporal and inter-country fluctuations of remittance effects. There are good cases where remittances boost growth or moderate recession, and bad cases where remittances restraint growth or accentuate recession.

Tansel and Yasar (2010) estimate a Keynesian simultaneous dynamic macroeconomic model to investigate the impact of remittances on key macroeconomic variables such as consumption, investment, imports and income in Turkey for the period of 1964-2003 using two stages least square method. The estimated impact and dynamic multipliers indicate that impact of remittances on consumption, imports and income are all positive and reduce gradually while that on investment wears out in the second period. The impact multiplier for income implies a substantial increase in income due to remittances through multiplier process. The remittance-induced output growth rate is highest during the early 1970s and early 1980s but negligible during the other years.

Balde (2009) investigates the relationship between remittances and economic growth in 29 SSA countries for the period of 1980-2004 by using two stages least square method. The research finds that remittances do not have any direct impact on economic growth in SSA countries. The study also reports that initial per capita income has a significantly negative impact on economic growth and institutional variable has positive impact on growth.

However, the estimated coefficients of openness, foreign aid, government spending and inflation are not statistically significant implying that these variables do not influence growth in SSA. The researcher asserts that remittances may promote economic growth through indirect channels, such as, savings, investment, financial development and education. Even if remittances are used for consumption, this may lead to multiplier effects through increased demand and increased production that is conducive to economic growth.

Fayissa and Nsiah (2011) estimate the macroeconomic impact of remittances considering some control variables such as openness, capital-labor ratio and economic freedom on the economic growth of 29 African, 14 Asian and 21 Latin American and Caribbean (LAC) countries by using panel unit root tests, panel cointegration test and panel fully modified ordinary least square (FMOLS) method for the panel data from 1985 to 2007. Results indicate that remittances, openness of the economy and capital-labor ratio have significantly positive impact on economic growth for all regions as a group and in each group of the three in the study. While the economic freedom index has also a positive and significant effect on growth in Africa and Latin America, however, its effect on the economic growth in Asia is mixed.

Fayissa (2008) explores the impact of remittances on economic growth within the neoclassical growth framework using an unbalanced panel data spanning from 1980-2004 for 37 African countries. Results indicate that remittance has a significantly positive effect on GDP per capita (i.e., a 10 percent increase in the remittances of a typical African economy would result in about 0.4 percent increase in the average per capita income). Similarly, investment in human capital, investment in physical capital and initial GDP per capita exert a significantly positive impact on economic growth. Foreign aid has a negative effect on economic growth but its impact is not significant. Openness of the economy, i.e., term of trade and foreign direct investment have expected positive impact but those do not have a significant impact on economic growth. Institutional variable indicates that a 10 percent reduction in political rights lead to about 1.34 percent reduction in per capita income.

Jawaid and Raza (2012) examine the relationship between workers' remittances and economic growth in China and Korea by employing time series data from the period of

1980 to 2009. The study finds that there exists a significant positive relationship between remittances and economic growth in Korea, while significant negative relationship exists between remittances and economic growth in China. Error correction model confirms the significant positive short run relationship of workers' remittances with economic growth in Korea, while results in China are insignificant in the short run. Causality analysis confirms unidirectional causality running from workers' remittances to economic growth in both China and Korea. Sensitivity analysis confirms that results are robust.

Waheed and Aleem (2008) analyze the relationship between workers' remittances and economic growth using the long time series data of Pakistan over the period of 1981 to 2006 and employing cointegration and error correction model. The study reports that a significant positive impact of workers' remittances on economic growth in the short run, while significant negative relationship is found to be in the long run.

Qayyum et al. (2008) investigate the relationship of workers' remittances, economic growth and poverty in Pakistan over the period of 1973 to 2007 employing Auto regressive distributive lag (ARDL) approach. The study shows that workers' remittances have positive and significant contribution in economic growth and poverty reduction in Pakistan.

Yasmeen et al. (2011) use the annual time series data of Pakistan from 1984 to 2009 to identify the impact of workers' remittances on private investment and total consumption. The research point outs that workers' remittances have significant positive impact on total consumption and private investment.

Ahmed, Zaman and Shah (2011) examine the impact of remittances, exports, money supply on economic growth in Pakistan using bound testing approach during 1976-2009 period. The study reports that remittances have a positive impact on economic growth of Pakistan in both the long run and short run. The short run effects of remittances and exports are significant and contributing to about 0.034 percent and 0.078 percent respectively to economic growth. However, money supply is found to be insignificant to contribute to growth.

Muhammed and Ahmed (2009) use a Keynesian macroeconomic demand oriented simultaneous equation model to assess the dynamic impact of remittances on economic

growth in Pakistan employing generalized method of moment techniques. The study reports that the highest remittance induced growth rate takes place in the early 1980s. The study also find that one unit increase in workers' remittances in the current year leads to a 1.84 unit increase in the level of income through multiplier effects. The dynamic multiplier shows that the effect of remittances on investment wears out in the second year but the effect of remittances on private consumption reduces gradually. The research concludes that although the workers' remittances are used mostly for private consumption and partially for imports, but it contributes to the economy of Pakistan through multiplier process.

Dilshad (2013) analyzes the impact of workers' remittances on economic growth for Pakistan for a period of 1991 to 2012. The study reports a significant positive relationship between workers' remittances and economic growth in Pakistan.

Alam (2012) studies the macroeconomic implications of international migrants' remittances in Bangladesh using time series data, and applying Paris Winsten approach and generalized least square (GLS) technique over the period of 1976-2010. Results suggest that remittance has significant immediate positive effect on GDP and private investments. Remittances are shown to be highly correlated with human capital suggesting an indirect impact on GDP.

Hasan, Shakur and Bhuyan (2012) analyze the impact of inward remittance flows on per capita GDP growth in Bangladesh during 1974-2006 by using OLS, IV- 2SLS and GMM-IV estimation techniques. The research reports a non-linear relationship between inward remittances and economic growth in Bangladesh. The estimated coefficient on the squared remittance variable is significantly positive implies that inflows of remittances during 1974-2006 in Bangladesh reduce per capita GDP growth rates in the initial phase due to unproductive use but enhance growth rate at a later phase due to using productive purpose. The positive effect of remittances on the growth rate of the economy is channeled through its interaction with financial sector.

Joyaraman et al. (2012) investigate the role of remittances in India's economic growth over the period of 1970-2009 by employing bound testing approach. The research shows that remittances and the interaction between remittances and financial sector development

have a significant positive impact on economic growth in India over the last four decades (1970-2009).

Rao and Hasan (2009) analyze the growth effects of remittances and the channels through which remittances affect growth for an unbalanced panel of 40 countries over the period of 1960 to 2007 employing pooled OLS, fixed effect, random effect and system of generalized method of moment method. The research selects Solow growth model for their analysis. The research reports that remittances do not have any significant direct growth effects but finds two channels, that is, investment and financial development, through which remittances may have indirect growth effects. Findings of the study also suggest that although there are short to medium term transitory growth effects, there is no long run growth effects of remittances.

Ajilore and Ikhide (2013) examine the hypothesis that 'size matters' in the empirical controversy of the relationship between migrants' remittances and economic growth through an analysis of the remittance-growth relationship in five Sub-Saharan African countries, where remittance inflows are overwhelming proportion of real GDP over the period of 1985-2010 employing Auto regressive distributive lag bound testing estimation procedure. Results indicate positive and significant effects of migrants' remittances on growth performance in Cape Verde and Nigeria, but negative and slightly significant effects for Lesotho, with no evidence of long run relationship between remittances and economic growth in Senegal and Togo. Thus, the hypothesis that size matters in the remittance growth nexus finds no support, as results provide no significant departure from the existing inconclusive relationship.

Abdullaev (2011) investigates the potential impacts of workers' remittances on economic growth of 10 Asian and former Soviet Union countries over the period of 1995-2009 by employing pooled OLS, FEM, REM and Arrellon-Bond GMM estimation technique. Results indicate that remittance transfers have positive impact on per capita income growth in these countries. Doubling the remittances lead to 5-9 percent increase in growth in per capita income relative to the choice of the model. Remittances have no impact on physical capital accumulation but the effect of remittances on human capital is significantly positive. It is found that doubling the remittances could lead to approximately 5 percent increase in human capital accumulation.

Muchemwa (2012) assesses the growth effects of remittances for 29 SSA countries over the period of 1980-2008 by employing Arellano-Bover GMM one-step estimation technique. Empirical results reveal evidence supporting for statistically significant positive growth effects of remittances in SSA and the positive growth effects of remittances in SSA happen through the human capital channel.

Das and Chowdhury (2011) analyze the long term relationship between remittances and GDP for 11 top remittance recipient developing countries over the period of 1985 to 2009 employing panel cointegration and pool mean group approach. Results support a positive long run relationship between remittances and GDP growth. However, the magnitude of the remittance-GDP coefficient is found quite small. So they hypothesize that remittances may use to increase consumption in these countries.

Das (2012) examines impact of remittances for four developing countries over the period of 1975 to 2006 using various specifications of investment, consumption and growth equations. The study argues that remittances can bring a favorable outcome even if it is used for consumption. The research also shows that remittances can have a positive on economic growth either through consumption or investment. The size of the coefficient is found be large if the effect comes from investment, while any effect through consumption produce a smaller coefficient.

Barguellil, Zaiem and Zmami (2013) examine the effect of remittances on economic growth for a panel of two groups of countries over the period of 1990 to 2006 within the framework of modified version of Guilliano and Arranz's model (2009) employing Arellano and Bond GMM estimation technique. The first group of countries consists of the largest remittance recipients in GDP percentage. The second group includes countries recipient of the largest remittances in amounts. Results confirm that remittances have direct and indirect effects only on the largest remittance-recipient countries in GDP percentage, yet these effects disappear for the largest remittance recipient countries in amounts.

Cooray (2012) investigates the impact of migrant remittances on economic growth in six South Asian countries by incorporating migrant remittances among other variables into a growth model and employing a panel data over the 1970-2008 periods and using pooled

OLS, fixed effects and GMM estimation technique. The study finds that migrant remittances have a significant positive impact on economic growth and a significant positive interactive effect of remittances on economic growth is also found through education and financial development.

Datta and Sarker (2014) analyze the impact of remittances on economic growth in Bangladesh economy using time series econometric technique of Auto regressive distributive lag framework over the 1975 to 2011 period. The findings of this study show that in Bangladesh, there is a possibility of a long-run relationship between remittances and GDP, but that there is no predictive causal relationship, either in the short-run or in long-run.

Singh and Mehra (2014) study the impact of remittances on Indian economy and its relationship with economic growth over the 1975-2011 periods employing time series econometric technique. The study finds unique cointegrating vector, and remittances and physical capital as a significant positive indicator of GDP growth. Results confirm that one percent rise in remittances and physical capital increases GDP by 0.19 percent and 0.53 percent respectively. Error Correction Modelling results show that there is quick adjustment in the long run and short run coefficient and that 54 percent inequality is adjusted in each period. Remittances affect GDP directly as well as indirectly through physical capital formation in the short run. The research finds unidirectional causality that run from remittances to GDP and from Remittances to physical capital.

Choudhury (2011) analyzes whether remittance inflows become a lifeline or cause of trade deficit to Nepalese economy by observing the interrelationship between per capita household consumption and remittance income following first difference vector autoregressive (VAR) model. Results show that per capita consumption is marginally (about 0.06 percent) affected by the remittance income. In the light of permanent income hypothesis, it has been concluded that households perceive remittance as permanent income and spend them to durable goods and services which are imported goods. This kind of practice leads to long run trade deficit which are found from the analysis that states one percent increase in share of remittance to GDP increase the share of trade deficit to GDP by 0.53 percent.

Srivastava and Chaudhury (2007) analyze the direct impact of remittance on three development indicators, viz., Gross Domestic Product (GDP), Gross National Product (GNP) and Per Capita Income (PCI) of Nepal during 1974/75 to 2005/06 using linear and log-linear models. The impact of remittances has been seen most remarkable in the GDP and GNP both in nominal and real terms. In nominal GDP and GNP, the remittances show 61 percent and 72 percent impact respectively while in real terms it shows 48 percent and 55 percent respectively. Remittance has also shown positive impact on the PCI but it is comparatively low (4 percent in nominal and 1 percent in real terms).

Bhatta (2013) uses cointegration techniques and vector error correction model (VECM) based on the monthly data of merchandise imports, workers' remittances and trade deficit for ten years period from August 2001 to May 2011 to investigate whether remittance causes the merchandise import and trade deficit to raise in the long run in Nepal. Results show that there is a long run positive unidirectional causality from remittance to import as well as remittance to trade deficit implying remittances cause merchandise imports and deteriorates trade balance.

Thagunna and Acharya (2013) analyze nine year (2001-2009) remittance and macroeconomic data of Nepal to study the effect of remittances on each of those variables by using time series econometric techniques. Results suggest that remittance has more causal relationship with consumption as well as import and less with investments. The study concludes that Nepali economic growth due to higher remittances is essentially a 'pseudo growth'.

Khathlan (2012) adopts the ARDL test and error correction model (ECM) techniques to establish the long run and short run relationship between workers' remittance and economic growth in Pakistan during the period 1976-2010. Results indicate the existence of a positive and significant relationship between worker remittances and economic growth in the long run and short run in Pakistan. The gross fixed capital formation has a positive and significant impact on economic growth in the short run but not in the long run. Foreign direct investment has a positive and significant impact on economic growth in both short run and long run.

Jawaid and Ali (2014) investigate the effect of workers' remittances on economic growth of five South Asian countries employing time series data ranging from 1975-2009.

Cointegration results confirm that there exists significant positive long run relationship between remittances and economic growth in Bangladesh, India, Sri Lanka and Nepal while significant negative relationship exists in Pakistan. Causality analysis shows bidirectional causality in Nepal and Sri Lanka. On the other hand, unidirectional causality varies from remittances to economic growth exists in Bangladesh, India and Pakistan. Sensitivity analyses of the results confirm that results are robust.

Imai et al. (2012) re-examine the effects of remittances on the growth of GDP per capita using annual panel data for 24 Asia Pacific countries including 5 South Asian countries employing two stage fixed effect and random effect model. Results show that remittances promote economic growth, and that macroeconomic instability in the form of high inflation is detrimental to economic growth. Similarly, civil war is negatively related to growth. Remittances are positively associated with better economic performance. The impact of regime durability on growth is positive suggesting countries with stable governments tend to enjoy a higher level of economic growth. The study also suggests that the volatility of remittances and foreign direct investment is harmful to economic growth. The study further shows that remittances contribute to poverty reduction.

Mim and Ali (2012) estimate the remittances effect on economic growth in MENA countries using panel data techniques over the period 1980-2009. Results show that the most important part of remittances is consumed and remittances stimulate growth only when they are invested. Moreover, empirical results suggest that remittances can enhance growth by encouraging human capital accumulation.

Salahuddin (2013) has tried to show the relationship between migrants' remittances and economic growth for a panel of some Asian countries namely, Bangladesh, India, Pakistan and Philippines using panel unit root panel cointegration techniques. This research finds long run positive relationship between variables implying remittances inflow spurs economic growth in these countries. This research also recommends that use of remittances in more productive sectors such as infrastructure, education, health might contribute to reducing poverty in the short run.

Okodua (2010) investigates the economic growth and developmental role of workers' remittances in selected SSA countries. Specifically, it seeks to determine the contributions of workers' remittances to output growth in SSA, analyzes the importance of workers'

remittances to the level of domestic investment in SSA, and determine the effects of remittances on trade balance in the selected SSA countries. Within the framework of an extended standard neo-classical growth model, the system Generalized Method of Moments (GMM) estimation technique is employed on a set of three linear dynamic panel data models. The major findings which are quite striking include: 1) workers' remittances have an insignificant contemporaneous negative impact on output growth suggesting that a sizeable proportion of remittances inflow to SSA is channeled intentionally or unintentionally to some economically unproductive uses, 2) workers' remittances also have a significant contemporaneous negative impact on domestic investment. In addition, workers' remittances inflow has a significant contemporaneous negative impact on external trade balance (proxied by real external balance) in the recipient SSA economies. Contemporaneously, real external balance in the selected SSA countries decline by about 2.21 percent as workers' remittance inflows into SSA rise by 10 percent. This suggests that workers' remittance inflow depresses trade balance in SSA.

Ukueva (2010) analyzes the effect of migration and remittances on a small, open, migrant-sending country in the context of an endogenous growth model with technology transfers. The research demonstrates that due to a dynamic feedback effect from economic conditions to migration and from migration to economic development in an economy exposed to migration, initial conditions can determine its long-run steady state growth, leading to the rise of vicious or virtuous circles of development. Countries with a low level of technological development may end up in a poverty trap, in which a low level of development results in low wage rates and consequently high migration rates. The high migration and loss of manpower in a general equilibrium setting generates less demand for the adoption of leading technologies, reducing incentives to invest into new technologies. This reduced incentive effect in turn leads to low output and low wages and even higher migration in future periods. In addition, the research shows that altruistic remittances as an important by-product of migration allow people to share the benefits of technological advances developed elsewhere and dampen the negative impact of migration. In particular, remittances remove the limiting case of emptying out of the economy and reduce the chances of ending up in a poverty trap.

Sufian and Sidiropoulos (2010) examine the effects of workers' remittance on economic growth in a sample of 7 remittance-receiving MENA countries. A standard growth models

are estimated using both fixed-effects and random effects models. The empirical results show the support of the fixed –effects method as the random effects model is rejected in statistical tests. Results support for the view that remittances have a positive impact on growth both directly and indirectly through their interactions with financial and institutional channels.

Siddique et al (2010) investigate the causal link between remittances and economic growth in three South Asian countries by employing the Granger Causality test under a VAR framework using time series data over twenty five years. This study finds that growth in remittances does lead to economic growth in Bangladesh, no causal relationship between growth in remittances and economic growth in India but a two way directional causality are found in Sri Lanka. The study also discusses a number of policy issues relating remittances and economic growth in association with liberalization of financial institutions, gender issues, regulation and enforcement, investment and savings schemes promotion and education.

Ozaki (2012) identifies that South Asia is a remittance economy. Over the last decade, migrant workers going abroad from South Asia has been continuously on the rise and corresponding to the growth of the number of migrant workers, remittance inflows to South Asia show a significant growth. However, the prevalence of informal remittance system is a key characteristic of remittances in South Asia and is attributed to the limited financial development and inclusion in the region. The high dependence on informal remittances is a concern for the governments and regulators.

## 2.4 Review of Literature on Migration and Economic Growth

Coppel, and Visco (2001) identify four main types of economic effect of international migration. First, migration can affect the host country's labor market by reducing wages and employment opportunities of the natives, on the other hand, it can reduce skill shortages in host countries. Secondly, migration can have fiscal consequences on the economy of host country, since the amount that immigrants pay in taxes may not exactly offset the cost of health and education they receive. Thirdly, migration can affect the demographic composition of both the host and home countries. For example, immigrants can be a solution to the problem of population ageing in developed countries and

emigration can be a solution to unemployment and underemployment problem of developing countries. Finally, migration may contribute directly to economic growth both in host and home countries. Remittances to home countries can be a major source of capital that drives development.

Kelegama (2011) examines how migration should be brought into the mainstream of development planning where development is understood as a dynamic process implying growth, advancement, empowerment and progress, with the goal of enlarging the scope of human choices and creating an environment where citizens can live with dignity and equality in the context of South Asian countries. However, it mainly focuses on rates and ratios, and microeconomic study on migration and remittances. This creates a gap for a macroeconomic study on the topic.

Papademetriou and Martin (1991) find that migration can be a source of development through facilitating a "migration cycle" which ideally consists of the "three R": recruitment, remittances and return.

Nyberg-Sorensen et al. (2002) identify various connections between migration and development which they call migration-development nexus. They summarize that migration-development nexus has four channels through which migration can have impact on the economic performance of the labor sending countries. These channels include domestic labor supply, remittances, transnational/diaspora activities and return migration. Firstly, migration can bring about a change in the labor force supply, a reduction in average skills level of labor, a change in total output or income, an increase in income or output per capita, a change in unemployment, impact the functional distribution of income and a deterioration in health and education, and hence, the quality of labor force. Secondly, through remittances, migration can reduce poverty, increase investments, output and inequality, reduce labor supply, generate dependence, develop financial sector, compromise export competitiveness and bring about inflation. Thirdly, through transnationalism, migration can promote transfer of skills and knowledge, foster business partnerships and foreign direct investment, and enhance translocal provision of public goods. Finally, through return migration channel, migration can change labor, increase savings and change the skills' level of labor force.

Drinkwater et al. (2002) assess the impacts of migration on long run economic growth following three broad approaches. The first model considers capital accumulation as an engine of economic growth, where capital includes human capital. In this approach, Reichlin and Rustichini (1998) use a two country overlapping generations model with mobile capital and labor to investigate the impact of persistent migration flows with lack of cross-country convergence. They assume that the level of technology is an increasing function of the stock of capital. The two countries are assumed to be identical in technology but different in terms of the initial stocks of factors of production. With increasing returns and perfect capital mobility, they find that the driving forces behind labor migration are the size and the composition of the workforce. In the second approach, growth is driven by the accumulation of human capital. Walz (1996) uses an endogenous growth model in which individuals can choose to invest in education or work in the unskilled sector to investigate the effects of migration on both home and host countries. The expected benefit to education is greater for workers with greater ability. Migration affects the growth rate of the economies by altering the composition of labor force in each country. The stock of knowledge depends on the average human capital which in turn is driven by migration decisions. A similar approach is taken by Haque and Kim (1995), in which there is a tendency for higher skilled workers to emigrate. The resultant 'brain drain' can bring about a reduction in the steady state growth rate of the country of emigration proportional to the fraction of the population that has emigrated. The third approach views innovation and technology as driver of economic growth (Romer, 1990).

Lundborg and Segerstrom (2000) analyze the effects of immigration on growth using a quality ladder growth model. The research finds that countries which trade with each other grows at the same rate, and growth rate amongst the highly trade-dependent developed countries are very similar while that amongst the developing countries vary widely. In this model growth is driven by improvements in product quality and firm's race to become the sole producer of hiring high skilled workers. In general, the authors conclude that free international movement is growth stimulating where there is reaction to labor force differences across countries. When migration is driven by policy differences or wealth differences across countries, growth effects are much less certain, since a policy change can alter the equilibrium of post-migration incentives to invest in research and development (R & D) in both countries.

Barro and Sala-i-Martin (1995) develop three models of migration and growth, each demonstrating that migration can increase growth rates through faster convergence to a steady state income per capita level. Firstly, the study extends the Solow-Swan growth model by allowing the labor force to increase at a faster rate than implied by natural population growth, with the assumption that capital is immobile other than when carried by migrants. There is, thus, a degree of capital mobility, but only to the extent that migrants bring human or physical capital with them. Using this model, the authors show that migration can increase the speed of convergence by about 10 percent. Extending the Ramsey model of household optimization gives the same conclusion. Finally, the Braun model of migration and growth is explained. Following Braun (1993), the cost of migration and the migrating individual's optimizing decision are considered, and in contrast to the other models, varying levels of capital mobility are allowed. The model concludes that the possibility of migration raises the rate of convergence to the steady state, and where there is a smaller tendency for the cost of moving to rise with the migration rate, convergence is faster. This would imply that where the income elasticity of migration is higher (the migration rate is more responsive to cross country income differentials) convergence will be faster.

Faist (2008) identifies three phases on the academic debate of migration- development nexus. Phase one includes the migration theories of 1950s to 1960s- namely neoclassical migration theory, modernization theory and human capital theory of migration. Within this phase migration plays positive role to economic development through factor price equalization, structural socio-economic transformation from traditional agriculture to modern industry, following top-down development process and process of large amount capital transfer in the form of remittances. Phase two includes the migration theories of the decade of 1970s to 1980s- namely, dependency theory, cumulative causation theory and world system theory of migration. In general, migration theories in this period exert negative impact on economic development through unequal relationship between developing and developed countries, dependency of developing countries on developed ones, asymmetrical and dependent incorporation of developing countries into the capitalist world economy, drawing people, resources and capital to the core areas, selective nature of migration, unproductive use of remittances, negative effects of social remittances, return migration due to failure, illness or old age, and undermining the development

prospect of the periphery by the core, developed countries. Phase three includes the migration theories since the end of 1980s to onward-namely, new economics of labor migration (NELM), network theory, transnational migration theory, social capital theory, alternative development theory and neoliberalism theory. The main message of these theories is that migration exerts positive but differential impact on economic development. In this context, migration is considered in a wider societal context of families, households and communities, a risk sharing and income-diversifying behavior. It is conceptualized as acting in a transnational social space, living across international borders, thus exchanging knowledge, ideas, facilitating investment and business. Agency of development has changed from government and market to a third system and society, which can be the community, non government organizations (NGOs), or even migrants, diasporas and transnational communities.

Moody (2006) gives an outline of a growth accounting framework of migration where growth in GDP per capita is driven by growth in labor productivity and growth in labor utilization. Migration affects labor utilization through the labor force participation rate, the unemployment rate and average hours of work. Migration is also likely to affect labor productivity. In particular, the human capital of migrants is expected to affect the productivity of the labor force. The emigration of highly skilled workers (brain drain) could be expected to reduce labor force productivity and *vice versa*. Migrants can also affect multifactor productivity by sharing their knowledge and skills within the firm which can encourage innovation.

## 2.5 Review of Literatures on Different Issues of Migration, Remittances and Growth

Lescarbot (1907) discusses that three things drive men to seek lands far away and to abandon their homes. The first is the desire to find something better. The second is a country full to bursting of people. The third reason is divisions, disputes and quarrels. More recently, the Global Commission on International Migration (2005) reaches a similar conclusion, referring to three 'Ds' driving emigration: development, demographics and democracy. Relative deprivations generates a lack of development, pressure on resources and employment, are caused by excessive population growth, and exclusion, persecution and violence, are caused by a lack of democratic rights.

UNDP (2009) study confirms that almost 80 percent of the migrant population of a developing country migrates to a more developed country as destination in search of greater income. The study also identify expected income differential during life cycle, comparative demographic dynamics and pressures, falling potential support ratio, population ageing, comparative degree of certainty and cost and access to destination countries as drivers of migration.

Massey et al. (1998) divide the modern history of international migration into four periods. They are the mercantile period, industrial period, period limited migration and post-industrial migration. During the mercantile period, from 1500 to 1800 A.D. world migration is dominated by flows out of Europe to America, Africa, Asia and Oceania, and stemmed from processes of colonization and economic growth under mercantile capitalism. Industrial period migration begin early in the 19$^{th}$ century and stem from industrial development in Europe and the spread of capitalism to former colonies in the new world. The period from 1800 to 1929 represents the first period of economic globalization, characterized by massive flows of capital, raw materials, goods, and people back and forth between Europe, America, Asia, and the Pacific. The period of limited migration start with the outbreak of World War 1. The 1920s are characterized by the rise of autarkic economic nationalism in both Europe and the Americas. Chauvinistic restrictions are successively placed on trade, investment, and immigration to curtail international movements of goods, capital, and labor. The onset of the Great Depression stops virtually all international movement, and except for a small amount of return migration, there is little movement during the 1930s. During the 1940s, international migration is checked by the Second World War. What movement there is consisted largely of refugees and displaced persons and is not tied strongly to the rhythms of economic growth and development. The period of post-industrial migration emerge during the middle1960s and constitute a sharp break with the past. Rather than being dominated by outflows from Europe to a handful of settler societies, immigration becomes truly global in scope, as the number and variety of both sending and receiving countries increase as the global supply of immigrants shifted from Europe to developing countries of the Third World. The variety of destination countries has also grown. During the 1970s, even long-time, countries of emigration such as Italy, Spain, and Portugal begin receiving

immigrants from the Middle East and Africa; and after the rapid escalation of oil prices in 1973 several less developed but capital-rich nations in the Persian Gulf also begin to sponsor massive labor migration as well. By the 1980s, international migration spread into Asia, not just to Japan but also to newly industrialized countries such as Korea, Taiwan, Hong Kong, Singapore, Malaysia, and Thailand.

Massey (2003) identifies five discernible migratory systems in the world at the beginning of the 21st century. They are the North American migratory system, the Western Europe migratory system, the Persian Gulf system, Asian Tigers migratory system and South American (mainly Argentina, Brazil and Uruguay) system.

Ban-Ki-Moon, (2013) the UN secretary general proposes an eight-point agenda for making migration work in the High-Level Dialogue-2013 which are regarded as landmark development in the arena of international migration and development. The points include: protect the human rights of all migrants, reduce the costs of labor migration, eliminate migrant exploitation, including human trafficking, address the plight of stranded migrants, improve public perceptions of migrants, integrate migration into the development agenda, strengthen the migration evidence base, and enhance migration partnerships and cooperation.

McKenzie and Sasin, (2007) identify four methodological challenges that confront any economic work on international migration and remittances. These problems are simultaneity, reverse causality, selection bias and omitted variables. First, many of the decisions on international migration are made at the same time as other household decisions. For example, a household may decide to send its oldest male to work abroad at the same time that it decides to send its youngest daughter to school. As a result, variables that 'cause' international migration may also 'cause' household patterns of consumption and education. The second problem is reverse causality. For instance, while international remittances may help reduce poverty in the developing countries, the level of poverty may also influence the amount of remittances received by a particular country. Thus any attempt to analyze the impact of remittances on poverty that fails to consider the reverse causality between these two variables lead to erroneous conclusions. The third problem is selection bias, which refers to the 'selectivity' of people who tend to migrate and to receive remittances. For example, if households with more education or income are more

likely to produce migrants, then it is impossible to identify the effects of migration by simply comparing the characteristics of migrants and non-migrants households. Fourth, when households produce migrants or receive remittances on the basis of unobservable characteristics like the risk averseness of the household head, then the problem of omitted variables bias arises. For example, it is possible that households with more risk averse heads will be less likely to produce migrants, but it is very difficult to collect data on this issue. To meet these various methodological challenges, at least five possible solutions are available. The first and perhaps the best solution is to use a randomized 'natural' experiment whereby individuals desiring to pursue international migration are denied to the right to migrate (by a lottery system, for example), thereby, creating a 'control group' of would-be migrants to compare with a group of actual migrants. Comparing the characteristics of would-be-migrants to those of actual migrants would then yield accurate information on the causal motives for migration. A second, and slightly less difficult, solution is to use panel data. Panel data, which includes repeated observations on the same household over two or more time periods, is a good solution because by taking "first differences" between various variables it becomes possible to eliminate many of the methodological problems discussed above. Unfortunately, however, panel data sets on international migration and remittances in the developing world are relatively rare. A third solution is to construct a "counterfactual" situation, that is, to artificially construct what the status of a migrant household would have been had that household not produced a migrant. For example, if the topic is remittances and income, then it would be necessary to estimate the income of a migrant household by imputing the value of that migrant had he stayed and worked at home. A fourth solution to use econometric procedures to regress the outcome of interest (for example, poverty) on a set of independent variables, and then supplement this approach with a sample selection procedure, like the two-stage Heckman model. Here the selection model is used to estimate the size and direction of the selection bias. However, the difficulty comes in specifying an exogenous variable that "causes" migration or the receipt of remittances in the first-stage equation, but has no direct impact on the dependent variable in the second-stage equation. A fifth, and quite common, solution is to use instrumental variables. A good instrumental variable, one that is correlated with the explanatory variable but uncorrelated with the outcome variable, can eliminate many of the biases that arise from endogeneity, selection bias and omitted variables. In practice, however, selecting a good instrumental variable in migration and

remittances work can be difficult. In empirical analysis, many studies employ one or more of these solutions to the problems of simultaneity, reverse causation and selectivity.

Carling (2005) investigates on senders of remittances. He categorizes four types of remittances senders. Firstly, individual migrants who send remittances in four different ways including personal deposits, intra-family transfers in which remittances are sent to family members, relatives and friends, charitable donations in the home country, and by paying government taxes or levies either voluntary or mandatory. A second group includes collective migrant senders send funds through organizations to their home communities to support investments and other development initiatives such as home town associations (HTAs) in Mexico. A third group include governments in remittances sending countries or country of migrant destination that transfers social security benefits for former employees who have returned in their countries of origin after retirement. The final group includes former employers or pension fund organizations responsible for social security benefits. These are transfer pensions or social security benefits to former employees who are entitled to retirement benefits and have returned to other countries of origin or moved to other countries after retirement.

Puri and Ritzema (1999) observe that officially transferred remittances published in the recipient countries' balance of payments grossly underestimate the actual level of remittances. The degree of under recording/ leakage varies from country to country. The study categorizes two types of leakages: one due to erroneous (imprecise accounting) and the other due to the choice of informal, unsupervised channels for remittances. Erroneous practices happen due to the tendency of treating informal remittances as foreign exchange leakages from the labor exporting country. The leakages of this form are categorized as personal imports of migrant workers (i.e., goods imported by returning migrants under the duty free allowance facility or brought along with them under personal baggage/ gift facilities) and the savings brought home on return (in the form of cash or traveler's cheques) that are latter converted into local currency at domestic banks. The informal means include retention of remittance savings in personal accounts of migrants, hand carrying and use informal foreign exchange intermediaries. They also summarize these reasons of the occurrence of leakages of remittances as follows: firstly, where banking and foreign exchange facilities are inadequate, inefficient, or even destroyed, informal non-bank means of transfer may be used, regardless of transactions costs. Secondly, significant price differences between the remittance sending and receiving countries may encourage sending or carrying remittances in the form of goods (remittances in kind) either for

personal use by the recipient or for resale in the informal market. Thirdly, informal foreign exchange markets may be used when the remittance – receiving country's exchange rate is overvalued which acts as an implicit tax on those who remit money through official channels. This closely relates to the highly restrictive trade and exchange control systems in place which generate a demand for capital flight through under-invoicing of imports and smuggling. Fourthly, financial repression, characterized notably by negative real interest rates on domestic savings, also drive money balances to foreign bank accounts.

BBS (2014) remittance use survey data shows that banking channel is the most popular and widely used system for sending remittance. Two thirds use this system for sending remittance followed by Hundi (10.04%) and Western Union (6.87%). About 96.0% of remittances are transferred as cash and the rest in kind. Remittance is the main source of income of more than 75% of households. At the national level, about 84% of total remittance received is spent for expenditure requirement while 16 % are saved. Food expenditure and non-food expenditure (excluding consumer durables) account for equally one-third in expenditure category.

## 2.6 Conclusions and Research Gap

This Chapter reviews important literatures on migration, remittances and economic growth. We review the determinants of remittances, growth impact of remittances, growth impact of migration, different methodological and conceptual issues of migration, remittances and economic growth.

From the review of literature a good number of macroeconomic determinants of remittance inflows are found. They are home country income, host country income, inflation rate or inflation differentials between home and host countries, exchange rate or real effective exchange rate, interest rate or interest rate differentials, private sector credit to GDP or broad money (M2) to GDP, institutional quality index, total number of migrants abroad, net migration, total labor force, rate of unemployment in home country and host country, wage rate at home and host country, oil price, lagged remittances, agricultural GDP of home countries, adjusted savings, age dependency ratio and dual exchange rate.

We identify the following factors to show the relationship between remittances and economic growth from the review of literature. The factors are lagged real GDP per capita,

remittance per capita and remittance as a share of GDP, investment GDP ratio, broad money GDP ratio, domestic credit to private sector GDP ratio, labor force, population growth rate, government expenditure GDP ratio, trade openness as share of GDP, inflation rate, real exchange rate, foreign direct investment, official development assistance, secondary school enrollment, gross fixed capital formation, political risk, economic risk, financial risk, deposit ratio, terms of trade, real interest rate, capital labor ratio, final consumption expenditure and government fiscal balance

**Research Gap**

From the literature, it is evident that a good number of researches have been done to determine the macroeconomic factors of remittances and to assess the growth impact of remittances in developing countries around the world. The macroeconomic study on migration, remittances and economic growth does not get maturity. Most of the studies are either country specific or regional studies outside of South Asia. Those studies consider either only determinants or growth impacts of remittances only. No study combines the three concepts of migration, remittances and economic growth. Some studies take time series data. Some studies perform panel data estimation technique. Few study use either pooled ordinary least square model or fixed effects or random effects model. But those models suffer from endogeneity problem and give biased result. It is well known that dynamic panel data model especially Blundell-Bond System Generalized Method of Moment (SGMM) model corrects the problem of endogeneity and give meaningful result.

Although there are some studies that use dynamic panel data model but no study is conducted in South Asian region to determine remittances and growth impact of remittances using dynamic panel data framework. This creates a research gap in the migration remittance literature. That is why, this research empirically analyzes the macroeconomic relationship of migration, remittances and economic growth in South Asian countries using Arrellano-Bover/Blundell-Bond System Generalized Method of Moment (SGMM) estimation technique along with pooled OLS, REM and FEM techniques. In this respect, to the best of our knowledge this research is first of its kind.

# Chapter 3

## Theories of Migration, Remittances and Economic Growth

### 3.1 Introduction

This research studying the macroeconomic relationship among migration, remittances and economic growth in South Asian countries is based on the important theories of migration, remittances and economic growth. The elaboration of the theoretical framework addresses the issues of why or how certain relationships exist, and the nature the direction of relationships among the variables of interest. According to Mikkelson (2005), theories give us concepts, provide basic assumption, direct us to the important questions and suggest ways for us to sense of data. These also increase our awareness of the interconnections and of the broader significance of data. This Chapter summarizes the most important theories of international migration, remittances and economic growth. Without describing these theoretical concepts and schools, some of the later statements in this thesis would remain without a conceptual base. That is why, we describe the theories of migration, theories of remittances and the theories of economic growth.

The Chapter is organized as follows: Section 3.2 discusses the theories of migration; theories of remittances are given in Section 3.3; theories of economic growth are presented in Section 3.4 and Section 3.5 concludes.

### 3.2 Theories of Migration

The concept of international migration is defined as the spatial movements of people across borders with the aim of spending a certain time in the target country. Migration can be classified on the basis of decision (voluntary, involuntary or forced), time (temporary, permanent or circular), space (internal, international or transnational), skillness (skilled, unskilled or semi-skilled), legality (legal versus illegal) and documentation (documented versus undocumented). While migration is as old as human civilization, theories of migration are fairly new.

According to Chang (1981) the research on international migration has focused on explaining the decision-making mechanism (individual, household, or village) and human

behavior for persons (with different personality traits and socio cultural backgrounds) interacting with and reacting to (at different levels) the general environment (socioeconomic, ecological, and political stimuli) over time (short- and long-run situations) in order to achieve (maximize, minimize, or satisfy) certain objectives (personal or otherwise, economic and noneconomic) under certain consequences (on the migrant and others in the sending and receiving points). Therefore, why a person decides to migrate can be of miscellaneous nature. There is no single, comprehensive theory of international migration to explain the causes and continuation as the phenomenon is complex and depends on the interplay between many variables- economic, political, demographic, social cultural, environmental, psychological, historical, geographical variables, past and present immigration policies, income, unemployment, leisure, education access to information, social capital and so on. All these factors jointly determine the general level and distribution of wealth and other opportunities, peoples' perceptions of 'here' and 'there' and by that, the propensity and capability of people to migrate.

In order to structure the various theoretical contributions to international migration following classification dimensions have been developed. Firstly, migration theories can be classified on the basis of level they focus on. Table 3.1 shows the classification:

**Table 3.1: Theories of Migration Defined by Level of Analysis**

| Micro-level | Meso-level | Macro-level |
|---|---|---|
| Migration cause: Individual values/desires/expectations e.g., improving survival wealth etc. | Migration cause/perpetuation: Collectives/ social networks, e.g., social ties | Migration cause/perpetuation: Macro level opportunity structure, e.g., economic structure (income and employment opportunities differentials) |
| Main theories:<br>- Lee's push/pull factors,<br>- Neoclassical micro-migration theory<br>- Behavioral models<br>- Theory of social systems | Main theories:<br>- Social capital theory<br>- Institutional theory<br>- Network theory<br>-Cumulative causation theory<br>- New economics of labor migration | Main theories:<br>-Neoclassical macro-migration theory<br>-Migration as a system<br>-Dual labor market theory<br>-World system theory<br>-Mobility transition |

Source: Faist, 2000 and Zanker, 2008

Within this classification, we get three level of migration analysis: micro-level theories focus on individual migration decisions; macro-level theories look at aggregate migration trends and explain these trends with macro-level explanations; and the meso-level theories lie in between micro-level and macro-level and focus on the household or community level migration decisions. Lee's push-pull migration theory, neo-classical micro-migration theory, behavioral models and theory of social systems are micro-level theories. Social capital theory, institutional theory, network theory, cumulative causation theory and new economics of labor migration are meso-level theories. Neoclassical macro-migration theory, migration as a system, dual labor market theory, world system theory and mobility transition theory are macro-level theories of migration.

Secondly, migration theories can be classified as initiation theories of migration and perpetuation theories of migration on the basis of causal analysis of migration behavior and attitude. Table 3.2 lists theories of migration on the basis of initiation and perpetuation of migration.

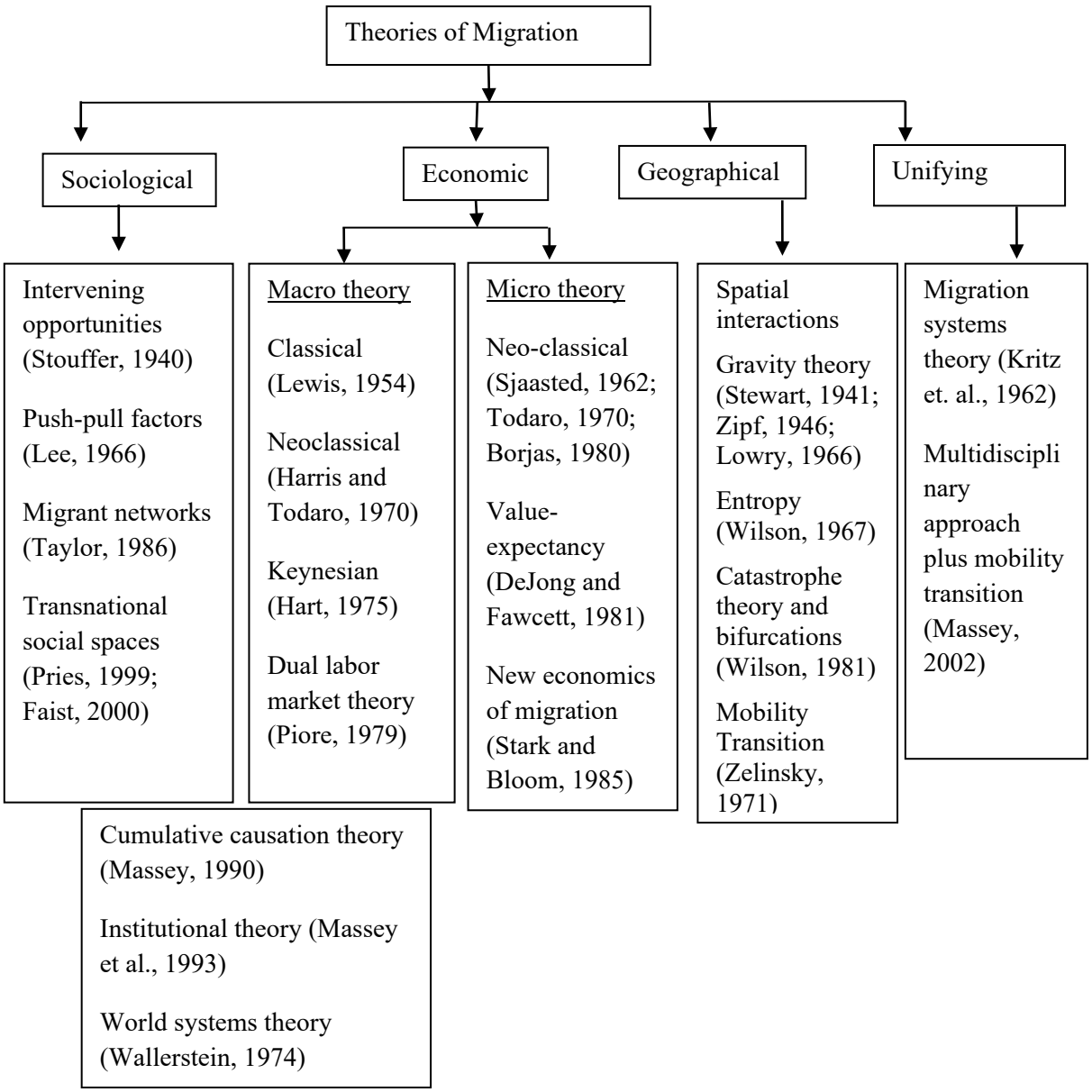
**Table 3.2: Theories of Migration Defined by Initiation or Perpetuation of Migration**

| Initiation of migration | Perpetuation of migration |
|---|---|
| - Neoclassical migration theory<br>- Migration as a system<br>- Dual labor market theory<br>- World systems theory<br>- Mobility transition<br>- Lee's push/pull factors<br>- Behavioral models<br>- Theory of social systems<br>- New economics of labor migration | - Migration as a system<br>- World systems theory<br>- Social capital theory<br>- Institutional theory<br>- Network theory<br>- Cumulative causation theory |

Source: Massey et al, 1993 and Zanker, 2008

Thirdly, migration theories can be classified on the basis of various disciplines of science: sociological, economical, geographical and unifying theories of migration.

**Figure 3.1: Selected Migration Theories Offered by Various Disciplines of Science**




Before going to describe the migration theories, if we look back, then can see that an economic analysis of migration dates back to Smith (1776). He writes in his popular book "An inquiry into the Nature and Causes of the Wealth of Nations":

'. . .the wages of labor vary more from place to place than the price of provisions. The prices of bread and butcher's meat are generally the same or very nearly the same through the greater part of the United Kingdom. These and most other things which are sold by retail, the way in which the laboring poor buy all things, are generally fully as cheap or cheaper in great towns than in the remoter parts of the country. . . But

the wages of labor in a great town and its neighborhood are frequently a fourth or a fifth part, twenty or five-and twenty per cent. Higher than at a few miles distance matter. Eighteen pence a day may be reckoned the common price of labor in London and its neighborhood. At a few miles distance it falls to eight pence, the usual price of common labor through the greater part of the low country of Scotland, where it varies a good deal less than in England. Such a difference of prices, which it seems is not always sufficient to transport a man from one parish to another, would necessarily occasion so great a transportation of the most bulky commodities, not only from one parish to another, but from one end of the kingdom, almost from one end of the world to the other, as would soon reduce them more nearly to a level. After all that has been said of the levity and inconstancy of human nature, it appears evidently from experience that a man is of all sorts of luggage the most difficult to be transported.'

The above quote contains insightful observations which foreshadow research in the migration field two centuries later. Smith (1776) observes that there is greater spatial dispersion of wages of labor than that of commodity prices which is still relevant today, because international commodities seem to be more efficiently arbitraged than labor. He effectively suggests that migration is potentially a result of spatial disequilibrium in labor markets. His observation of large wage differences in Britain suggests that wage differences are clearly not the only determinants of migration.

More than 150 years later, another leading economic theorist, Hicks (1932), writes that ". . . differences in net economic advantages, chiefly, differences in wages, are the main causes of migration".

However, the origin of migration theory as an autonomous field of enquiry can be traced back to Ravenstein (1885) who draws on census data on nativity of the population and place of residence along with vital statistics and immigration records in order to identify empirical regularities that might be posited as "The Laws of Migration" which is published in Volume 44 of the Journal of Royal Statistical Society in 1885. Ravenstein's article attempts to establish relation between distance and volume of migration. He observes migration as an inseparable part of development and asserts that the major causes of migration are economic. He hypothesizes seven laws of migration which can be summarized as follows according to Greenwood (1997):

1) Most migrants move only a short distance and usually to large cities;

2) Cities that grow rapidly tend to be populated by migrants from proximate rural areas and gaps arising in the rural population generate migration from more distant areas;

3) Out-migration is inversely related to in-migration;

4) A major migration wave generates a compensating counter-wave;

5) Those migrating to a long distance tend to move to large cities;

6) Rural persons are more likely to migrate than urban persons;

7) Women are more likely to migrate than men.

Based on some of Ravenstein's laws, Zipf (1946) introduces a migration model, known as gravity model of migration which hypothesizes that the volume of migration between two places is directly proportional to the product of the populations of the origin and destination and inversely proportional to the distance between the two. This model is obviously an application of Newton's law of gravity, which predicts that the level of attraction between two bodies. In applying Newton's law, Zipf treats 'mass' as the population of a place and 'distance' as referring to miles between two places. His intuition is that distance is a good proxy for the costs of migration and the volume of migration is higher the greater are the populations of the origin and destination countries.

Jerome (1926), a macroeconomist specialized in business cycle analysis, finds that there is strong correlation between cyclical changes in employment and cyclical changes in immigration and emigration. He concludes that migration does respond to changes in employment conditions, but may contribute as well to unemployment.

There are some differences between internal and international migration theories. Although this study concentrates on international migration, involving crossing the countries' borders, many theories attempting to explain population movements refer to internal migration. Nevertheless, they are included in the discussion because contemporarily, given the economic integration and globalization process, the complexity of migratory phenomenon increases (Korys and Okolski, 2004), while the diversity between the mechanisms driving internal and international migration becomes less and obvious. In the present day world, both types of population flows may become more and more substituting, and that prospective migrants would migrate either internally or externally, making decisions on the basis of a cost-benefit calculation.

### 3.2.1 Classical Theory of Migration

The classical migration theory considers the phenomenon of migration in the context of broader process of economic development rather than a theory of determinants of migration. Here we consider the wage differentials based classical model of migration namely, Lewis migration model (1954). Lewis model postulates that the internal economic structure of an underdeveloped economy can be sub-divided into two sectors. One is a rural technologically backward agricultural sector and another is a technologically advanced urban manufacturing sector. The producers of manufacturing sector act as profit maximizers, that is employ labor up to the point where marginal product equates wage. The rural sector provides subsistence wage and there is excess supply of labor in that wage such that marginal productivity of labor is nearly zero. This labor has been termed by Lewis as surplus labor. As marginal product is almost zero this surplus labor can be removed from agriculture without sacrificing the agricultural output. Lewis argues that the goal of economic development can be achieved by transferring the surplus labor to the industrial sector by enabling industrial sector to increase production. It is assumed that the wage rate in manufacturing sector is higher than the agricultural sector's wage and this wage difference can induce laborers of agricultural sector to migrate to industrial sector. With reinvestment of accumulated profit, manufacturing sector can uninterruptedly grow by using the surplus labor until all surplus labor of agriculture is fully exhausted.

Harris-Todaro model assume that rural urban migration proceeds in response to the expected wage differential instead of actual wage differential. That is, as long as the "probability or ratio of urban employed workers divided by total urban workers" multiplied by urban wage rate is higher than the rural wage rate, rural laborers find it rational to migrate to urban sector to get higher urban expected wage. In the model, urban wage rate is assumed institutionally/politically fixed above the market clearing wage rate. In response to the higher urban fixed wage, rural laborers start to migrate to urban sector but not all of them find employment as the urban producers employ labor only up to the level where marginal product equates the fixed wage rate. But the migrants stay in urban area as urban producers picks laborers randomly from the pull of urban workers comprising permanent urban proletariat and migrant workers. If expected urban wage is still higher than rural wage, more people migrate to urban sector to get higher urban wage even some people in urban sector remained unemployed. With this flow of migration from

rural to urban sector urban unemployment increases, urban expected wage falls and the equilibrium in the labor market is reached when urban expected wage become equal to rural wage. Thus, urban fixed higher wage results in unemployment in urban sector and consequently the economy produces and consumes less than what it is capable of producing and consuming with full employment. The wage differential explanation is broadly applicable to both internal and international migration.

### 3.2.2 Neoclassical Theory of Migration

The neoclassical theories of migration have their roots in neoclassical economics where economic agents are rational, self-interested and autonomous individuals who maximize their well being subject to income and time constraints. In this framework, migration is conceptualized as people responding to uneven distribution of factors of production which determine unequal returns to each other. Hence, migration is considered as development fostering and correcting imbalances in interregional imbalances in factor returns. Wage differentials are most important factors in determining migration.

At the micro-level, neoclassical migration theory views migrants as individuals, rational actors who decide to migrate on the basis of cost-benefit calculation. This theory treats migration as an investment in human capital. Assuming free choice and full access of information, people are expected to go where they can be the most productive, given their skills, and undertaking certain investments such as material costs of travelling, the cost of maintenance while moving and looking for work, the effort involved in learning a new language and culture, the difficulty experienced in adapting to a new labor market, and the psychological costs of cutting old ties and forging new ones. According to this theory, a potential migrant chooses the destination that is maximizing the net present value of his expected future income less various direct and indirect costs of migration. In a more comprehensive framework, this can be formalized as:

$$ER(0) = \int_0^n [p_1(t)p_2(t)Y_d(t) - p_3(t)Y_0(t)]^{e^{-rt}} dt - C_0$$

In the above equation, $ER(0)$ denotes the expected returns from migration at the moment 0, n is the time horizon of the decision making process, p is the probability of not being deported ($p_1 < 1$ for irregular migrants), $Y_0$ and $Y_d$ are earnings at the origin and

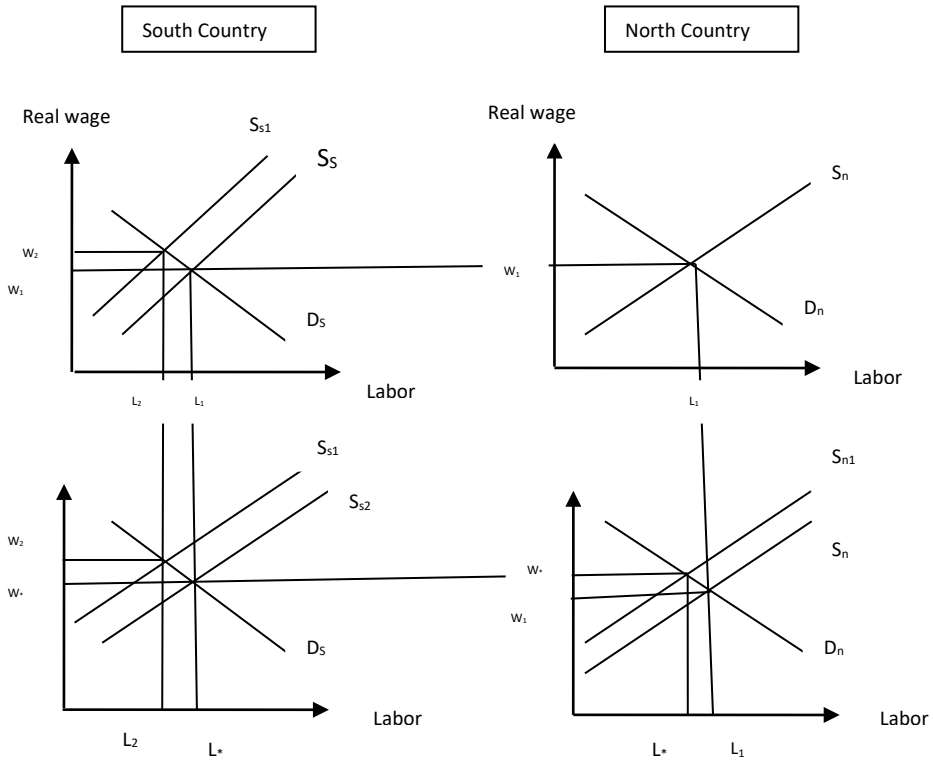
destination while $p_2$ and $p_3$ denote the respective probabilities of finding a job, r is the discount rate, and $C_0$ is the sum of all costs of migration, both economic and psychological.

At the macro-level analysis of neoclassical analysis, it is assumed that wage differences between regions are the main reason for labor migration. Such wage differences are due to geographic differences in labor demand and labor supply. According to this theory and its extensions, international migration, like its internal counterpart, are caused by geographic differences in the supply of and demand for labor. Countries with a large endowment of labor relative to capital have a low equilibrium market wage, while countries with a limited endowment of labor relative to capital are characterized by a high market wage, as depicted graphically by the familiar interaction of labor supply and demand curves. The resulting differential in wages causes workers from the low- wage country to move to the high-wage country. As a result of this movement, the supply of labor decreases and wages rise in the capital-poor country, while the supply of labor increases and wages fall in the capital-rich country, leading, at equilibrium, to an international wage differential that reflects only the costs of international movement, pecuniary and psychic. In a perfectly neoclassical world, this process of "factor price equalization" (Heckscher-Ohlin model) eventually results in growing convergence between wages at the sending and receiving end. In the long run, this process would remove the incentives for migrating. The neoclassical theory of migration can be described in Figure 3. 2.

Factor flows are important in defining health of a country, neoclassical theory suggest that capital flows to the country offering the highest rate of return and labor flows to the country offering the highest wages. The model consists of two countries (the North Country and the South country) producing a single good using the same technology with identical and immobile capital stock. Initially the same demand and supply conditions exist in each country- both countries have the same level real wage, $w_1$. Now if there is a decrease in labor supply of the South country due to migration, the labor supply curve shifts to inwards to $s_{s1}$ leading to an increase in the real wage in the south country to $w_2$. Given perfect information and no barriers or costs associated with migration, workers in

the North Country respond to the real wage differential by moving to the South country. This pushes the labor supply curve outwards in the South country to $s_{s2}$ and moves the North Country's supply curve inwards to $S_{n1}$. As a result, the new real wage level settles out to w* in both region and there is no incentive for further migration.

**Figure 3.2: Impact of International Migration on Real Wage**




### 3.2.3 Behavioral Model of Migration

This model is similar to a cost-benefit analysis, assuming individual that intends to be rational ex-ante, but is not necessarily so ex-post. Individuals have threshold level of utility they aspire to. They compare place utilities to their threshold in order to decide whether to migrate or not and to which place. Place utilities for the current position are based on past and future rewards, whereas place utilities for possible destinations depend on anticipated rewards. Knowledge is based on the subjective and incomplete knowledge that individuals have in their personal action spaces, so rationality is bounded. Action spaces depend on personal characteristics, the variability of the environment and life-stage of the individual. Migration flows thus occur as a consequence of these individual places

utility evaluations and are not necessarily optimal according to rational and perfect information standards.

### 3.2.4 The Value-Expectancy Model

This is a cognitive model in which migrants make a conscious decision to migrate based on more than economic considerations. The potential migrant's strength of migration intentions depends on a multiplication of the values of migration outcomes and expectations that migration actually leads to these outcomes. Values are specific goals, e.g. wealth or autonomy. Values and expectations depend on personal and household characteristics (e.g., education level) and societal norms. These values do not necessarily need to be economic, for example, security or self-fulfillment can also be important to potential migrants. Migration depends on the strength of migration intentions, indirect influences of individual and societal factors and modifying effects of constraints and facilitators. The underlying formal model defines the individual motivation to migrate (*MM*), being subject to maximization, as:

$$MM = \Sigma Pi\ Ei$$

The values of *Pi* refer to the preferred outcomes of migration, and *Ei* to the 'expectations' of their realization through migration which are hold by a potential migrant, and thus can be interpreted as subjective probabilities. The index *i* denotes the 'values' or 'desires' of an individual, that is, various dimensions of the decision-making problem. The presented theory is very comprehensive and may cover different aspects of human decisions in the migration context (different values of *i*), not only limited to the economic ones (unemployment, wages), but also potentially taking into account the social and psychological spheres of life.

### 3.2.5 Migration as a Theory of Social Systems

According to this theory, migration is a result of resolving structural tensions (power questions) and anominal tensions (prestige questions). Migrants hope to achieve their desired status in the destination country, but often tensions are transformed instead of reduced. The success of a migrant depends on the global distributions of the different systems (for the different countries) among "status lines". A migrant coming from a country with a low rank is unlikely to achieve a high internal rank at the destination.

"Under casting" of migrants takes place, which means that migrants take on the lowest position in society, whereas lower stratum natives experience upward mobility, at least, in terms of power/ income. This theory does not exclude economic push factors for migration, but instead places them in a wider context of other societal push factors and also considers what happens to migrants at their destination. The theory broadly makes sense and furthermore includes structural factors, which most micro theories neglect.

### 3.2.6 Keynesian Migration Theory

Keynesian economy is critical to the neo-classical view on (international) migration. In Keynesian theory, labor supply depends on nominal wage, not on real wage. This distinction originates in the different views on the role of money in the economy. In the neo-classical point of view money is solely a medium of exchange. The Keynesian point of view is different, because here money is not only a medium of exchange but also a medium of saving. Because of functioning money as savings, potential migrants are also attracted to high nominal wage regions. Therefore, a new international equilibrium, as neo-classical economy foresees, may not exist. It is obvious that intentions to re-migrate or to send remittances increase the importance of the nominal wage level compared to the real wage level. Nevertheless in Keynesian theory migration is an equilibrium recovering mechanism too. However, in this theory international migration removes unemployment differences instead of real wage differences. This aspect of Keynesian theory lies behind a hypothesis which states that the unemployment difference between a sending and a receiving country has a positive effect on the amount of labor migration between these two countries.

### 3.2.7 Push-Pull Theory of Migration

The push pull model generally emerges from the idea that migration is a consequence of the socioeconomic disequilibrium among countries, in which some factors operate primarily by 'pushing' a person out of a place or, on the contrary, by 'pulling' him/her to another one. So this model examines and explains the factors of migration in both home and host countries. The negative characteristics at home country are included in the push factors that drive people to leave home and the positive characteristics at the center of destination are included in the pull factors that attract migrants to a new location. In fact, these differentiating factors are really two sides of the same coin. In moving migrants must

not only see a lack of benefits at home (push factors) but also a surplus of benefits abroad (pull factors); otherwise the migration would not be worthwhile.

The main push factors of migration include poor socioeconomic living conditions, unemployment, increasing dependency burden of household wage-earners, drops in real income, currency devaluation, rising cost of living, professional isolation, lack of sufficient and decent employment opportunities, corruption, violation of human rights, low status of women, surplus labor, demographic pressures, political instability, insecurity and violent conflicts, climate change and environmental degradation or disasters. These conditions in the home country offer result of development prospects for which migration is too often considered to be the only alternative.

The main pull factors of migration include higher salaries, greater job mobility and professional career development, fewer bureaucratic controls, higher standards of living, favorable migration policies, high labor demand and active presence of recruitment agents. However, according to the formulation of Lee (1966), the factors that enter into the decision to migrate and the process of migration may be summarized under four headings: factors associated with the area of origin; factors associated with the area of destination; intervening obstacles and personal factors. He, thus, conceptualizes the decision to migrate as the result of a cost- benefit comparison between the attractive and repulsive features of both areas with constraint to natural inertia, distance, information, personal factors etc.

### 3.2.8 Dual /Segmented Labor Market Theory

Dual labor market theory argues that international labor migration is primarily driven by pull factors in the developed migrant receiving countries not push factors of home countries. In this case, wage differentials between origin and destination countries are neither necessary nor sufficient conditions for labor migration. According to this theory, the primary reason for migration lies in segmentation of host countries labor markets. The segments in the labor markets in these countries may be distinguished as being primary and secondary in nature. The primary segment is characterized by capita intensive production methods and predominantly high skilled labor, while the secondary segment is characterized by labor intensive methods of production and predominantly low skilled labor. Workers in the capital-intensive primary sector get stable, skilled jobs working with the best equipment and tools. Employers are forced to invest in these workers by providing

specialized training and education. Their jobs are complicated and require considerable knowledge and experience to perform well, leading to the accumulation of firm specific human capital. Because of these costs and continuing obligations, workers in the primary sector become expensive to let go, they become more like capital. However, workers in the labor intensive secondary sectors hold unstable, unskilled jobs; they may be laid off at any time with little or no cost to the employer. Indeed, the employer will generally lose money by retaining workers during slack periods. As a result, employers force workers in this sector to bear the cost of their unemployment.

Thus, the inherent dualism between labor and capital extends to the labor force in the form of segmented labor market structure. Low wages, unstable conditions and lack of reasonable prospects for mobility in the secondary sectors make it difficult to attract native workers, who are instead drawn into the primary, capital intensive sector where wages are higher, jobs are more secure and have the possibility of occupational improvement. To fill the shortfall in demand within the secondary sector, employers turn to immigrants.

The demand for migrant labor force also stems from several factors such as structural inflation, motivational problems and the demography of labor supply. Due to structural inflation, there is constant wage rising in the primary sector because workers believe that wages should reflect social status, and they have rather rigid notions about the correction between occupational status and pay. Proportional wage rises in the secondary sector are too expensive; the consequent lower pay makes the secondary sector unattractive to native workers. Migrants are motivated to work in these low-status jobs, because they don't consider themselves as part of the destination society rather they see themselves as a member of their home community, within which foreign labor and hard currency remittances carry considerable honor and prestige. Employment in the secondary sector fluctuates according to the economic cycle, making it unstable and uncertain work, again unattractive to native workers. Moreover, acute motivational problems arise at the bottom of the job hierarchy because there is no status to be maintained and there are few avenues for upward mobility. Again, traditional sources of labor in the secondary sector from domestic society, women and teenagers are not available anymore due to demographic changes. Women have joined the regular labor force and there are smaller teenagers cohorts. Therefore, there is a strong demand for temporary migrant labor that acts as a pull factor to migration. This theory predicts that the negative qualities that people in the

industrialized countries attach to low wage jobs may open up employment opportunities to foreign workers, thereby raising their expected earnings, increasing their ability to overcome risk and credit constraints, and enabling households to achieve relative income gains by sending family members abroad.

### 3.2.9 Marxist Theory of Migration

Castle and Kosack (1973) concentrate on two central concepts of Marxist analysis- industrial reserve army and labor aristocracy- to explain why labor in-migration in general and foreign immigration in particular, is essential to the interests of the bourgeoisie. As industrial reserve army, immigrants ensure that labor costs are kept sufficiently low so as to sustain profit rates. At the same time, they also enable capitalists to divide the working class and reduce the likelihood and immediacy of the latter's counter-systemic uprising. This undermining of workers' unity is achieved through both material and ideological mechanisms: "by creating a split between immigrant and indigenous workers along national and racial lines, and offering better conditions and status to indigenous workers, it is possible to give large sections of the working class the consciousness of a labor aristocracy.

### 3.2.10 Historical Structural Theory of Migration

Historical structural paradigm has its intellectual roots in Marxist political economy and in world systems theory. Historical-structuralist postulates that economic and political power is unequally distributed among developed and underdeveloped countries, that people have unequal access to resources, and that capitalist expansion has the tendency to perpetuate these inequalities and reinforce a stratified economic order. They perceive migration as a natural outgrowth of disruptions and dislocations that are intrinsic to the process of capitalist accumulation. They also interpret migration as one of the many manifestations of capitalist penetration and the increasingly unequal terms of trade between developed and underdeveloped countries. They state that individuals do not have a free choice, because they are fundamentally constrained by structural forces. This approach perceives the

consequences of migration for development as generally negative and migration ruins stable peasant societies, undermines their economies and uproots their population.

### 3.2.11 World Systems Theory of Migration

The world systems theory considers international migration from a global perspective and classifies countries according to their degree of dependency and distinguishes between the capitalist 'core' nations followed by the 'semi-peripheral' and 'peripheral' and isolated nations in the external area which are not yet included in the capitalist system. In this perspective, the incorporation of the peripheries into the capitalist economy is associated with putting a drain on them, exactly the opposite of factor price equalization presumed by neoclassical theory. Here labor follows where capital goes. The penetration of capitalist economic relations into peripheral, non capitalist societies create a mobile population that is prone to migrate abroad. Driven by a desire for higher profits and greater wealth, owners and managers of capitalists firms enter poor countries on the periphery of the world economy in search of land, raw materials, labor and new consumer markets. In the past this penetration is assisted by colonial regimes, at present it is assured by neocolonial regimes and multinational corporations, and direct foreign investment. This theory, thus, argues that international migration follows the political and economic organization of an expanding unified global market. So, international migration has little to do with wage rates or employment differentials between countries.

### 3.2.12 Network Theory of Migration

Migrant networks are sets of interpersonal ties that connect migrants, former migrants, and non-migrants in origin and destination areas through ties of kinship, friendship, and shared community origin. They increase the likelihood of international movement because they lower the costs and risks of movement and increase the expected net returns to migration. Network connections are a form of social capital that people draw upon to gain access to employment abroad (Massey et al., 1993). Besides material and human capital (education, skills, knowledge), social capital is a third, crucial migration resource in enabling and inspiring people to migrate. At the receiving end, social capital in the form of migrated kin has a countervailing effect on legal, political, and financial obstacles to immigration. At

the sending end, the implication of falling costs and risks is that migration, *ceteris paribus,* tends to become less selective—with regards to access of migrants to human and material capital—over time. Once the number of migrants reaches a critical threshold the expansion of networks reduces the costs and risks of movement, which cause the probability of migration to rise, which cause additional movement, which further expand the networks, and so on. The facilitating role of such "family and friends networks" makes migration notoriously difficult for governments to control. The development of such networks are often facilitated by government policies toward family reunification and, once started, migrant networks can make international flows relatively insensitive to policy interventions.

### 3.2.13 Institutional Theory of Migration

When international migration occurs on a large scale it becomes institutionalized. Institutional theory points to the fact that once international migration has begun, private and voluntary organizations develop to satisfy the demand created by an imbalance between large number of people who seek entry into capital-rich countries and the limited number of immigrant visas these countries typically offer. This imbalance and the barriers that core countries erect to keep people out, create a lucrative niche for entrepreneurs and institutions dedicated to promoting international movement for profit, yielding a black market in migration. This underground market creates conditions conducive to exploitation and victimization. Voluntary humanitarian organizations also arise in developed countries to enforce the rights and improve the treatment of legal and undocumented migrants. For profit organizations and private entrepreneurs provide a range of services to migrants in exchange for fees set on the underground markets: surreptitious smuggling across borders, clandestine transport to internal destinations, labor contracting between employers and migrants, counterfeit documents and visas, arranged marriages between migrants and legal residents or citizens of the destination country, and lodging, credit, and other assistance in countries of destination. Humanitarian groups help migrants by providing counseling, social services, shelter, and legal advice about how to

obtain legitimate papers, and even insulation from immigration law enforcement authorities.

### 3.2.14 Cumulative Causation Theory of Migration

In addition to the growth of networks and the development of migrant- supporting institutions, international migration sustains itself in other ways that make additional movement progressively more likely over time, a process Myrdal (1957) called cumulative causation (Massey, 1990). Cumulative causation theory holds that the establishment of international migration streams creates 'feedbacks' that make additional movements more likely by altering the social context of subsequent migration decisions. So far, social scientists have discussed six socioeconomic factors that are potentially affected by migration in this cumulative fashion: the distribution of income, the distribution of land, the organization of agriculture, culture, the regional distribution of human capital, and the social meaning of work.

### 3.2.15 Migration Systems Theory

The migration systems theory includes a variety of discipline and analyzes the process of migration. The base of this theory is to synthesis the migration movements with the relations of micro and macro structures. The whole economy of the world associations among states and forces at regional, national and international level are included in the macro structure. The social relations among the workers in home and host countries are included in the micro structures. This theory is paying attention on the structure of the world market, especially on the influence exercised by capitalist relations on non-capitalist peripheral societies through the actions of the multinationals, governments etc. International migration occurs because land, labor and raw materials fall under the influence of market control and it is not so much affected by differentials in income or employment rather it is a consequence of globalization and dissemination into markets. Since modern capitalism has generated a mass of mobile workforce in search of better opportunities. An international migration system generally includes a core receiving nation, which may be a country or group of countries, and a set of specific sending countries linked to it by unusually large flows of immigrants. This theory draws a two-way, reciprocal and dynamic link between migration and development. The geographer

Mabugunje (1970), the founder of this theory, defines migration systems as a set of places linked by flows and counter flows of people, goods, services and information which tend to facilitate further exchange, including migration between the places. Migration systems link people, families and communities over space in what we nowadays would refer to as transnational communities.

Migration simultaneously reshapes the socio-economic development context at both the origin and destination, which in their turn, are likely to influence subsequent migration patterns. In this context, social remittances consist of ideas, behaviors, and identities, a migration driven form of cultural diffusion, plays an important role in promoting immigrant entrepreneurship, family formation and political integration. It also affects the perceptions, feelings of relative deprivation and aspirations of people which are also likely to affect subsequent migration patterns. The influx of international remittances to migrant households can increase intra-community inequality and feelings of relative deprivation among non migrants and may contribute to a 'culture of migration', in which migrating becomes the norm. A proper understanding of the inter-linkages and feedback mechanisms between migration and development necessitates studying entire migrant communities, including non migrants as well as the concrete regional and local contexts and transnational spaces in which they live.

### 3.2.16 New Economics of Labor Migration (NELM)

The new economics of labor migration views migration as a family (i.e. group) strategy to diversify sources of income, minimize risks to the household and overcome barriers to credit and capital. In this model, international migration is a means to compensate for the absence or failure of certain types of markets in developing countries, for example, crop insurance markets, future markets, and unemployment, insurance or capital markets. The concepts of relative deprivation lie at the core of this approach. By sending a member abroad the family attains a higher economic status relative to the status maintained by neighboring households while sending a family member abroad serves as a tool of risk diversification and insurance against potential crop failures or other calamities. The

fundamental assumption of this model is that individuals, households act not only to maximize income but also to minimize and spread risks. In contrast to the neoclassical model, wage differentials are not seen as a necessary condition for international migration and economic development in the areas of origin or equalization of wage differentials do not necessarily reduce pressures for migration. The basic idea of this model is that for household as a whole, it may be a pareto-superior strategy to have members migrate elsewhere, either as a means of risk sharing or as an investment in access to higher earnings streams. The key theoretical propositions of the New Economics Labor Migration can be summarized under five main headings:

1) The emphasis on the relative deprivation as determinant of migration
2) The emphasis on the household as the relevant decision making unit
3) The emphasis on migration as a strategy to diversify risk and overcome market incompleteness
4) The introduction of information-theoretical considerations in migration theory and
5) The interpretation of migration as a process of innovation adoption and diffusion.

### 3.2.17 Transnational Theory of Migration

Transnational theory of migration is viewed in the light of expanding globalization, rapid telecommunication system and modern technologies by countries. Transnational activities are those activities that are performed on a repeated level at borders (Portes, 1999). There has been increasing recognition of the increased probabilities for migrants and their families to live transnationally and to adopt transnational identities through mobile telephone, fax, television, internet, globalised banking system, money transfer operation, mobile banking system or informal channels. These instruments increasingly enable migrants and their families to foster double loyalties, to travel back and forth, to relate people and to work and to do business simultaneously in distance places. Migrants' engagement with origin country development is not conditional on their return, but can be sustained through telecommunication, holding visits and circular migration patterns. In this way, transnational ties can become trans-generational. This is exemplified by

persistent and increasing remittances, transnational marriages and the involvement of 'Diaspora' group in social, cultural, political, civil society activities and economic affairs of their origin countries.

### 3.2.18 Roy's Theory of Migration

Roy's theory of migration (1951) explains the causes and impact of income inequalities in the receiving and sending countries upon the decision of migration. The individuals situated in the upper part of income distribution have less incentive to migrate in case of home country has greater inequality than the host country and people situated in the lower part of this distribution have greater tendency for migration. In other words if home country has less inequality than the host country, the individuals in the lower part of distribution have less incentive for migration as compared to the individuals at the top of this distribution.

### 3.2.19 Mobility Transition Theory of Migration

The mobility transition theory attempts to explain changes in spatial mobility by a hypothesis akin to the demographic and epidemiological transitions. Like the two latter transitions, the mobility transition hypothesis is a set of mostly descriptive propositions to do with the distinctive stages that societies go through as they modernize with respect to mobility patterns. Social modernization causes an increase and continuous diversification of human mobility patterns. 'Nations' are thus posited to follow unilinear paths from a traditional stage to a modern or post-modern (super advanced) stage, exhibiting definite and patterned regularities in the growth of personal mobility which comprise an essential component of the modernization process. During a transition from a pre-modern to modern society, in the 18$^{th}$ and 19$^{th}$ centuries, migratory movements are primarily undertaken towards the national borders as well as other countries. Along with the industrialization process, migration from rural to urban areas is on the rise- it begins to decline only in the advanced societies in the second half of the 20$^{th}$ century. Again migration between and within urban areas has been increasing in these advanced societies because of short-term circulatory movements. Recently circulation has been absorbing

more and more mobility due to increasing role of communication system. These migration and mobility patterns are expressed through a five-stage model, based on the historical experience of Europe:

1. Pre-modern traditional society: very limited migration, only local movements related, e.g., to marriage or to marketing agricultural produce.
2. Early transitional society: mass rural-urban migration, emigration to attractive foreign destinations for settlement and colonization.
3. Late transitional society: slackening of both rural-urban migration and emigration, growth in various kinds of circulation, e.g., commuting.
4. Advanced society: rural-urban replaced by inter-urban migration, mass immigration of low-skilled workers from less developed countries, international circulation of high-skilled migrants and professionals, intense internal circulation, both economic and pleasure related.
5. Future super advanced society: better communication and delivery systems may lead to a decline in some forms of human circulation, internal migration is inter or intra-urban, continued immigration of low-skilled labor from less developed countries, and possibility of strict controls over immigration.

### 3.2.20 Heckscher-Ohlin Migration Model

In the standard Heckscher-Ohlin model, trade and migration are substitute, that is, migration decreases with trade liberalization. The movement of productive factors raises world income and these income gains are shared between the host and home countries. It holds that there are mutual gains from migration similar to the commercial gains to the conventional gains from trade. The model predicts that labor migrates from regions where its marginal product is low to regions where its marginal product is high, and that it crosses international borders to do so. In the absence of restrictions, labor migration should tend to bring about wage convergence between the host and source countries. The source country will experience a rise in wages and a fall in returns to capital, a rise in per capita income and a fall in national output (assuming no simultaneous emigration of capital). The host country sees a fall in wages as a result of the influx of workers and a rise in returns to capital. Per capita income falls although national income rises. When there is simultaneous emigration of capital (in the form of financial or human capital) the

predicted effects are less clear without precise information about the nature, value and ownership of the capital. If there are only two factors of production (capital and labor) the model's results hold.

But if there are more than two factors, then the results of factor migration being a perfect substitute for trade in causing factor price equalization may no longer hold. When economies of scale in production are possible, then migration and trade may act as complements, rather than substitutes. Since with economies of scale it is always cheaper to produce in one location rather than two, production expands until either demand or economies of scale in one country are exhausted. Production in one country is reduced as production in the other expands. Factors shifts to the location of expanding production. This would increase the host country's capacity to export, as well as increasing its domestic market for imports

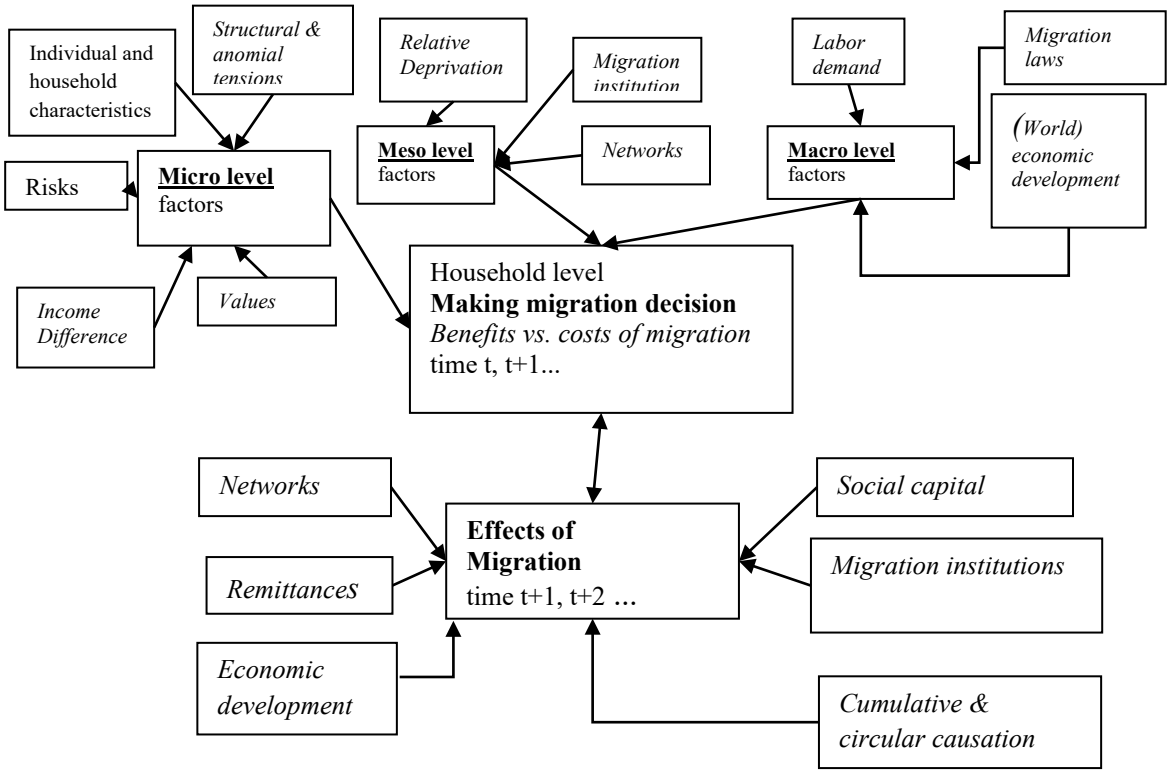
### 3.2.21 A General Framework of Migration Decision Making

We summarize the most important migration theories in the above sections. Comparing and contrasting them make it clear that they are not necessarily conflicting, but that they can be combined in a complimentary fashion. Individual decisions are made in specific social context that feed back into the economic and social structural environment and affect future migration choices (Massey et al., 1994). Figure 3.3 below shows the links among the different theories and sums them up into one complete picture.

It is clear that most migrants do not take the decision to migrate in a social vacuum and that their family is likely to have some influence. Therefore the migration decision should be considered on a household level. The migration decision entails weighing up the costs versus the benefits of migration. Various factors are likely to affect the costs and benefits. On the micro-level income differences and poverty undoubtedly push and pull potential migrants. Risks and dysfunctional credit markets in the home country could also be reasons for migration. Questions of power and prestige can also influence decision making, as well as other personal goals or values. Furthermore personal and household

characteristics (e.g. marital status, education level) are very important in explaining the selectivity of migrants.

**Figure 3.3: General Framework of Migration Decision Making**




Source: Zanker, 2008

Looking at the meso-level, migration is more likely to take place in a context of relative deprivation, i.e., in a community with higher levels of inequality. Migration is also more likely to take place if migration institutions have already been established or if migrant networks are available to the potential migrant.

On the macro-level, the demand for labor and migration laws are crucial in influencing the decision to migrate, but especially the destination of migrants. Globalization and world-wide economic development may affect migration flows in many ways ranging from decreasing transportation costs to changing job prospects all over the world.

Finally, migration has many effects that in turn also influence the decision-making process of future migrants. Migration affects economic development in the origin and destination country and therefore changes potential pull and pull factors. For example high migration

flows, might make labor scarce in the origin community and therefore improves the job prospects of people left behind. These people are less likely to migrate, as the benefits of migration are lower. Cumulative and circular migration refers to the fact that once migration is in place, it sustains itself. It has been shown that migrant institutions, social capital and networks that develop over time as more people migrate, reduce the costs and ease of migration for future migrants. Migrants send remittances home that might finance the migration costs of future migrants.

## 3.3 Theory of Remittance

Remittance theory deals with the basic questions of what motivations are behind remitting remittance income to home country. These theories also help to identify the determinants of remittances. There are number of remittance theories in the economic literatures that explain the motivations why individual migrants remit. Understanding these motivations helps to grasp the private nature of remittance flow. Although remittances are regarded as private flows between migrants and their families, the effects of remittances are economy wide. We are giving the following remittance theories to explain the causes behind the migrants' decisions to send remittances to their family back home.

### 3.3.1 Theory of Pure Altruism/ Altruistic Motive of Remittance

This theory states that migrants remit money because they have emotional ties with the family members and care about the well being of those by providing them with additional income. It assumes that remittances are a commitment or an obligation to the household of the migrant. Remittances are sent to family members due to the act of love and liability of migrant workers. This theory can be modeled in a Becker type setting where migrant derives positive utility from consumption of the family. The migrant is satisfied when the welfare of his family back home is better off. This implies that the migrant is motivated to remit more remittances to his family when there are unfavorable economic conditions holding in the home country. So in case of altruistic motive, it is observed that remittances are "compensatory transfers" since they increase when the migrant's home country is faced with economic disruptions such as shocks, droughts, floods and financial crisis etc. Due to compensatory nature of remittances, the pure theory of altruism implies that remittances are countercyclical, that is, they increase when there is deterioration in economic condition in the business cycle of the home country (Vargas and Silva, 2008).

According to Funkhouser (1995), the altruistic motive of remittances has the following testable implications in microeconomic viewpoint: emigrants with higher earning potential remit more; low income households receive more remittance; remittance from a given migrant should decrease with the number of other emigrants from the same household; the duration of stay should have a negative impact on the remittances because it is supposed that the attachment to the family weakens gradually. Whereas in macroeconomic viewpoint, this theory suggests that there is an inverse relationship between the volume of remittances and economic condition holding in the home country, i.e., favorable economic conditions in the home country would imply a reduction in the volume of remittance inflows.

### 3.3.2 Theory of Self Interest/ Self Interest Motive

This theory assumes that the migrant is motivated by economic and financial interest at the time of sending remittances to the home country with aspiration to inherit, to demonstrate laudable behavior as an investor for the future in fixed capital, public assets or to be eligible to other resources in the origin community. So it covers investment or entrepreneurial purposes as well as personal consumption considering remittances as a means of overcoming the lack of opportunities and a failing financial inclusion (Aguinas, 2006). It is argued that migrants try to save more at every point in time, then, they take decision about how (in which assets) and where (in which country) to accumulate their wealth. The home country is the obvious place to invest in the purchase of property, land and assets including financial assets and to buy reputation at home. In a three generational setting, remittance may be sent to parents to ensure that remitter's own children also take care of him in the old age (Cox and Stark, 1994), known as demonstration effect. According to this theory, remittances increase with household's assets and income, the probability of inheriting, the migrant's wealth and income, and decrease with risk aversion. Under this theory, it is argued that remittances are not always countercyclical rather there are some instances where volume of remittances reduce following poor economic conditions in the recipient country. Because deterioration in economic performance of the home country is regarded as lower investible and inheritable assets to the migrant. Therefore, there might be a positive correlation between volumes of remittances and economic performance of the home country where bad economic conditions may result in low volumes of remittances.

### 3.3.3 Tempered Altruism or Enlightened Self Interest

In this case, the migrant and the family members at home mutually benefit from migration through some kind of implicit contractual arrangement. Family is considered as an appropriate unit of analysis of migration and remittances, because all the family members share and trade off the expenditure and payback of the remittances. It originates from the notion of the New Economics of Labor Migration (NELM) which states that due to market failures in the source country (for example, a poorly developed social protection system), it becomes a convenient strategy for a household member to migrate to a non-correlated labor market to diversify economic risks by entering a type of contract agreement with the household left behind. Remittances are sent home when the household experiences shocks and to enable the household to invest in new technology. At the same time, the household also supports the migrants, e.g., by paying costs of migration or during spells of unemployment. Under the implicit contractual arrangement we can get the following types of motivations to remit money home.

### 3.3.4 Exchange Motive

The migrant remits to the family in exchange of services offered such as taking care of migrant's assets (land, house, cattle etc.) welfare (health and education services) or relatives (elderly parents, wife and children) at home. Such motivation is the sign of temporary migration and it signals the migrant's intention to return. In case of exchange motive, migrants are supposed to remit even if the family income increases because remittance can increase the quality of services that it can buy. If migrant's income increases, remittances increase. If the household income increases, thus making the service more expensive, remittances can increase or decrease depending on the migrant's elasticity of demand. If the migrant's demand for the services is elastic, fewer services are demanded and remittances decrease. If the demand is inelastic, the same services are bought, but at a higher price, which leads to more remittances, despite the higher income of the household at home. Higher unemployment in the home country should mean fewer remittances since less money is then needed to make those at home performs their services (opposite of altruistic motive). The central prediction of the exchange model is that, in contrast to the altruistic model, an increase in the recipient's income may raise the amount

of remittances. Bargaining power among the family members is often regarded as threat-point. In this case, greater familial wealth increases the family's bargaining power.

#### 3.3.4.1 Insurance Motive

Insurance motive is based on intra-familial arrangements against income volatility. In this case, migrant's remit money to their kith and kin to avert temporary 'shocks'. This is part of risk sharing or risk spreading strategy of family members. In the remote areas of the most developing countries, where financial and insurance markets are incomplete and imperfect, the incomes are subject to risks of drought, floods, price fluctuations etc. Therefore, family can decide to send some members abroad in order to diversify the risk associated with rural income volatility. They may be 'picky' in selecting the right migrant (i.e., those who combine high income potentials and degrees of loyalty). Although foreign jobs are also subject to risks, these risks are independent from rural income variations. In case of insurance motive, migrants would insure the remaining members of the family against drops in rural incomes and receive assistance in case of unemployment or retirement, with the exact terms of the insurance contract depending on the relative bargaining power of the migrant and family members. In the presence of altruistic motives, it is expected that lower income households receive more remittances. But within a bargaining model, the reverse can be expected because the bargaining strength of a lower-income household would be smaller (Lucas and Stark, 1985). Such intra-family contracts are also subject to moral hazard problems. Because within such contracts, remittance recipients are insured against risks and they can reduce their level of effort to ensure their minimum income. As there is no control or monitoring mechanism between the migrant and the family, and in the presence of asymmetric or incomplete information moral hazard problem may emerge.

#### 3.3.4.2 Investment Motives

This motive is also known as portfolio diversification motives which state that the decision to remit is sometimes influenced by the offer of a risk-return option to be weighed against local sources of income. The migrant can decide to invest his savings in his home country as well as in his host country. In this case, the migrant calculates his potential return in the home country relative to that in the host country. The macroeconomic stability in the home

and host countries, interest rate differentials, black market exchange premium, inflation rates and other returns determine the remitting decision of the migrant.

#### 3.3.4.3 Loan Repayment Motive

According to this motive, the family invests in the training of the out-going worker and finances the costs of migration including the cost of travel and subsistence costs in the host country. Here, family works like a bank to finance the expenditure of migration for its members. Therefore, migrant workers are obliged to send remittances to the family members stayed at home to repay the loans. However, the repayment part of this motive starts when the worker settles in the host country with a rising salary. At this stage the migrant might also become a lender, by financing other migrant family members, which increases overall remittances. This motive also assumes that there should be a positive link between the migrant's education level and remittance inflows. In case financing education, Poirine (1997) assumes that a household finances a potential migrant's education if the family implicit lending rate is higher than the market interest rate and the youth borrowing rate is higher than the family implicit lending rate.

#### 3.3.4.4 Inheritance and Enforcement Motive

It is reasonably argued that remittance would take place when there is a welfare gain for all the parties concerned. Remittance may be seen as a pure strategy of investment in inheritance on the one side of the migrant and as an enforcement device to secure remittances on the other side of the family. Two basic mechanisms generally serve as enforcement devices to make family arrangements incentive compatible: punishment and social norms. At the family level the most obvious threat that may be used to secure remittances in the possibility of depriving the migrants of their rights to inheritance and return. de Briere et al. (2002) summarize the main predictions of the inheritance motive as follows: the amount of remittances increase with a) the remaining household's assets and income b) the probability of inheriting (depends on the age of parents, number of siblings etc.) c) the migrant's wealth and income, and decrease with d) degree of risk aversion, providing that inheritance is more risky than other available forms of savings.

### 3.3.5 Strategic Motive

The model first developed by Stark (1995) and later by Stark and Wang (2002) consider that migration decision is made on the basis of wage differentials. Stark suggests that remittance may be part of a strategic interaction aiming at positive selection among migrants. When migrants are heterogeneous in skills and individual productivity is not perfectly observable on the labor market of the host country (at least for a given period of time), employers apply statistical discrimination so that migrant workers are paid the average productivity of the minority group to which they belong. Since high skilled migrants usually have a larger amount to gain by migrating, they are typically the first to go and then unskilled follow. In such a context, skilled workers have an incentive to remit money home to keep unskilled workers in the home country, as it is assumed migration of these workers may mean depressed wages for the skilled migrants.

## 3.4 Theory of Economic Growth

In accounting for an economy's growth, it is conventional to relate the level of output to its factor inputs. This permits us to write our production function as follows, ***Y= f (K, L, D, E)*** This function states that the output (Y) is a function of capital (k), Labor (L), Land (D) and entrepreneurship (E).Various theories on economic growth have been enunciated, each trying to explain the mechanics of growth. Some of these theories include:

(i) Classical Growth Models,
(ii) Marxian theory of growth
(iii) Rowstow's stages of growth theory
(iv) Keynesian Growth Model (Harold- Domar growth model),
(v) Neoclassical Growth Model and
(vi) Endogenous Growth Model.

## 3.4.1 Classical Growth Model

The classical theory of growth assigns the rate of investment as the responsible factor for fostering economic growth. A positive relationship between rate of investment and economic growth is deemed to exist hence higher rates of profit is deemed to result in

higher rates of growth via its positive effect on the rate of investment. Classical economists like Adam Smith, David Ricardo, and J.S Mill are the exponents of this theory of growth. They argue that the increased division of labor and hence specialization increases the growth rate of capital that result in increase in both profit and wages. However, an increase in both profit and wages would in turn promote population expansion which is the course of growth of capital and labor overtime would result in diminishing returns consequent upon the fixed amount of land.

### 3.4.2 Marxian Theory of Growth

The Marxian theory of growth is a historical theory of economic growth. It is an admixture of reasoning proceeding from economics and sociological perspectives. The theory proceeds by viewing growth as a process of continuous transformation of a society's social cultural and political life. Such transformation can be traced to the society's mode of production as well as property rights of the society's economic power and prestige seeking class. Marxian growth theory asserts that growth is dependent on the rate of accumulation of labor surplus value by the capitalist class, labor surplus value being the rate of profit in excess of labor's true remuneration which has however been expropriated from the workers by factor owners (capitalists).

### 3.4.3 Rostow's Stages of Growth Theory

This theory of growth as postulated by W.W. Rostow is a historical account of the processes of economic growth. Rostow posits that all countries of necessity pass through five stages in the process of growth. These stages are: *The traditional society* characterized by economic decision making on the basis of customs, tradition and obligations. *The precondition for take-off* stage is characterized by advances in Agriculture and discarding of uneconomic culture as well as the emergence of an entrepreneurial class. *The take off stage* is characterized by increased rate of saving emergence of leading sectors which helps to pull along other sectors contributing thereby to the realization of sustained growth. *The stage of drive to maturity* is characterized by the consolidation of industrial revolution. Moreover, within this stage the other sectors catch up with the leading sectors and the economy, having attained the, 'critical minimum speed to be airborne in the growth process in stage three actually becomes airborne in this stage of growth'. *Stage of*

*high mass consumption* is deemed to have matured, making it possible for the citizens to enjoy appreciable levels of living standards.

### 3.4.4 Keynesian Growth Model

Keynesian growth theory is mainly connected with Harrod (1939) and Domar (1946). The theory is based on the active role of money, the principles of effective demand, the saving function, the transition of saving to investments and multiplication effect. In his scientific work, Harrod (1939) starts from the accelerator principle and Domar (1946) starts from the multiplication effect. Despite the different approaches, they come to the same conclusion that the rate of growth of output is determined jointly by the national savings ratio and national capital output ratio. In economic literature their theory appears as Harrod-Domar Keynesian theory of growth or simply, Harrod-Domar growth model. The Harrod-Domar growth model shows through a mathematical equation, the economic growth is a direct result of capital accumulation in the form of savings.

### 3.4.5 Neo-Classical Growth Model

This model assumes that countries use their resources efficiently and that there are diminishing returns to capital and labor. From these two premises, the neoclassical model makes three important predictions. First, increasing capital relative to labor creates economic growth, since people can be more productive given more capital. Second, poor countries with less capital per person grow faster because each investment in capital produces a higher return than rich countries with ample capital. Third, because of diminishing returns to capital, economies eventually reach a point at which any increase in capital no longer creates economic growth. This point is called a "stationary state”. The model also notes that countries can overcome this steady state and continue growing by inventing new technology.

### 3.4.6 Endogenous Growth Model

The first ideas of new endogenous growth theory appeared in Romer’s (1986) work on the “Increasing Returns and Long-Run Growth” and Lucas’s (1988) work on the “Mechanics of Economic Development”. They develop the endogenous growth theory that includes a mathematical explanation of technological advancement. This model also incorporates a

new concept of human capital, the skills and knowledge that make workers productive. Unlike physical capital, human capital has increasing rates of return. Therefore, overall there are constant returns to capital, and economies never reach a steady state. Growth does not slow as capital accumulates, but the rate of growth depends on the types of capital a country invests in.

## 3.5 Conclusion

In this chapter, we describe the leading theories of migration, remittances and economic growth. Before describing the leading theories of migration, we give a classification of migration theories on the basis of level of analysis, initiation and perpetuation of migration. We also mention typologies of migration theories on the basis of different disciplines of social science. Then, we start to describe migration theories from the beginning of this concept. Descriptions of migration theories help us to set linkage among migration, remittances and economic growth. The classical and neoclassical theories of migration indicate that migration occurs as result of differences of factors of production. There is no room for remittances in these theories rather migration plays developmental role through factor price equalization process. New economics of labor migration (NELM) theory, network theory, and institutional theory posit that migration exerts positive role in economic development through sending remittances. Different motives behind remitting the remittances to home countries are also incorporated in this chapter in the heading of remittance theory. Remittance theories help to identify the determinants of remittances. Altruistic motive of remittances suggest that there is an inverse relationship between the volume of remittances and economic condition of home country. On the other hand, self interest motive of remittance assumes that there is a cyclical rather countercyclical relationship between economic performance of home country and volume of remittances. Finally, different theories of economic growth are also summarized here. Elaborations of these growth theories guide us to incorporate remittances into the growth model and to measure the impact of remittances on economic growth in South Asian countries.

# Chapter 4

## Trends and Patterns of Migration, Remittances and Economic Growth in South Asia

### 4.1 Introduction

This Chapter gives a brief contextual background on the subject of migration, remittances and economic growth in the world and in South Asian countries. It also provides summary statistics of country wise data used in remittance determinants model and remittance-growth model. The focus is to determine the existence of any pattern, distribution and trend in the identified variables that characterize the South Asian region. Such characterization helps in the identification of necessary links among the variables of interest within the South Asian economies. This Chapter starts with describing global trends and patterns of migration and remittances. Then, we describe the migration and remittances scenario of South Asian countries. Finally, South Asian country specific information on migration, remittances and economic growth are given.

This chapter is organized as follows: Section 2 gives global trends and patterns of migration and remittances, trends and patterns of South Asian migration, remittances and growth are provided in Section 3, Section 4 presents descriptions of migration, remittances and growth of South Asian countries with summary statistics of country specific data and conclusions are provided in Section 5.

### 4.2 Trends of Global Migration

According to the data released by the United Nations (2013), there are 232 million international migrants around the Globe which is 3.2 percent of world population in 2013, up from 175 million in 2000 and 154 million in 1990. During the same period, there are 12.35 million international migrants in South Asia, that is, less from 12.89 million in 2000 and 15.9 million in 1990. The number of international migrants is increasing and will continue to increase. This can be seen from the projection on United Nations Department of Economic and Social Affairs (UNDESA). The Table 4.1 shows the scenario.

**Table 4.1: Trends and Projection of International Migrants**

| Year | Number of International Migrants | Proportion of Migrants in Total Population | Base of Projection |
|---|---|---|---|
| 1990 | 154 million | 2.9 percent | |
| 2000 | 175 million | 2.8% | |
| 2010 | 221 million | 3.2% | |
| 2013 | 232 million | 3.2% | |
| 2030 | 309 million | 3.7% | 1990-2000 growth rate |
| | 378 million | 4.5% | 2000-2010 growth rate |
| | 331 million | 3.9% | 2010-2013 growth rate |
| 2050 | 443 million | 4.6% | 1990-2000 growth rate |
| | 513 million | 5.4% | 2000-2010 growth rate |
| | 415 million | 4.4% | 2010-2013 growth rate |

Source: UN DESA, 2014.

Since the United Nations Millennium Development Goals (MDGs) are adopted in 2000, the global population has grown by one billion to a total of seven billion. UN Report 2013 shows that there are 214 million international migrants and 750 million internal migrants around the Globe implying that every seventh person is a migrant, by virtue of having moved either outside their country of birth or within their own country. There is a growing awareness of the importance of migration as a global public good. This has led to steady urbanization, with the result that more than half of the world's populations live in urban areas. It is estimated that one billion of these people live in slum areas.

Population increase and migration have direct impacts on development. The positive aspects include a larger working population and higher growth, while negative impacts include greater competition for scarce resources, leading to higher unemployment and social challenges. Global imbalances are reflected in large youth populations in low income countries and labor shortage in the majority of high income countries due to ageing populations.

### 4.2.1 Patterns of Global Migration

If we look at global migration patterns, we see that in 2013, about 80 percent of migrants born in the North, i.e., developed countries are residing in the North, while half of all international migrants born in the South/Developing countries have remained in the South. The majority of international migrants born in Europe, Asia and Oceania are living in a country within their region of birth. That is, in most of the regions, a majority of migrants originate in their region of destination in 2013. For example, 82 percent of African migrants reside in Africa and 18 percent in outside Africa. 76 percent Asian origin migrants reside in Asian countries and 24 percent outside Asian countries. 64 percent of Latin American and Caribbean (LAC) migrants reside in within the region and 36 percent outside LAC region. 52 percent European migrants reside within the region and 48 percent outside the region. Only 2 percent North American migrants reside within the region and 98 percent outside the region.

In 2013, 3.2 million migrants from Bangladesh residing in India constitute the single largest bilateral stock of international migrants in the South countries and 2.3 million migrants from Afghanistan living in Pakistan and Iran, most of whom are refugees, constitute another large bilateral stock of international migrants within the region. Again, some of 2.9 million international migrants from India are residing in United Arab Emirates (UAE) and 1.8 million in Saudi Arabia. The world's largest corridor of international migration is between United States of America (USA) and Mexico. In 2013, the USA hosts some of 13 million migrants born in Mexico. There is also about 2.2 million foreign born population from China, 2.1 million from India, 2.0 million from Philippines living in USA. In Europe, Germany and France host the largest bilateral stocks. In 2013, about 1.5 million international migrants born in Turkey are residing in Germany.

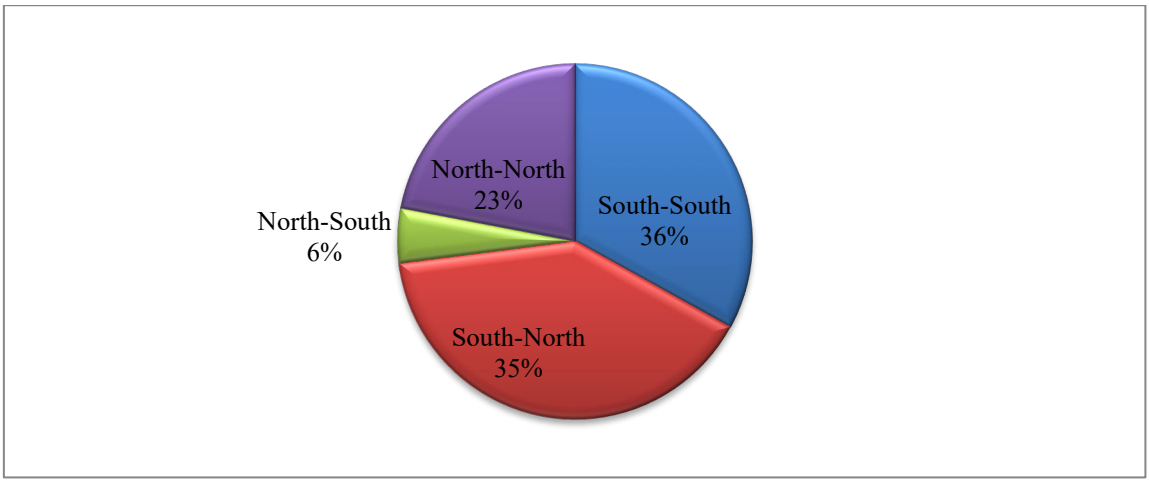
In 2013, Asians and Latin Americans living outside their home regions form the largest diaspora groups. Asians represent the largest group, accounting for about 19 million migrants living in Europe, some 16 million in Northern America and about 3 million in Oceania. Migrants born in Latin America and Caribbean represent the second largest diaspora group with the majority, 26 million living in North America.

Addressing the issue of hosting 232 million international migrants, the North, developed countries, is home to 136 million international migrants, compared to 96 million in the

South, developing countries. Most international migrants, about 171 million out of 232 million are of working age (20-64 years) and account for 74 percent of the total (more than seven out of ten international migrants). Globally, women account for 48 percent of all international migrants. Europe and Asia combine host nearly two- thirds of all international migrants worldwide. Europe remains the most popular destination region with 72 million international migrants in 2013, compared to 71 million in Asia. Compared to other regions of destination, Asia sees the largest increase of international migrants since 2000, adding some 20 million migrants in 13 years. This growth is fuelled mainly by increasing demand for foreign labor in the oil-producing countries of Western Asia and in South-Eastern Asian countries with rapidly growing economies, such as Malaysia, Singapore and Thailand.

In contrast with common perception, South- South migration is larger than South-North migration in 2013: 82.3 million (or 36 percent) of migrants from developing countries live in another developing country compared to 81.9 million (or 35 percent) of migrants from the South live in a developed country. The number of international migrants from the North who reside in the North stand at 53.7 million (or 23 percent), whereas 13.7 million (or 6 percent) of international migrants from the North are living in the South. Therefore, we get four migration pathways which can be shown in Figure 4.1.

**Figure 4.1: Four Migration Pathways**



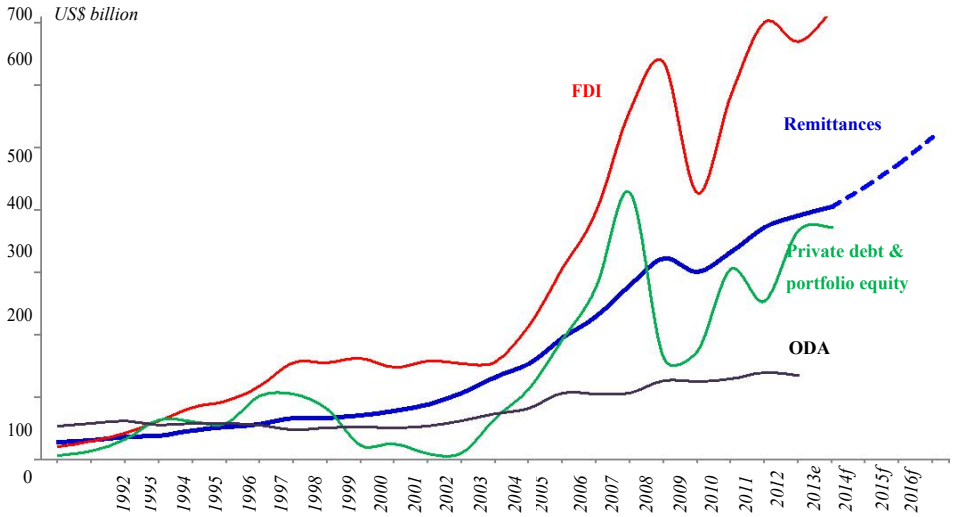

International migration remains highly concentrated. In 2013, half of all migrants live in 10 countries, with the USA hosting 45.8 million. Following USA, remaining 9 host countries are Russian Federation, Germany, Saudi Arabia, UAE, UK, France, Canada,

Australia and Spain which have 11 million, 9.8 million, 9.1 million, 7.8 million, 7.8 million, 7.4 million, 7.3 million, 6.5 million and 6.5 million migrants respectively.

### 4.2.2 Trends of Global Remittances

Remittances remain a key source of external resource flows for developing countries, far exceeding official development assistance and more stable than private debt and portfolio equity flows. Figure 4.2 shows the global trends of international capital flows.

**Figure 4.2: Trends of Global Remittances, ODA, FDI and Private Debt and Equity**

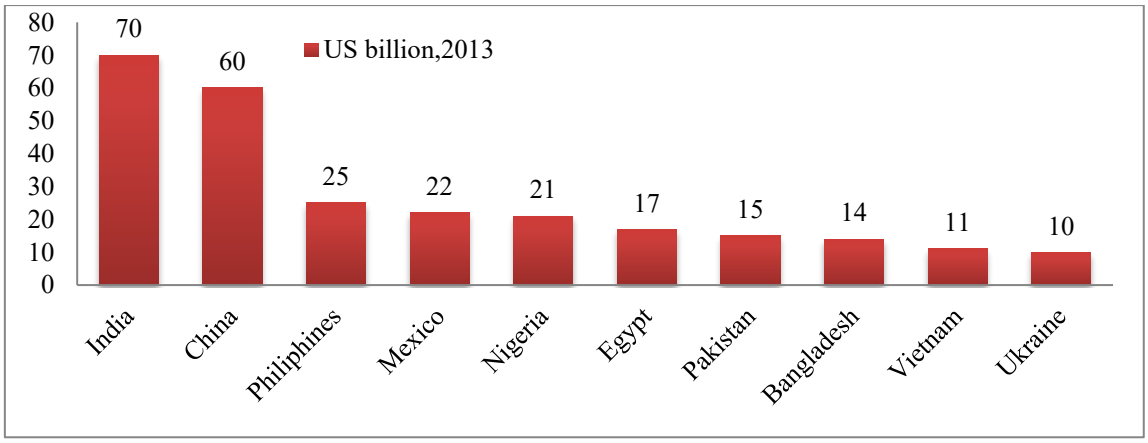



*Sources*: World Development Indicators and World Bank Development Prospects Group, 2014

Remittance has proved to be the most stable and resilient amongst the external sources of income. It is categorically seen from the Figure that while private debt and portfolio equity and FDI display unstable movement, remittances have maintained a relatively stable uptrend in spite of frequent economic shocks. These flows are large and they are growing. In 2013, remittances to developing countries are estimated $ 404 billion. Globally the average cost of sending remittances remains 7.9 percent.

Figure 4.3 shows top 10 recipients of remittances in amount of US$ in 2013 in the world. India is the largest recipient of officially recorded remittances in the world, and receives about $70 billion in remittances in 2013. Other large recipients include China, the Philippines, Mexico, Nigeria, Egypt, Pakistan, Bangladesh, Vietnam and Ukraine. These countries receive $60 billion, $25 billion, $22 billion, $21 billion, $17 billion, $15 billion, $14 billion, $11 billion and $10 billion remittance respectively in 2013.

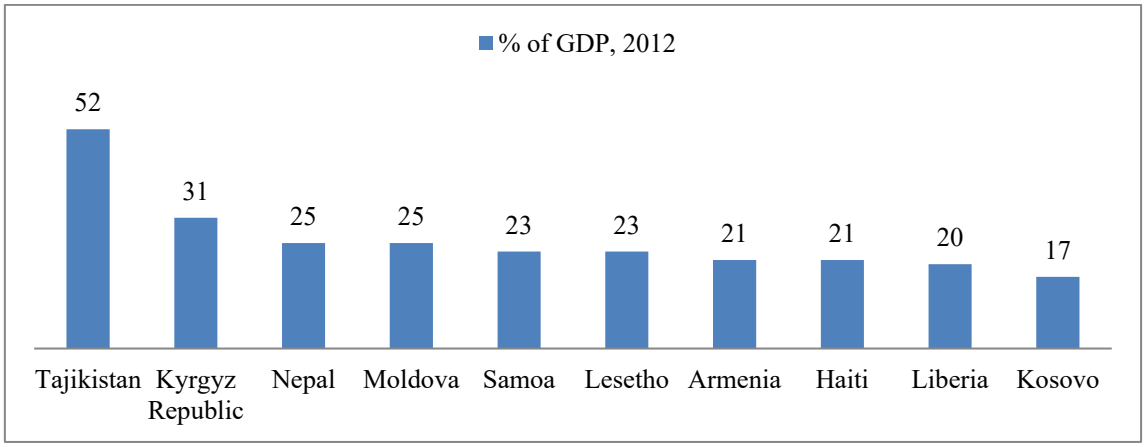
**Figure 4.3: Top 10 Recipients of Remittances in the World (US billion, 2013)**




Source: World Development Indicators and World Bank Development Prospects Group.

Figure 4.4 shows the top ten recipients of remittances as a percentage of GDP. Revised estimates suggest that remittances as a share of GDP are 52 percent in Tajikistan, 31 percent in the Kyrgyz Republic, and 25 percent in both Nepal and Moldova, 23 percent in both Samoa and Lesotho, 21 percent in both Armenia and Haiti, 20 percent in Liberia and 17 percent in Kosovo. Remittances to many smaller developing countries tend to be equivalent to a larger share of their respective GDP.

**Figure 4.4: Top 10 Recipients of Remittances in the World (% of GDP)**




Source: World Development Indicators and World Bank Development Prospects Group.

## 4.3 Trends of South Asian Migration

South Asia is one of the main sources of sub-regions for migrants in Asia. In 2013, South Asians are the largest group of international migrants living outside their home region. Of

36 million international migrants from South Asia, 13.5 million reside in the oil-producing countries of Western Asia. In terms of regions, Indian subcontinent (including Bangladesh, India, Nepal, Pakistan and Sri Lanka) provide 29.2 percent of the migration program (an increase from 23.7 percent in 2011-12) largely due to increase of migrants from India. The data of United Nations Population Divisions reveals that in 2013, India has 5.3385 million international migrants following 4.0808 million in Pakistan, 1.3965 million in Bangladesh, 0.9712 million in Nepal and 0.325 in Sri Lanka. The percentages of female migrants in these countries are 48.7 percent, 43.5 percent, 13.4 percent, 68.3 percent and 49.8 percent for India, Pakistan, Bangladesh, Nepal, and Sri Lanka respectively. Similarly, during the same period, the percentage of international migrants to total population in South Asian countries are 0.9 percent, 0.4 percent, 3.5 percent, 2.2 percent and 1.5 percent for Bangladesh, India, Nepal, Pakistan and Sri Lanka respectively. The trends of total number of emigrants in South Asia are given in Table 4.2 which shows that except Afghanistan and Bhutan the rest of the countries show upward trend in emigrant flows.

**Table 4.2: Number of Emigrants in South Asian Countries (Millions)**

| Country/Year | 1990 | 2000 | 2010 | 2013 |
|---|---|---|---|---|
| Afghanistan | 7.3 | 4.86 | 5.23 | 5.11 |
| Bangladesh | 5.64 | 5.7 | 7.51 | 7.76 |
| Bhutan | 0.01 | 0.11 | 0.1 | 0.09 |
| India | 6.85 | 8.12 | 13.43 | 14.17 |
| Nepal | 0.59 | 0.82 | 1.02 | 1.04 |
| Pakistan | 3.56 | 3.7 | 5.36 | 5.69 |
| Sri Lanka | 0.83 | 0.88 | 1.16 | 1.25 |

Source: Trends in International Migrant Stock: The 2013 Revision, UN Population Division.

Considering the number of emigrants as a percentage of neighboring countries, Afghanistan has the highest number of emigrants to neighboring countries following Bangladesh, Pakistan and India. The number of emigrants as a percentage of neighboring countries in Afghanistan is 70.4 while those of Bangladesh, Pakistan and India are 57.4 percent, 40.2 percent, and 18.4 percent respectively. It is found that total recorded migrants as a percentage of world migrant as a bilateral movement between pairs of

countries/ regions in South Asia is 13.46 percent. Out of these bilateral movements, 5.67 percent of recorded migration occurs within South Asian countries followed by the high income countries (2.66 percent), MENA (2.07 percent), European Union (1.13 percent and USA (0.83 percent). The score of migration intensity in South Asia is 5.89 percent which demonstrate the strong bias towards intra-region migration. Therefore, South Asian countries have a huge propensity to migrate between themselves followed by high income countries (3.18 percent) and MENA countries (2.78 percent).

Migration has always been a part of life in South Asia. The historic ties that link the various population across the region, accentuated by the modern day dynamics of migration have given rise to multiple forms of population movement ranging from voluntary to involuntary, internal to external, long term to temporary, permanent to circular. That is why, hundreds of years circular movements of people have been taken place in South Asia primarily to diversify income sources beyond subsistence agriculture. The absence of centralized bureaucratic administration determining citizenship or membership of ethnic groups during the pre-colonial period encourages the free movement of people across Indian subcontinent. The advent of colonial rule marks some changes in the migratory patterns as people from the Indian subcontinent become bonded or contracted laborers for the British. Many people from India are also transported to work in mines, plantations and households in the North and South America, the Caribbean and South East Asia subsequently becoming settlers in those colonies. The independence and subsequent partition of the Indian subcontinent in 1947 result in bloody ethnic, religious and communal conflicts, leading to massive 'partition migration'. Approximately 35 to 40 million people move across national boundaries of India, Pakistan, Sri Lanka, Nepal and what is known today as Bangladesh (Weiner, 1993). It is also reported that about 5 million Hindus and Sikhs leave Pakistan for India and about 6 million Muslims move to Pakistan as a result of Indian independence in 1947 (Khadria, 2008). The end of British colonial period also observes many people migrating to European countries from South Asia. During the post Second World War period, many European countries experience a labor shortage, especially in low skilled industries and attract labor migrants from former colonies including the Indian subcontinent to work in various industries. The emergence of nation-states in 1947 also results in the beginning of impositions of various procedures on people's mobility within South Asia for the first time. However, those can not altogether

stop the flow of people within and outside the subcontinent. Contemporary trends of migration in South Asia show that in the 1950s and 1960s, mostly professionally qualified persons migrate to the more developed countries, especially the Western countries. In the early 1970s, the spurt in oil prices lead to the oil producing countries of the Middle East investing in infrastructure development in a major way, which create a huge demand for different categories of labor. Migrant workers from South Asia join the labor market predominantly in Saudi Arabia, the United Arab Emirates (UAE), Kuwait, Qatar, Oman, Iraq and Libya. Since mid-1980s, such migration expand to the newly industrialized countries in South East Asia and East Asia, such as the Republic of Korea, Malaysia and Singapore, which face a shortage of labor force willing to take up the so-called 3D jobs - dangerous, dirty and degraded.

The majority of migrant workers from South Asia constitute semi-skilled and unskilled manpower. Currently, almost 24 million people born in South Asia are living outside their countries of birth. This is around 1.5 percent of the total population of the region. Indians constitute the majority of the migrants due to sheer size of the country but the rate of emigration is higher for smaller countries such as Nepal, Sri Lanka and Afghanistan. In terms of destination, 35 percent of the migrants are in the Middle Eastern countries, close to 20 percent are in the wealthy OECD countries and 43 percent are in other countries in the region. Among the most important examples of the latter are the Nepalese, Pakistanis and Bangladeshis who are currently living in India.

The region is characterized by a large proportion of female migrants who mostly work as domestic workers in the informal sector of the receiving countries, although the extent of feminization varies reflecting differences in sending country migration policies. Migration for higher education is also significant for this region with South Asian students constituting a sizeable proportion of the international student population. A noteworthy characteristic of South Asian migration is its reliance on private-fee-charging recruiters for facilitating the movement of low and semi-skilled workers, often raising concerns about possible abuse and exploitation of innocent laborers who take huge loans or use their life's savings to go abroad by agents. An important development in recent years is, growing importance of temporary migration of highly skilled workers and of circular migration. Barbora (2007) identifies another form of migration, forced migration, which is a very pertinent issue and creates many problems to the South Asian governments. The

movement of refugees fleeing from conflicts in Sri Lanka (to India) and Afghanistan (to Pakistan), forced eviction of Nepali-speaking citizens from Bhutan (to Nepal), forced migration of Muslim Rohingiya from Burma (to Bangladesh), and periodic migrations of ethnic minorities such as the Nagas and the Chins from Burma (to northeast India) owing to conflict are part of the international dynamic of conflict-induced migration in South Asia. Insistence on a unitary citizenship regime has exacerbated this problem in places, such as, northeast India. South Asian countries add 1.0 million to 1.2 million new entrants to the labor force every month for the next two decades and contribute about 40 percent of the total new entrants to the global working-age (15–64 year) population.

### 4.3.1 Level of Skills and Age Group of Migrant Workers in South Asia

India's focus is on skilled migration, whereas Sri Lanka's female laborers constitute the bulk of those going abroad for work. Migrant laborers from Pakistan and Bangladesh are essentially unskilled workers, as it is the case from Nepal, which is relatively a late entrant in this kind of a labor market. The average age of migrants is between 20-35 years, which represents the most productive age group of workers (Khatri, 2007).

### 4.3.2 Remittance to South Asia

Growth in remittances to the South Asian region (SAR) is projected to about 2.3 percent in 2013, after averaging 14.1 percent in 2011 and 2012 (World Bank, 2014). Remittances to India are increased by only 1.7 percent to reach $70 billion in 2013, as the impetus from the depreciation of the Indian rupee during 2013 appears to have attracted inflows mainly for investment purposes, as indicated by the surge in non-resident Indian deposits. In Bangladesh, the third largest recipient of remittances in the region, inflows decreased by 2.4 percent, largely due to the combined dampening effect of fewer migrants finding jobs overseas (lowering net migration), the appreciation of the Bangladeshi taka, and difficulties in resolving the status of migrant workers in the Gulf Cooperation Council (GCC) countries.

Figure 4.5 shows amount of remittance inflows in US$ billion in South Asian countries. This Figure reports that in 2013, India receives US$70 billion remittances while Pakistan, Bangladesh, Sri Lanka and Nepal receive $15 billion, $14 billion, $7 billion and $5 billion respectively.

**Figure 4.5: Amounts of Remittance Inflows in (US$ billion) South Asian Countries**

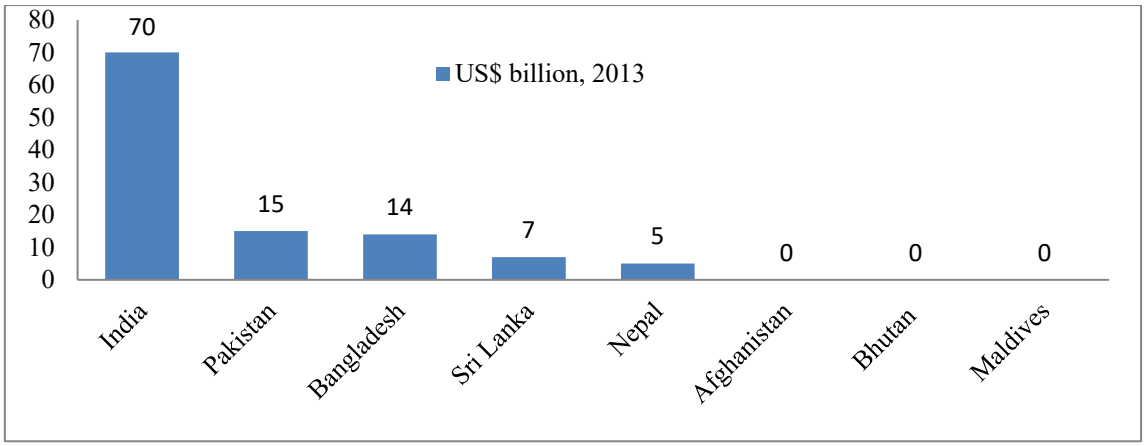
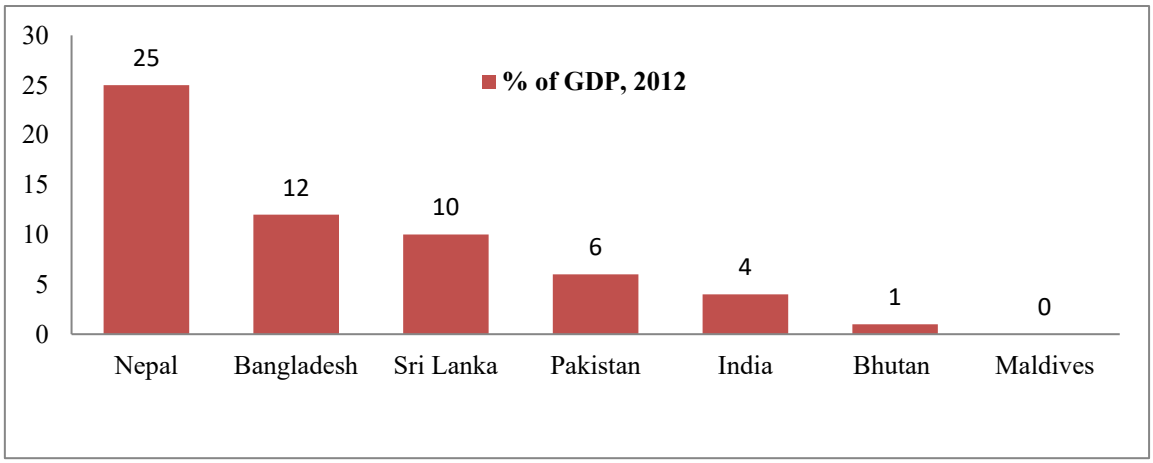



Figure 4.6 plots the amount of remittances as a percentage of GDP in South Asian countries. It is seen from the figure that remittances as share of GDP are highest in Nepal following Bangladesh, Sri Lanka, Pakistan and India. Nepal receives 25 percent of her GDP as remittance income while that of Bangladesh, Sri Lanka, Pakistan and India receive 12 percent, 10 percent, 6 percent and 4 percent of GDP

**Figure 4.6: Amounts of Remittance Inflows (% of GDP) in South Asian Countries**

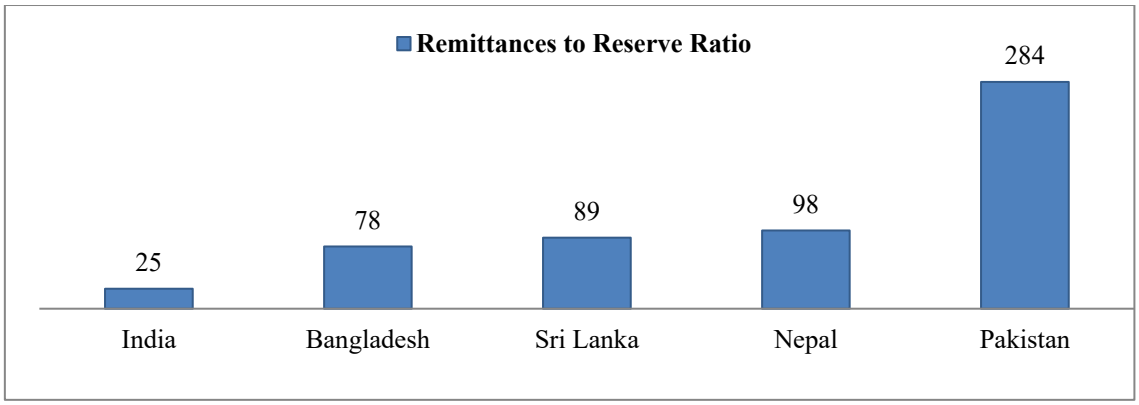



Remittances are contributing to boost up foreign currency reserves and providing essential support to the balance of payments in South Asian countries. It also improves the creditworthiness of these countries. From figure 4.7, we see that in 2013 the amount of remittances are equivalent to 284 percent of international reserves in Pakistan followed by Nepal (98 percent), Sri Lanka (89 percent), Bangladesh (78 percent) and India (25 percent) respectively. It is also found that in 2013 the amounts of remittances are equivalent to 170 percent of Imports in Nepal followed by 76 percent in Bangladesh, 50 percent in Sri

Lanka, 49 percent in Pakistan and 23 percent in India respectively. Therefore, remittances remain the largest source of external resource flows in South Asian countries.

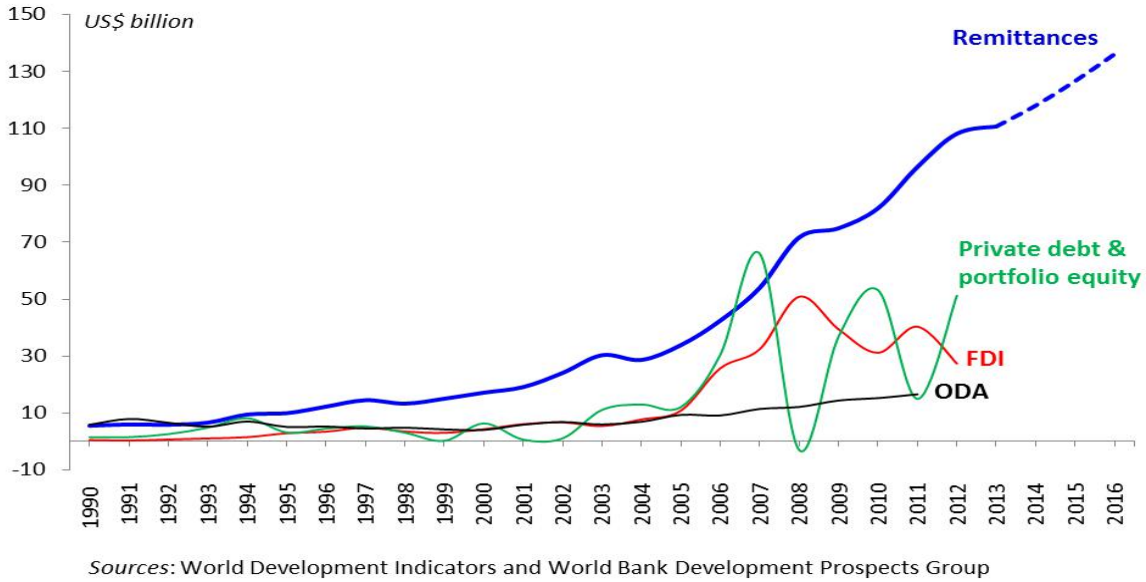
The outlook for remittances in South Asian region is strong, and growth is projected to accelerate to an annual average of over 7 percent in 2014-2016. Remittances remain the largest source of external resource flows in this region, greatly exceeding foreign aid and substantially more stable than FDI and private debt and portfolio equity flows.

**Figure 4.7: Remittances and Reserves in South Asia**




Although the flow of official development assistance is stable but it is far below than the remittance inflows in South Asian region. Figure 4.8 shows trends of remittances and other international capital flows to South Asian region.

**Figure 4.8: Trends of International Financial Flows in South Asia**



There are no exact statistics of bilateral remittances flows to South Asian region as most of the migration and resultant remittance flows are transmitted through irregular or undocumented channel. World Bank development prospect group collects the data on bilateral remittances that are given in Table 4.3.

**Table 4.3: Bilateral Remittance Matrix in South Asian Countries in 2013 (in US$ Million)**

| Remittance-receiving country (across) / Remittance-sending country (down) | Bangladesh | India | Nepal | Pakistan | Sri Lanka |
|---|---|---|---|---|---|
| Bangladesh | 0 | 4,082 | 0 | 40 | 0 |
| India | 6,620 | 0 | 1,634 | 2,189 | 400 |
| Nepal | 1 | 3,224 | 0 | 39 | 2 |
| Pakistan | 0 | 0 | 0 | 0 | 0 |
| Sri Lanka | 0 | 1,410 | 0 | 0 | 0 |

Source: Development Prospects Group, World Bank, 2013

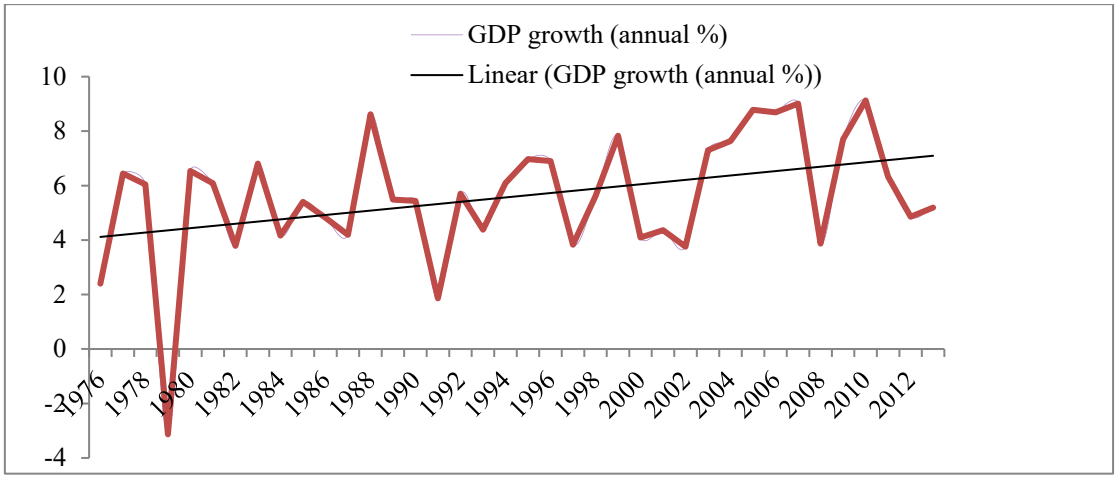
From Table 4.3, it is clear that India dominates in earning foreign remittances in the South Asian countries. She receives $4082 million remittance from Bangladesh, $3224 million from Nepal and $1410 million from Sri Lanka. Bangladesh receives $6620 million remittances from India; Pakistan receives $2189 million; Nepal receives $1634 and Sri Lanka receives $400 million remittances from India. An interesting point to be noted is that Bangladesh ranks fifth (behind the UAE, the USA, Saudi Arabia and the UK) among the top 15 countries from which India draws remittance from her expatriates (Siddiqui, 2014). He cites the information from The Silicon India News report of 21 May, 2013 titled as 15 Nations sending highest remittances to India.

### 4.3.3 Trend of GDP Growth Rate in South Asia

Economic growth in South Asia weakens considerably in 2013 to 5.19 from 5.4 per cent in 2012 and from 7.4 percent 2011. Delayed monsoon rains, electricity shortages, macroeconomic imbalances including large fiscal deficits and high inflation, political instability, and policy and security uncertainties contribute to subdued economic activity in the region, which also faces negative impacts from the Euro Area debt crisis and a weak global economy. The trend of GDP growth rate in the South Asia is presented in Figure

4.7. From the figure we can say that the actual growth rate of GDP fluctuates randomly but the trend GDP line shows an upward trend.

**Figure 4.9: Trend of GDP Growth Rate in South Asia**




## 4.4 Country Specific Description of Migration, Remittances and Economic Growth

This section gives brief description of migration history of five South Asian countries. It plots the trends of migration, remittances and economic growth in these countries. Summary statistics of our main variables are also given in this section.

### 4.4.1 The Case of Bangladesh

The root of international labor migration from Bangladesh can be traced back to the colonial past, when people migrate to industrialized countries, mostly in the west. During the 18th & 19th centuries, sailors who are from the southeastern part of East Bengal, now Bangladesh, working in the British merchant navy travel from Kolkata port, India to other parts of the world. A segment of landless and jobless peasants from the northern part of Bangladesh, also find jobs in the British Merchant Navy. Unlike the sailors from the southeastern part, this segment of peasants does not have much oceangoing experience and jump into the ship when the opportunity comes up. Later, they discover themselves in a number of countries including the USA and the UK. These groups of people are considered pioneer expatriate workers to the west (Siddiqui 2003). For certain reasons, however, this flow has weakened by the 1960s and the direction of the migration flow

changes in the 1970s. New era of international migration emerges after the independence of Bangladesh in 1971, when the Middle Eastern countries experience significant growth in infrastructure development with rising oil prices. To build their infrastructure they recruit a larger number of workers from various countries, where different categories of Bangladeshi workers constitute a significant portion. Subsequently, such migration continues to the newly industrialized countries of South East Asia. The nature of such migration is different from migration to the West in terms of duration. Migration to the Middle East and South East Asia is on short term employment, and migrants had to return home after the completion of their employment contract. This migration reflects the nature of current migration and is the largest category of the country's migrants. A tendency to find employment in developed countries like USA, Canada, and Italy and in some Asian countries like Japan is observed in the 1990s and onward. Migration is the highest foreign exchange earning sector in Bangladesh. In 2009, earnings from migrant remittances are two times higher than the net income of the garments sector and nine times higher than the foreign direct investment to the country (Protifolon, 2011).

#### 4.4.1.1 Patterns of Migration in Bangladesh

It is already mentioned in the earlier section that short-term migration represents the most common form of labor migration from Bangladesh and Bangladeshi migrants mostly go to the Middle Eastern and South East Asian countries, Saudi Arab, UAE, Qatar, Kuwait, Bahrain, Oman, Iran, Iraq, Singapore, Malaysia, South Korea, Brunei, Hong Kong as well as Libya, a North African country. Among these countries, almost one half of the total numbers of workers migrate to Saudi Arab, followed by UAE and Malaysia. However, evidences show that migration patterns change over time. Workers from Bangladesh are now migrating to a wider range of countries including South Africa, Mauritius, Lebanon and Jordan. The UK and USA, among the western countries, are the two main destinations for Bangladeshi migrants. However, skilled and professional migrants move to Canada, Germany, Italy, Australia, New Zealand, France, Switzerland, Belgium, Netherlands, Spain and Japan (BMET 2012).

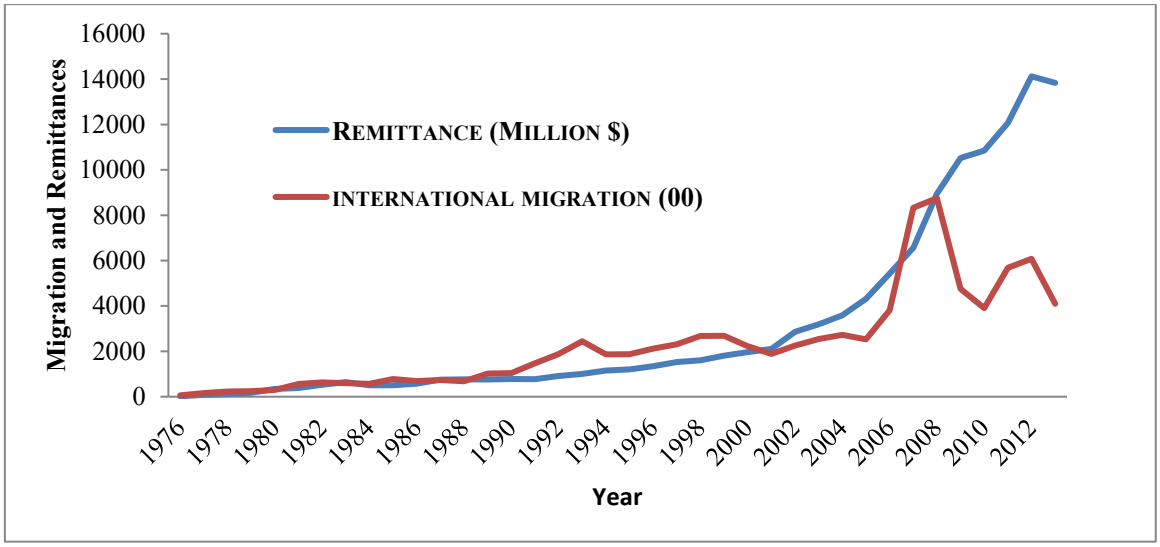
According to BMET, there are four types of temporary migrants: professional, skilled, semiskilled and unskilled. Semiskilled and unskilled workers comprise the majority of migrants, while skilled and professionals represent minority, though the share of

professional and skilled workers, during the early years, is higher than that of semiskilled and unskilled workers.

#### 4.4.1.2 Trends of Migration, Remittances and Economic Growth in Bangladesh

Bangladesh is a labor surplus country. It sends a good amount of people abroad since the oil boom in 1970s in GCC countries. The trends of migration and remittances are given in the figure 4.10. During 1976 to 2012, the mean amount of remittances in Bangladesh is $2792.51 million with a minimum amount of $18.76 million and a maximum amount of remittances of $14119.63 million. Remittance inflows in Bangladesh are increasing continuously up to 2012. After 2012, they decrease slightly. This is a very exceptional case, because since independence, flow of remittances never decline overtime.

**Figure 4.10: Trends of International migration and Remittances in Bangladesh**

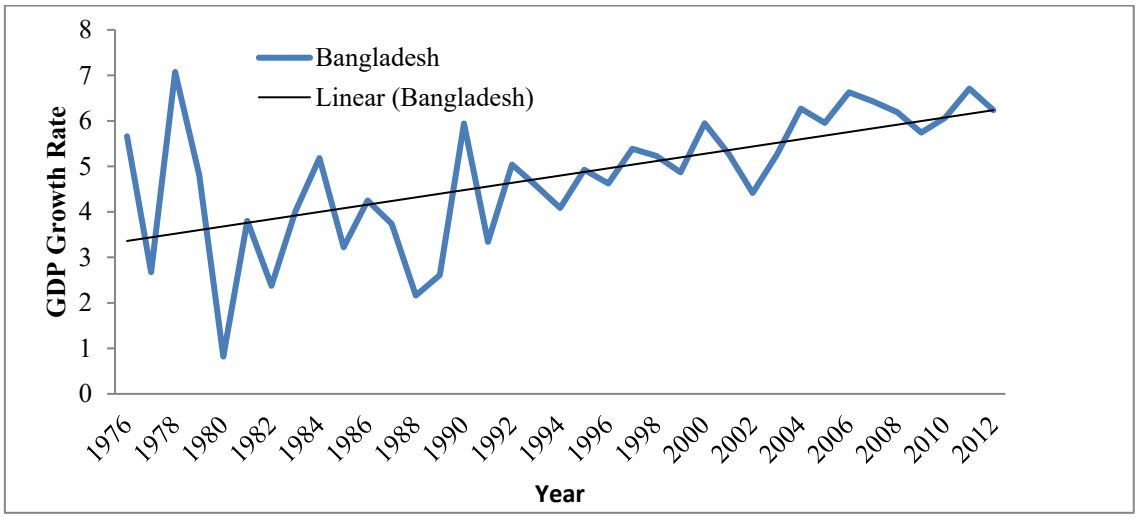



During the same period, mean number of international migrants is found to be 2293.86 hundreds with a minimum of 60.87 hundreds and maximum of 8750.55 hundreds international migrants. International migration in Bangladesh is increasing from 1976, reaches its peak in 2008, and then decline.

Trend of economic growth rate in Bangladesh is given in figure 4.11. There are some large swings in the actual growth trend during the 1980s. Figure 4.11 shows that Bangladesh is experiencing an ever increasing growth trend since 1976 to date. The mean GDP growth

rate in Bangladesh is about 4.83 percent during the time period 1976 to 2012 with a minimum growth rate of 1.44 percent and maximum rate of 7.07 percent.

**Figure 4.11: Trends of GDP Growth in Bangladesh**




### 4.4.1.3 Summary Statistics of Data of Bangladesh

After describing trends and patterns of migration, remittances and economic growth in Bangladesh, we present summary statistics of data of Bangladesh for remittance determinants model and remittance-growth model in Table 4.4 and Table 4.5. We find 37 observations for each variable. Table 4.4 shows summary statistics of remittance determinants model.

**Table 4.4: Summary Statistics of Data of Bangladesh in Remittance Determinants model**

| Name of Variable | No. of Observations | Mean | Standard Deviations | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Remittances GDP Ratio | 37 | 4.634542 | 3.360009 | 0.1860654 | 12.16854 |
| Inflation Rate | 37 | 6.448973 | 6.44904 | -17.63042 | 25.61889 |
| Official Exchange Rate | 37 | 42.73004 | 19.58049 | 15.01612 | 81.86266 |
| Per capita GDP of Home Country | 37 | 335.5802 | 154.0019 | 126.9433 | 750.08 |
| Per Capita GDP of Host Country | 37 | 15494.27 | 6144.096 | 8665.995 | 31140.18 |
| Broad Money to GDP Ratio | 37 | 33.80998 | 18.43017 | 11.41806 | 69.73062 |
| Migrant Population Ratio | 37 | 0.001695 | 0.0013641 | 0.0000823 | 0.0059137 |
| Political Rights Index | 37 | 3.675676 | 1.292157 | 2 | 7 |

Remittance-GDP ratio is used as dependent variable, whereas, inflation rate, official exchange rate, per capita GDP at home country, per capita GDP of host country, broad money to GDP ratio, migrant population ratio and political rights index are used as explanatory variables. The mean value of remittance GDP ratio is found to be 4.634542 with a minimum value of 0.1860009 and a maximum value of 12.16854. Its standard variable is found to be 3.360009. Similarly, we can interpret remaining variables of Bangladesh for remittance determinants model.

Summary statistics of data of Bangladesh in remittances-growth model are presented in Table 4.5. In remittance growth model, real GDP is used as explained variable and remaining other variables in the table are used as explanatory variables.

**Table 4.5: Summary Statistics of Data of Bangladesh in Remittances-Growth Model**

| Name of the Variable | NO. of Observation | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Real GDP (million $) | 37 | 44029.76 | 6624.167 | 36460.3 | 58061.83 |
| Real Remittances (million $) | 37 | 1936.551 | 1421.128 | 96.0638 | 5295.986 |
| Inflation Rate | 37 | 6.448973 | 6.44904 | -17.6304 | 25.61889 |
| Official Exchange Rate | 37 | 42.73004 | 19.58049 | 15.0161 | 81.86266 |
| Economically Active Population (%) | 37 | 56.79592 | 4.266447 | 51.9053 | 64.71382 |
| Real Gross Fixed Capital Formation (million $) | 37 | 8472.424 | 1538.614 | 6364.06 | 11677.53 |
| Real Government Final Consumption Expenditure (million $) | 37 | 2125.443 | 551.1856 | 1649.49 | 3954.596 |
| Domestic Credit to Private Sector by Bank as GDP Share | 37 | 21.50045 | 13.13312 | 2.96541 | 49.16416 |
| Total Trade GDP Ratio | 37 | 29.33913 | 11.39188 | 16.2362 | 55.29305 |
| Real Foreign Direct Investment (million $) | 37 | 136.0933 | 182.3816 | -32.3245 | 530.7851 |
| Real Official Development Assistance (million $) | 37 | 1975.159 | 1238.953 | 593.819 | 4691.929 |
| Political Rights Index | 37 | 3.675676 | 1.292157 | 2 | 7 |

Real remittance, real GDP, real gross fixed capital formation, real government final consumption expenditure, real foreign direct investment and real official development assistance are expressed in million US$. Rest of the variables is reported in the form of rates and ratio. Mean value of real GDP in Bangladesh is found to be $44029.76 million with a minimum value of 36460.3 and a maximum value of $58061.83 and standard deviation of 6624.167. Mean value of real remittance in Bangladesh is found to be $1936.551 with standard deviation of 1421.128, minimum value of $96.0638 million and maximum value of $5295.986 million. Mean value of inflation rate is found to be 6.448973 with standard deviation of 6.44904. Minimum and maximum inflation rate in Bangladesh is found to be -17.6304 and 25.61889 respectively. Similarly, we can interpret the rest of the data used in Bangladesh in remittance growth model.

### 4.4.2 The Case of India

When India becomes independent after 1947, majority of the skilled population has been immigrated to the developed countries such as USA, UK, Australia, Singapore etc. This trend of changes has been done with the improvement of education system, new technology (Information and Communication Technology) and speedy mode of transport system. According to Ministry of overseas Indian Affairs (MOIA) report 2012, currently 30 million Indian as form of PIO (Those emigrated before independence), and NRI (those emigrated after independence) are residing outside country from their place of birth. They have been working in different field such as academic, technical, professional, services, and hotel, and many of them become renowned in their field across the globe.

Indian Emigration Act 1983 keeps records of workers in only those who require Emigration check before leaving India. It has divided emigrants' workers those who required Emigration Check and those under the Emigration Check Not Required (ECNR). First categories mainly Government include the semi-skilled and unskilled workers while the late categories comprises the skilled workers, professional, businessman. These categories have been marked on the basis of occupation. In March, 2002, 17 categories of workers are exempted from emigration clearance (ECNR stands for Emigration Check Not Require) mainly skilled workers. As the partial recorded data shows government only provide statistics of emigration clearance persons. In the absence of well-regulated rules

and procedure for recruitment of workers, the statistics on emigration clearance and employment abroad and the outflow for the period till 1983, are quite partial.

#### 4.4.2.1 Patterns of Migration in India

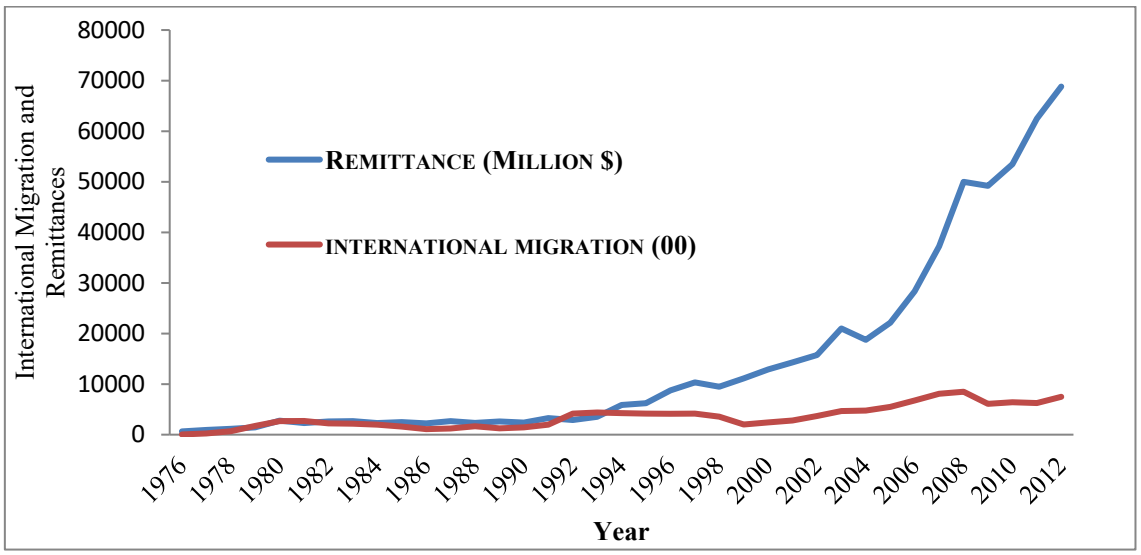
Out of 30 million, almost 6 million Indian migrants workers are engaged in various kinds of jobs in six GCC countries. They are mainly getting employment in three kinds of jobs:1) white collar jobs (doctors, nurses, engineers, architects, accountants, and managers); 2) semi-skilled workers or blue collar jobs (craftsman, drivers, artisans and other technical workers); 3) unskilled laborers in construction sites, farmlands, livestock ranches, shops, stores and households maids, domestic works. The first category of workers or skilled labors almost comprises about 30 per cent of the total Indian immigrants in the gulf countries. Second and third categories comprise almost 70 per cent and 12 per cent of the total Indian immigrants. Within the GCC countries, Kingdom of Saudi Arabia (KSA) and United Arab Emirates (UAE) are the most popular destinations of Indian immigrants and together they contribute more than 60 per cent of the total deployment of Indian migrant workers. It has been shown that nearly 4 million Indian immigrants are working the North America (USA and Canada) and 2.5 million are working in different European countries like U.K., Netherlands, Germany, Austria, and Switzerland. Indian migrants also make strong identity even in the South and South East Asian countries like Malaysia, Singapore and Myanmar.

#### 4.4.2.2 Trends of International Migration, Remittances and Economic Growth in India

India is the largest populous country in South Asia. It sends a large amount of both skilled and unskilled people abroad. As we know it is the highest remittance receiver in the world. Trends of Indian migration and remittances are plotted in Figure 4.12. From the Figure, it is evident that during the study period the rate increase in remittances is higher than that of international migration. The mean amount of remittances in India is $ 32815.11 million with a minimum amount of $624.34 million and maximum of $699690 million. Again, the

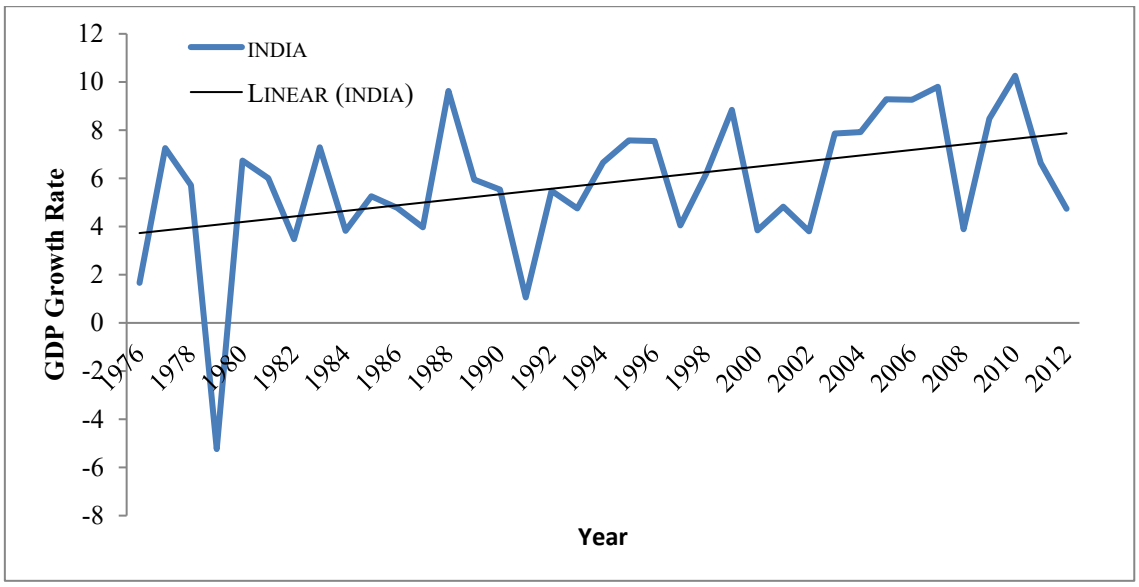
mean number of international migrants in India is 4798.19 hundreds with a minimum number of 42 hundreds and maximum number of 53384.86 hundreds.

**Figure 4.12: Trends of International Migration and Remittances in India**




The GDP growth trend of India is depicted in Figure 4.13. India is the largest country in this region. Though India has an upward trend in GDP growth rate, she faces some large swings in her actual growth line; even she faces a negative growth rate in 1979. The mean GDP growth rate is highest in the South Asian region, 5.78 percent with a minimum growth rate -5.24 percent and a maximum rate of 10.6 percent.

**Figure 4.13: Trends of GDP Growth Rate in India**



#### 4.4.2.3 Summary Statistics of Data of India

Table 4.6 presents summary statistics of data of India for remittance determinants model. This Table shows that all variables have 37 observations. Mean value of remittance GDP ratio in India is found to be 1.938057 with a minimum value of 0.6145765 and a maximum value of 4.082787 and standard deviation of 1.043986. Mean value of India's per capita GDP is found to be $528.8875 with a minimum value of $164.1086 and a maximum value of $1539.606 and a standard deviation of 374.4552. Mean value of India's migrant population ratio is found to be 0.0003464 with a minimum value of 0.0000065 and a maximum value of 0.0007224. Similarly, we can interpret the rest of the variables in remittance determinants model.

**Table 4.6: Summary Statistics of Data of India in Remittance Determinants model**

| Name of Variable | No. of Observations | Mean | Standard Deviations | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Remittances GDP Ratio | 37 | 1.938057 | 1.043986 | 0.6145765 | 4.082787 |
| Inflation Rate | 37 | 7.57095 | 2.909545 | 2.460282 | 15.72804 |
| Official Exchange Rate | 37 | 28.84314 | 16.1541 | 7.862945 | 53.43723 |
| Per capita GDP of Home Country | 37 | 528.8875 | 374.4552 | 164.1086 | 1539.606 |
| Per Capita GDP of Host Country | 37 | 21652.9 | 10487.9 | 11448.12 | 48052.15 |
| Broad Money to GDP Ratio | 37 | 49.62888 | 15.14818 | 27.54754 | 77.71508 |
| Migrant Population Ratio | 37 | 0.000346 | 0.0001768 | 0.0000065 | 0.0007224 |
| Political Rights Index | 37 | 2.243243 | 0.5965366 | 2 | 4 |

Table 4.7 shows summary statistics of data of India for remittance growth model. This Table also shows that all the variables have 37 observations. In this table, real GDP, real remittances, real gross fixed capital formation, real government final consumption

expenditure, foreign direct investment and real official development assistance are given in million US$. Rest of the variables is reported in rates and ratio form.

**Table 4.7: Summary Statistics of Data of India in Remittances-Growth Model**

| Name of the Variable | No. of Observation | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Real GDP (million $) | 37 | 824210.6 | 207051.3 | 529611.5 | 1175474 |
| Real Remittances (million $) | 37 | 1222.096 | 1343.846 | 69.45513 | 4733.97 |
| Inflation Rate | 37 | 7.57095 | 2.909545 | 2.460282 | 15.72804 |
| Official Exchange Rate | 37 | 28.84314 | 16.1541 | 7.862945 | 53.43723 |
| Economically Active Population (%) | 37 | 60.18024 | 2.746706 | 56.50792 | 65.37147 |
| Real Gross Fixed Capital Formation (million $) | 37 | 316023.6 | 104318.5 | 197105.3 | 548621.9 |
| Real Government Final Consumption Expenditure (million $) | 37 | 148879.2 | 32494.51 | 105866 | 196658.5 |
| Domestic Credit to Private Sector by Bank as GDP Share | 37 | 29.01977 | 10.18566 | 17.57941 | 51.02004 |
| Total Trade GDP Ratio | 37 | 25.00894 | 13.82549 | 12.00868 | 54.73235 |
| Real Foreign Direct Investment (million $) | 37 | 9014.237 | 13361.48 | -434.666 | 53899.37 |
| Real Official Development Assistance (million $) | 37 | 7423.766 | 5772.421 | 1199.227 | 22779.49 |
| Political Rights Index | 37 | 2.243243 | 0.596536 | 2 | 4 |

### 4.4.3 The Case of Nepal

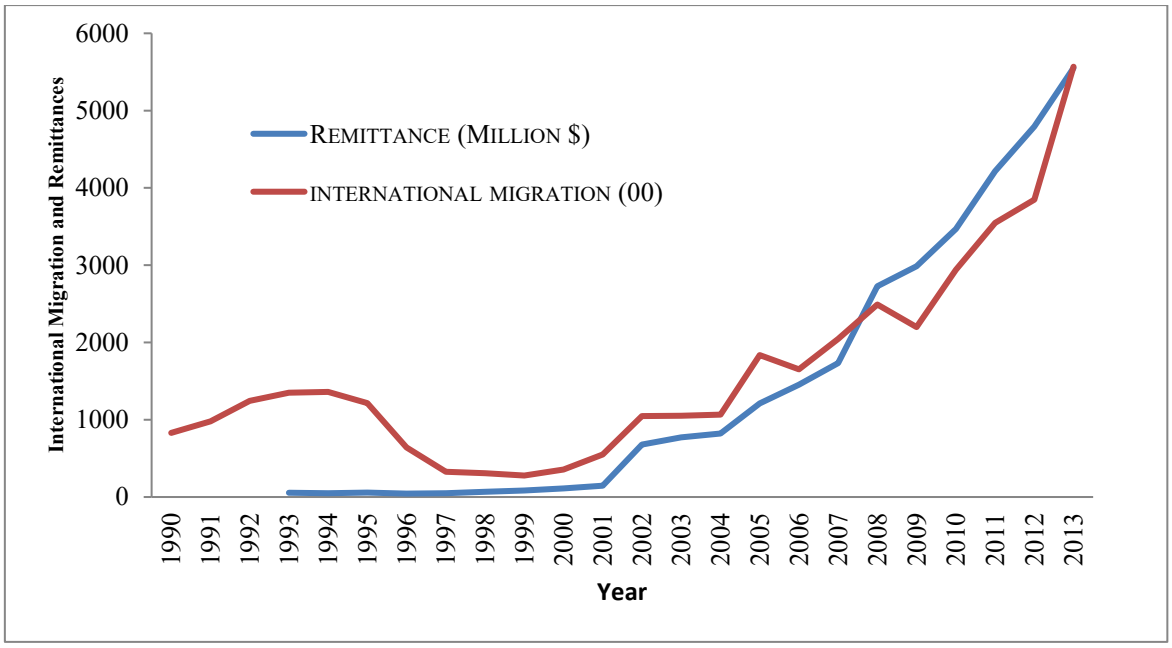
The history of Nepalese International Labor migration traces back around 200 years ago when they start to seek work abroad and send remittances back to their families. In early 19th century, for instance, the first men migrates to Lahore (in today's Pakistan) to join the

army of the Sikh ruler, Ranjit Singh. They earn the nickname "Lahure" which is still used for Nepalese employed in foreign armies abroad. In 1816, the first British army of India and were then, and still are called "Gurkhas". Since then, international labor migration of Nepalese has never ceased. Especially in the recent decades, it has greatly increased and diversified in pattern (NIDS, 2004). Following its independence from the Britain in 1947, India starts to recruit Nepali men into its military. Nepali workers have been going to present-day India, which borders Nepal on three sides, seeking employment during the dry season for centuries. Following the enactment of the Labor Act of 1985, the first official recognition of the benefits of foreign migration (CBS, 2006), foreign employment destinations diversifies to include Southeast and Fareast Asia and later the Middle East. While the Government of Nepal recognizes 107 overseas destinations for Nepali migrants, migration is concentrated in a few countries, namely India, the Gulf (mainly, Qatar, Saudi Arabia, and UAE) and Malaysia.

#### 4.4.3.1 Trends of International Migration, Remittances and Economic Growth in Nepal

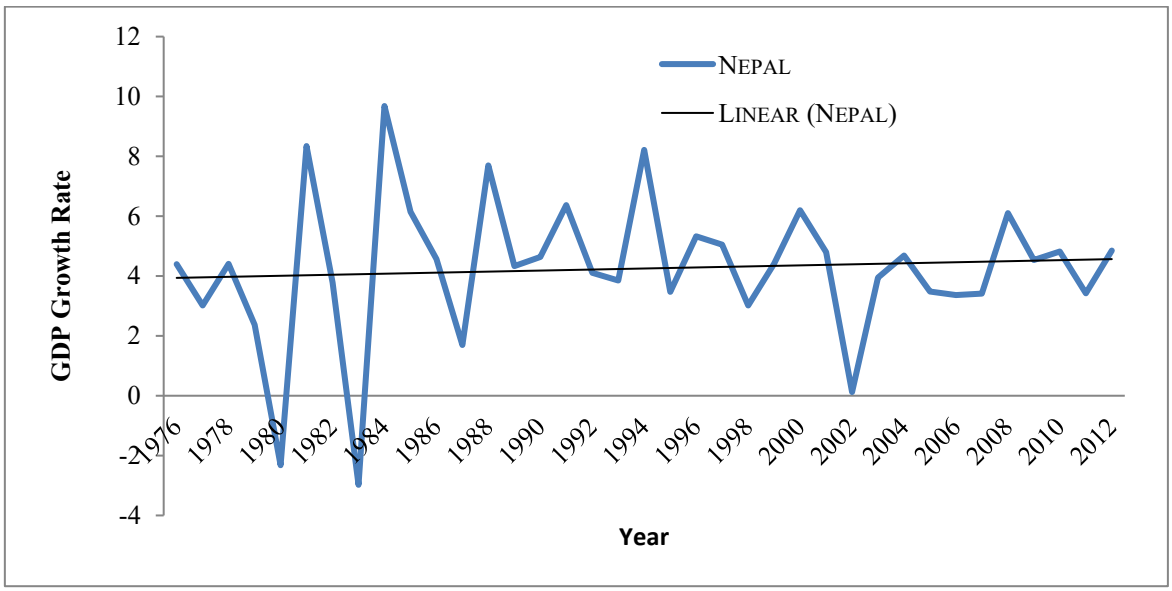
The amount of remittances in Nepal is increasing in tandem with international migration. Figure 4.14 shows the trends of Nepal's migration and remittances scenario. Nepal joins the pace of international migration mainly in the decade of 1990s and very quickly she becomes one of the important suppliers of international labor in the world. The mean amount of remittances in Nepal during 1990 to 2012 is $1479.95 million with a minimum amount of $44.16 million and a maximum amount of $5551.53 million. During the same period, mean number of international migrants in Nepal is 1613.74 hundreds with a minimum number of 277.96 hundreds and a maximum number of 5567.9 hundreds. We have the data on migration and remittances in Nepal from 1990 to 2012. Prior to this period, we find no data on migration and remittances.

**Figure 4.14: Trends of International Migration and Remittances in Nepal**




If we concentrate on the growth rate of Nepal, we see that the trend GDP growth line becomes more or less at the same level during 1976 to 2012. However, the actual GDP growth rate faces some large swings, even shows negative growth. The actual and trend GDP growth lines are given in Figure 4.15. It shows that the mean growth rate is 4.14 percent with a minimum rate of growth -2.98 percent and a maximum rate of 9.68 percent growth.

**Figure 4.15: Trends of GDP Growth in Nepal**



#### 4.4.3.2: Summary Statistics of data of Nepal

Table 4.8 reports summary statistics of Nepal's data for remittance determinants model. This Table shows that Nepal's has 20 observations of the variables that are used in remittance determinants model. Mean value of Nepal's remittance GDP ratio is found to be 10.49454 with standard deviation of 9.134974, and a minimum value of 0.9766525 and a maximum value of 24.95688. Mean value of per capita GDP of Nepal is found to be $340.1423 with standard deviation of 164.5116, and a minimum value of $187.2 and a maximum value of $699.0805. Mean value of per capita GDP of host country's GDP in case of Nepal is found to be $18733.11 with standard deviation of 8633.902, and a minimum value of $8592.372 and a maximum value of $33832.52. Mean value broad money to GDP ratio is found to be 54.90 with standard deviation of 14.69 and a minimum value of 34.84 and maximum value of 80.66. Migrant population ratio in Nepal has a mean value of 0.0060446 with standard deviation of 0.0038231, and a maximum value of 0.0140009 and minimum value of 0.001225.

**Table 4.8: Summary Statistics of Data of Nepal in Remittance Determinants Model**

| Name of Variable | No. of Observation | Mean | Standard Deviations | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Remittances GDP Ratio | 20 | 10.49454 | 9.134974 | 0.9766525 | 24.95688 |
| Inflation Rate | 20 | 7.589072 | 3.585546 | 3.070305 | 15.90833 |
| Official Exchange Rate | 20 | 68.13819 | 10.14691 | 48.60717 | 85.19716 |
| Per capita GDP of Home Country ($) | 20 | 340.1423 | 164.5116 | 187.2 | 699.0805 |
| Per Capita GDP of Host Country ($) | 20 | 18733.11 | 8633.902 | 8592.372 | 33832.52 |
| Broad Money to GDP Ratio | 20 | 54.90605 | 14.69458 | 34.84227 | 80.66311 |
| Migrant Population Ratio | 20 | 0.0060446 | 0.0038231 | 0.001225 | 0.0140009 |
| Political Rights Index | 20 | 3.9 | 0.9119095 | 3 | 6 |

Summary statistics of Nepal's data for remittance-growth model are presented in Table 4.9. It shows 37 observations for each variable.

**Table 4.9: Summary Statistics of Data of Nepal in Remittances-Growth Model**

| Name of the Variable | NO. of Observation | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Real GDP (million $) | 37 | 9086.48 | 2922.053 | 5821.796 | 14719.72 |
| Real Remittances (million $) | 37 | 811.5159 | 1271.738 | 18.11651 | 4007.793 |
| Inflation Rate | 37 | 8.513667 | 4.390223 | -3.56482 | 18.48909 |
| Official Exchange Rate | 37 | 45.98849 | 26.21147 | 12 | 85.19716 |
| Economically Active Population (%) | 37 | 55.6596 | 1.170578 | 54.28143 | 59.35588 |
| Real Gross Fixed Capital Formation (million $) | 37 | 2926.848 | 653.2032 | 1824.755 | 4045.346 |
| Real Government Final Consumption Expenditure (million $) | 37 | 1362.893 | 381.9249 | 853.5132 | 2073.468 |
| Domestic Credit to Private Sector by Bank as GDP Share | 37 | 22.07831 | 15.77464 | 3.529378 | 58.77493 |
| Total Trade GDP Ratio | 37 | 41.2619 | 10.76124 | 24.95113 | 64.03553 |
| Real Foreign Direct Investment (million $) | 37 | 14.82215 | 25.51579 | -10.4297 | 87.79964 |
| Real Official Development Assistance (million $) | 37 | 1210.631 | 514.7005 | 600.1458 | 2359.21 |
| Political Rights Index | 37 | 3.783784 | 1.108932 | 2 | 6 |

Mean value of Nepal's real GDP is found to be $9086.48 million with standard deviation of 2922.053, and a minimum value of 5821.796 and a maximum value of 14719.72. Similarly, we can interpret rests of the variables with respect to mean, standard deviation, minimum value and maximum value.

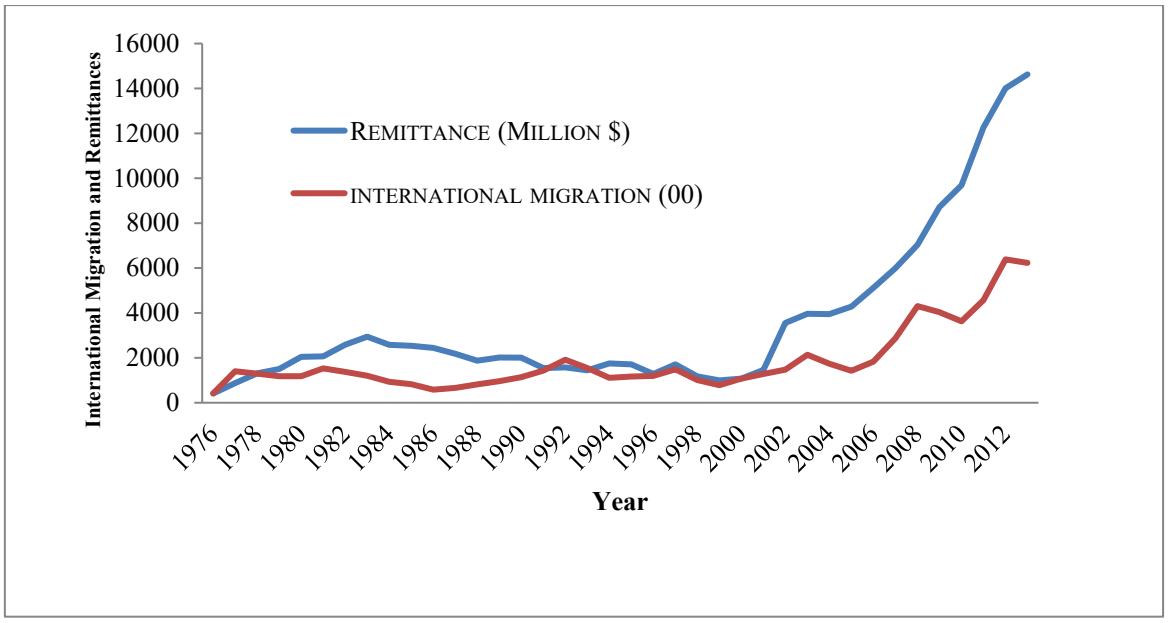
### 4.4.4 The Case of Pakistan

Pakistan as a populous country has seen an increasing number of its labor force moving to other countries around the world with the total number of Pakistani overseas workers and their families estimated to be around 5.7 million in 2013. Over the past 60 years, migration from Pakistan to other countries has largely been for seeking better economic opportunities and benefits to individuals, their families and communities. Workers from Pakistan migrate to the UK and other Western countries in the 1950s and 1960s. These migrants are mostly men and relatively little educated who take up low paid industrial jobs in the UK. The male migration gives rise to the migration of families in these countries. It is after the oil boom in the 1970s that a great avenue is opened in the countries of the Gulf which has today become the principal destination of Pakistani workers. Since the late 1980s and early 1990s, there have been new waves of migration by young men to the European countries and North America.

#### 4.4.4.1 Trends of International Migration, Remittances and Economic Growth in Pakistan

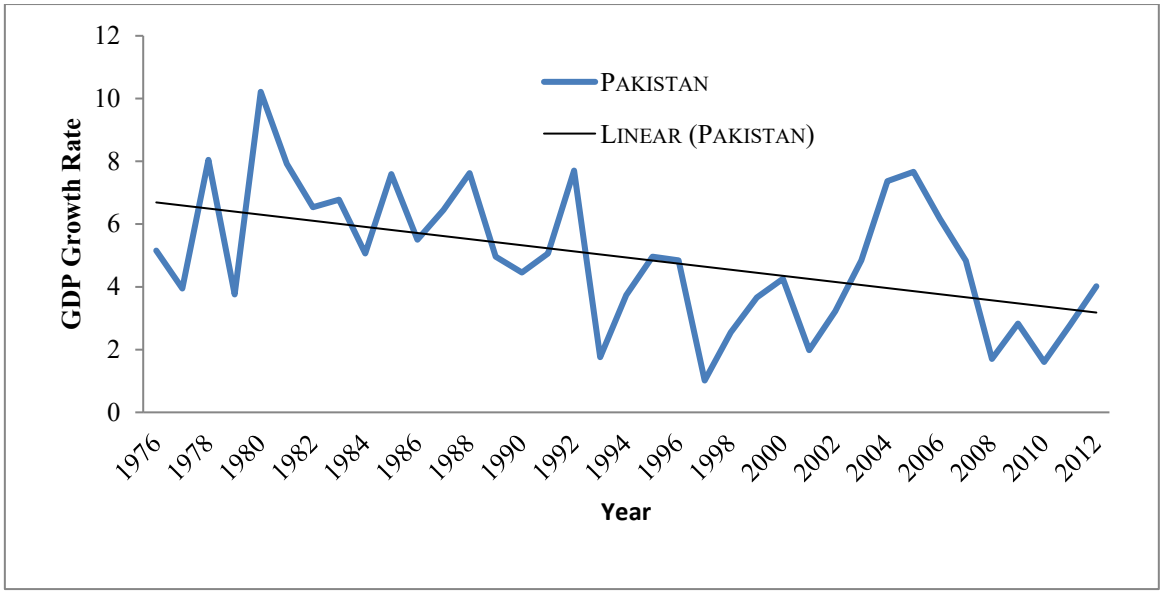
Pakistan is the second largest Muslim country in the world and she is the second largest populous country in South Asia. The trends of migration and remittances in Pakistan are given in Figure 4.16. It shows that remittances and international migration in Pakistan are moving in the same direction. Both migration and remittances are on an increasing trend. Summary statistics report that the mean amount of remittances in Pakistan is $3639.64 million with a minimum amount of $411.74 million and a maximum amount of $14626 million remittances. Similarly, mean value of international migrants in Pakistan is found to be 1727.04 hundreds with a minimum number of 416.9 hundreds and a maximum number of 6385.87 hundreds.

**Figure 4.16: Trends of International Migration and Remittances in Pakistan**




Pakistan is the only country in our study that faces negative growth trend line in spite of growing migration and remittances. Figure 4.17 shows the actual and trend GDP growth rate in Pakistan during 1976 to 2012. From the Figure, it is evident that the mean growth rate of GDP in Pakistan is 4.96 percent with a minimum growth rate of 1.014 percent and a maximum growth rate of 10.21 percent.

**Figure 4.17: Trends of GDP Growth in Pakistan**



#### 4.4.4.2 Summary Statistics of Data of Pakistan

Table 4.10 presents summary statistics of Pakistan's data for remittance determinants model. All variables have 37 observations. The mean value of remittance GDP ratio in Pakistan is found to be 4.95749 with standard deviation of 2.282038, a minimum value of 1.453638 and a maximum value of 10.24763 during the study period. Maximum and minimum rate of inflation in Pakistan are found to be 24.89115 and 2.463093 respectively and its mean value is found to be 9.766769 with standard deviation of 4.956054.

**Table 4.10: Summary Statistics of Data of Pakistan in Remittance Determinants model**

| Name of Variable | No. of Observations | Mean | Standard Deviations | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Remittances GDP Ratio | 37 | 4.95749 | 2.282038 | 1.453638 | 10.24763 |
| Inflation Rate | 37 | 9.766769 | 4.956054 | 2.463093 | 24.89115 |
| Official Exchange Rate | 37 | 38.06654 | 25.74939 | 9.9 | 93.3952 |
| Per capita GDP of Home Country ($) | 37 | 520.7649 | 280.898 | 189.8215 | 1255.191 |
| Per Capita GDP of Host Country ($) | 37 | 21652.9 | 10487.9 | 11448.12 | 48052.15 |
| Broad Money to GDP Ratio | 37 | 42.61065 | 3.309086 | 37.4758 | 49.18651 |
| Migrant Population Ratio | 37 | 0.0013336 | 0.0006653 | 0.0005555 | 0.0035643 |
| Political Rights Index | 37 | 4.864865 | 1.357329 | 3 | 7 |

Mean value of Pakistan's official exchange rate against US$ is found to be 38.06654 with standard deviation of 25.74939, and a minimum rate of 9.9 and a maximum rate of 93.3952. Similarly, we interpret the summary statistics of rests of the variables of Pakistan's data for remittance determinants model.

Table 4.11 provides summary statistics of data of Pakistan for remittance growth model. This Table reports that every variables used in the remittance growth model has 37 observations. Mean value of Pakistan's real GDP is found to be $166109.7 million with standard deviation of 43349.78, and a minimum value of $103677 million and a maximum value of $244249.1 million. Mean value of Pakistan's remittances is found to be

$11108.89 million with standard deviation of 6437.548, and a minimum amount of remittances $2414.475 million and a maximum amount of remittances $25600.18 million. Rest of the variables' summary statistics can be interpreted in a similar way with respect to mean, standard deviation, minimum and maximum value.

**Table 4.11: Summary Statistics of Data of Pakistan in Remittances-Growth Model**

| Name of the Variable | NO. of Observatio | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Real GDP (million $) | 37 | 166109.7 | 43349.78 | 103677 | 244249.1 |
| Real Remittances (million $) | 37 | 11108.89 | 6437.548 | 2414.475 | 25600.18 |
| Inflation Rate | 37 | 9.766769 | 4.956054 | 2.463093 | 24.89115 |
| Official Exchange Rate | 37 | 38.06654 | 25.74939 | 9.9 | 93.3952 |
| Economically Active Population (%) | 37 | 54.76906 | 2.791617 | 52.53904 | 61.31783 |
| Real Gross Fixed Capital Formation (million $) | 37 | 35571.38 | 7710.145 | 21267.58 | 47909.31 |
| Real Government Final Consumption Expenditure (million $) | 37 | 24146.76 | 7004.907 | 12669.54 | 41199.4 |
| Domestic Credit to Private Sector by Bank as GDP Share | 37 | 24.03897 | 2.936794 | 16.80182 | 29.78608 |
| Total Trade GDP Ratio | 37 | 33.80959 | 2.87128 | 27.71982 | 38.90949 |
| Real Foreign Direct Investment (million $) | 37 | 1804.994 | 1935.232 | 127.7836 | 8702.42 |
| Real Official Development Assistance (million $) | 37 | 5396.997 | 3222.167 | 1632.17 | 15777.14 |
| Political Rights Index | 37 | 4.864865 | 1.357329 | 3 | 7 |

### 4.4.5 The Case of Sri Lanka

Historically, migration from Sri Lanka emerge soon after the regaining political independence from the United Kingdom in 1948 as repatriation of Indian Tamil plantation

workers. In addition, small number of Europeans also goes back to Europe or migrates to Australia from early 1940 the century to 1950s. The Srima-Shastri pact of 1964 and Indira-Sirimavo supplementary agreement of 1974 pave the way for the repatriation of 600,000 persons of Indian Tamils to India from 1948s to 1980s. Another 375,000 Indian Tamils working in estate sector are accepted as citizens of Sri Lanka at the initial stage. Thereafter, citizenship is granted for the rest of the Indian Tamils associated with plantation estates in Sri Lanka in various years. With the generational changes and receiving of political power through labor unions, legal requirements for repatriation are stopped and living standards of the Indian Tamils have been increasing gradually since late 1970s. However, according to World Bank (2003), the highest poverty level is recorded among Indian Tamil dominated estate sector as 30 percent. As a result, a significant proportion of females of Indian Tamils have also migrated as housemaids to other sectors in Sri Lanka or Middle-east Asian countries after late 1970s. Actual momentum of migration from Sri Lanka for various purposes start in late 1970s and since then it has been tremendously growing year by year. As in other countries in South Asia, international migration, especially temporary contract based migration, has become an increasingly important avenue for employment for many Sri Lankans. According to the Sri Lanka Bureau of Foreign Employment (SLBFE), the number of migrants leaving the country on employment contracts increase from 14,456 per year in 1986 to 230,963 per year in 2005 (SLBFE, 2008). Unlike other South Asian countries, most migrants from the Democratic Socialist Republic of Sri Lanka (Sri Lanka) are women, and in recent years the growth rate of women departures has substantially exceeded than that of men.

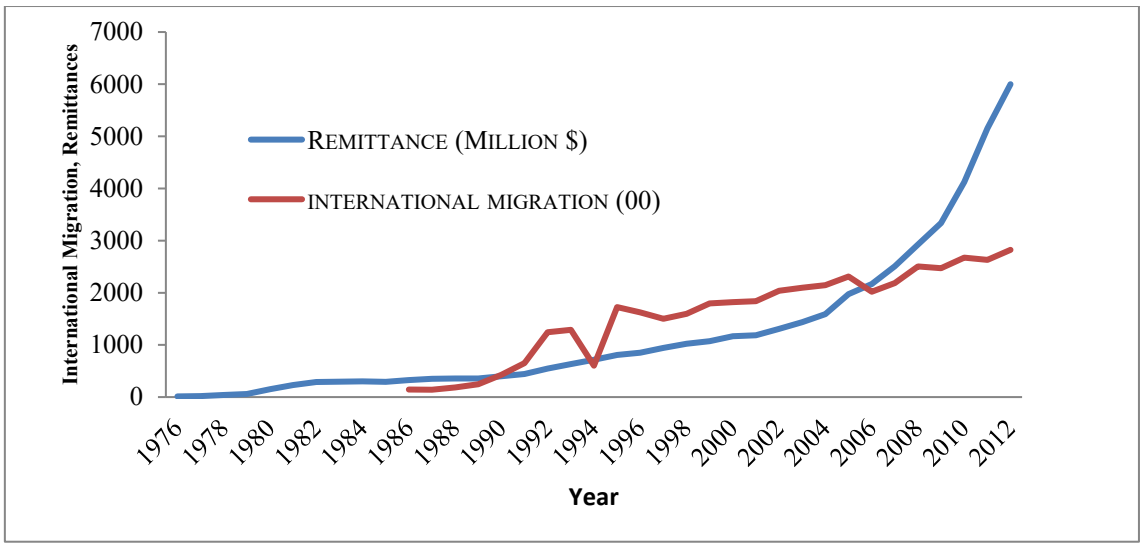
#### 4.4.5.1 Trends of International Migration, Remittances and Economic Growth in Sri Lanka

Remittances to Sri Lanka are increasing since our study period starts and the rate of growth of remittances is greater than that of international migration. Trends of international migration and remittances in Sri Lanka are plotted in Figure 4.18.

From the Figure, we see that data on international migration from Sri Lanka are available from 1986 but we get remittances data from 1976 to 2012. Though there are some ups and downs in the trend of migration, the trend of remittances shows a continuous upward trend. The mean number of migrant during the sampled period is found to be 169820 with

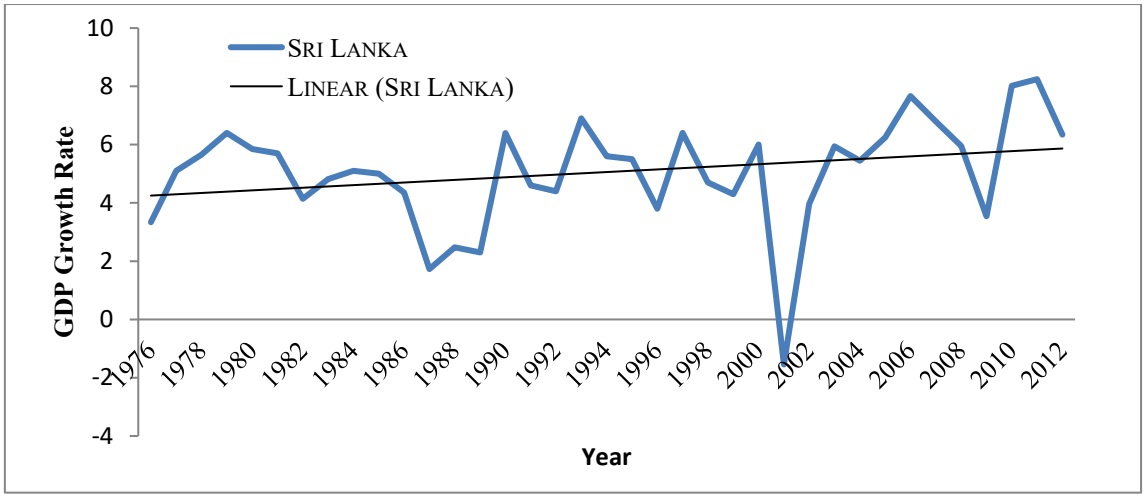
a maximum number of 324977 and minimum number of 14127 migrants. It shows that the mean amount of remittances to Sri Lanka is $1363.49 million with a minimum amount of $12.96 million and a maximum amount of $6422.19 million remittances.

**Figure 4.18: Trends of International Migration and Remittances in Sri Lanka**




The GDP growth rate of Sri Lanka shows an increasing trend in our study period though she faces negative growth rate in 2001. The actual and trend GDP growth rate are given in Figure 4.19. The mean GDP growth rate of Sri Lanka is 5.12 percent with a minimum growth rate of -1.54 percent and a maximum growth rate of 8.25 percent.

**Figure 4.19: Trends of GDP Growth in Sri Lanka**



#### 4.4.5.2. Summary Statistics of Data of Sri Lanka

Table 4.12 shows summary statistics of Sri Lankan data for remittance determination model. In this model, Sri Lanka has 27 observations for each variable. Mean value of remittance GDP ratio of Sri Lankan data is found to be 6.801176 with standard deviation of 1.32654, and a minimum value of 4.911958 and a maximum value of 10.10144. Mean Sri Lankan per capita GDP is found to be $1093.959 with standard deviation of 739.618, and a minimum per capita GDP of 397.1731 and a maximum per capita GDP of 2921.736. Rest of the variables for remittance determinant model can be interpreted in a similar way.

**Table 4.12: Summary Statistics of Data of Sri Lanka in Remittance Determinants model**

| Name of Variable | No. of Observations | Mean | Standard Deviations | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Remittances GDP Ratio | 27 | 6.801176 | 1.32654 | 4.911958 | 10.10144 |
| Inflation Rate | 27 | 9.836746 | 3.386178 | 4.162763 | 20.06327 |
| Official Exchange Rate | 27 | 74.00864 | 31.86398 | 28.01733 | 127.6034 |
| Per capita GDP of Home Country ($) | 27 | 1093.959 | 739.618 | 397.1731 | 2921.736 |
| Per Capita GDP of Host Country ($) | 27 | 21340.08 | 10842.73 | 10876.82 | 44309.19 |
| Broad Money to GDP Ratio | 27 | 35.90275 | 4.127318 | 28.25875 | 41.71578 |
| Migrant Population Ratio | 27 | 0.0082108 | 0.0041203 | 0.0008628 | 0.0138888 |
| Political Rights Index | 27 | 3.703704 | 0.724028 | 3 | 5 |

Summary statistics of Sri Lankan data for remittance growth model are given in Table 4.13. There are 37 observations for each variable. Mean value of Sri Lankan real GDP is found to be $27273.61 million with standard deviation of 9895.917, and a minimum value of $17102.62 and a maximum amount of $60626.68 million. In a similar fashion, we can report the summary statistics of the rest of variables of Sri Lanka for remittance growth model.

**Table 4.13: Summary Statistics of Data of Sri Lanka in Remittances-Growth Model**

| Name of the Variable | NO. of Observation | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Real GDP (million $) | 37 | 27273.61 | 9895.917 | 17102.62 | 60626.68 |
| Real Remittances (million $) | 37 | 3208.92 | 992.9128 | 449.4987 | 5227.624 |
| Inflation Rate | 37 | 11.00889 | 4.649021 | 0.583914 | 20.88531 |
| Official Exchange Rate | 37 | 58.90331 | 37.10368 | 8.412 | 127.6034 |
| Economically Active Population (%) | 37 | 63.84879 | 3.149906 | 58.66956 | 67.53043 |
| Real Gross Fixed Capital Formation (million $) | 37 | 14653.59 | 4854.048 | 7524.904 | 27588.75 |
| Real Government Final Consumption Expenditure (million $) | 37 | 6476.823 | 1859.296 | 3880.493 | 12461.09 |
| Domestic Credit to Private Sector by Bank as GDP Share | 37 | 23.26152 | 7.275148 | 8.798534 | 33.97185 |
| Total Trade GDP Ratio | 37 | 70.83268 | 9.375184 | 49.14914 | 88.63646 |
| Real Foreign Direct Investment (million $) | 37 | 567.3752 | 333.0085 | -41.7602 | 1433.128 |
| Real Official Development Assistance (million $) | 37 | 3596.781 | 2829.158 | 424.7762 | 9836.82 |
| Political Rights Index | 37 | 3.351351 | 0.000701 | 2 | 5 |

## 4.5 Conclusion

This Chapter shows the trends and patterns of migration, remittances and economic growth. It firstly give, an overview of global migration and remittances, then, South Asian migration history is described with giving this region's migration and remittances trends and patterns. International migration data reveals that every seventh person is a migrant either internal or international. The flow of South-South migration is larger than that of South-North migration. The chapter shows that global remittances are more stable and

resilient than other form of international capital flows. Three countries of South Asia are occupying the top ten recipients of remittances in the world and remittances to South Asian region are higher than any other form international capital flows. Among the South Asian countries India is in dominant position in earning remittances followed by Pakistan, Bangladesh, Sri Lanka and Nepal. Country specific migration history and trends of international migration, remittances and economic growth are given. Except Pakistan, remaining countries of the study show a positive growth trend during the study period. Summary statistics of country specific data for South Asian countries that are used in the empirical model in this thesis are also provided. We also discuss the historical background of South Asian international migration in this Chapter and find that there are three types of migration in the region namely, permanent migration to developed countries, cross-border migration within the region and temporary migration to Middle East and South East Asia. The country specific migration, remittances and growth trends guides us to explore the empirical macroeconomic analysis of these variables.

# Chapter 5

## Conceptual Framework of the Study

### 5.1 Introduction

This Chapter aims to give the conceptual framework of the study. For this purpose, we present the definition of the key concepts and figure out the conceptual framework of the macroeconomic relationship among migration, remittances and economic growth. Within the framework we show the mechanism of how migration, remittances and economic growth are related with each other. It also provides the conceptual models of the study based on economic theories.

This Chapter is organized as follows: Section 5.2 gives the explanations of the key concepts, Section 5.3 presents the conceptual framework of the study, Section 5.4 provides the conceptual models and Section 5.5 concludes the study.

### 5.2 Explanation of the Key Concepts

This thesis focuses on the macroeconomic study of migration, remittances and economic growth in South Asian countries. For this purpose, we give explanation of key issues below which help us to construct conceptual framework of the thesis.

**Migrants**

There are various definitions of migrants in the migration literature. International migrants may be recorded in terms of:

- Country of birth
- Country of citizenship (nationality)
- Last country of previous residence
- Duration of time spent away from birth place
- Purpose of their stay (type of VISA)

The United Nations (1998) defines a migrant as ‘any person who changes his or her country of usual residence’. Tourists and business travelers are therefore not included in the international migration statistics, as their movements do not involve changing their usual place of residence. GFMD (2007) defines migrants as people who 'keep their home

base in the origin country and return their earnings and other resources, including skills, to their families and home communities'. Statistically the migrant population is equated directly with the number of foreigners either those recorded by country of birth, or foreign born, or that fraction of the population with foreign nationality or the foreign population.

**Migration**

The concept of migration originates from Latin word 'migrare' which means to change the place of or to move out. Therefore, the characteristic of travel constitute an indisputable definition of migration. Migration is the temporary or permanent move of individuals or groups of people from one geographic location to another for various reasons ranging from better employment and income earning possibilities to persecution. Primarily, migration is known as international movement of people from one country to another one. International Organization of Migration (IOM) defines migration as "The movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification." As an economic activity, migration can be identified as an export of manpower and with its human & social dimensions it is different from goods and services exports. In our study, we count mainly international migration where migration occurs across borders. GFMD (2007) portrays migration not as solution for but as an opportunity for economic development. In this case, migrants act as agent for development for their countries of origin.

Migration is portrayed as a market in which workers make the free choice to move to the area where they receive the highest income. It is an expression of the human aspiration for dignity, safety and a better future. It is a part of the social fabric, part of our very make-up as a human family (Ban-Ki-Moon, 2013). Migration has always been a strategy for individuals and their families to overcome poverty, escape conflicts, react to economic and environmental shocks and strive for a more prosperous future. It is a powerful force of social change and cultural interaction in implicated countries. So, it is important because it shapes and re-shapes societies, making them more diverse and complex. The social and political relevance of migration goes beyond numbers as it involves people, not just

production factors but the plans, dreams, frustrations, hopes and interests of human beings. Migration can be an important enabler for social and economic development and allows people respond to changes in social, economic and environmental conditions. It has diverse developmental effects on both home and host countries.

**Remittances**

The remittance data used in this study are based on the definition of workers' remittances as used by the World Development Indicators (WDI) 2014. According to World Development Indicators 2014, personal remittances comprise personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash or in kind made or received by resident households to or from nonresident households. Personal transfers thus include all current transfers between resident and nonresident individuals. Compensation of employees refers to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by nonresident entities. Data are the sum of two items defined in the sixth edition of the IMF's Balance of Payments Manual: personal transfers and compensation of employees.

In Bangladesh, remittances sent by expatriate Bangladeshis are termed and accounted for as "wage earners remittance" without making any sub-classification. This definition does not include transfers through informal channels, such as, hand carries by friends or family members or in kind, like of jewelry, clothes, or other consumer goods, or through Hundi[1] (Azad, 2003).

**Economic Growth**

Economic growth is the increase in the amount of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP. It is a positive change in the output, or production, of a country or an economy. Economic growth can be measured in nominal terms, which include inflation, or in real terms, which are adjusted for inflation. Moreover, economic

[1] Hundi is an informal value transfer system based on the performance and honor of a huge network of money brokers which are primarily located in the Middle East and the Indian subcontinent.

growth is understood as an increase in what an economy can produce if it is using all its scarce resources. An increase in an economy's productive potential can be shown by an outward shift in the economy's production possibility frontier (PPF).

## 5.3 Conceptual Framework

By taking ideas from Okuda (2010) a conceptual framework of the macroeconomic relationship of migration, remittances and economic growth is presented to show how these three concepts are related with each other. Figure 5.1 shows the diagrammatic expression of conceptual framework of migration, remittances and economic growth nexus. The framework is described within the following transmission mechanism.

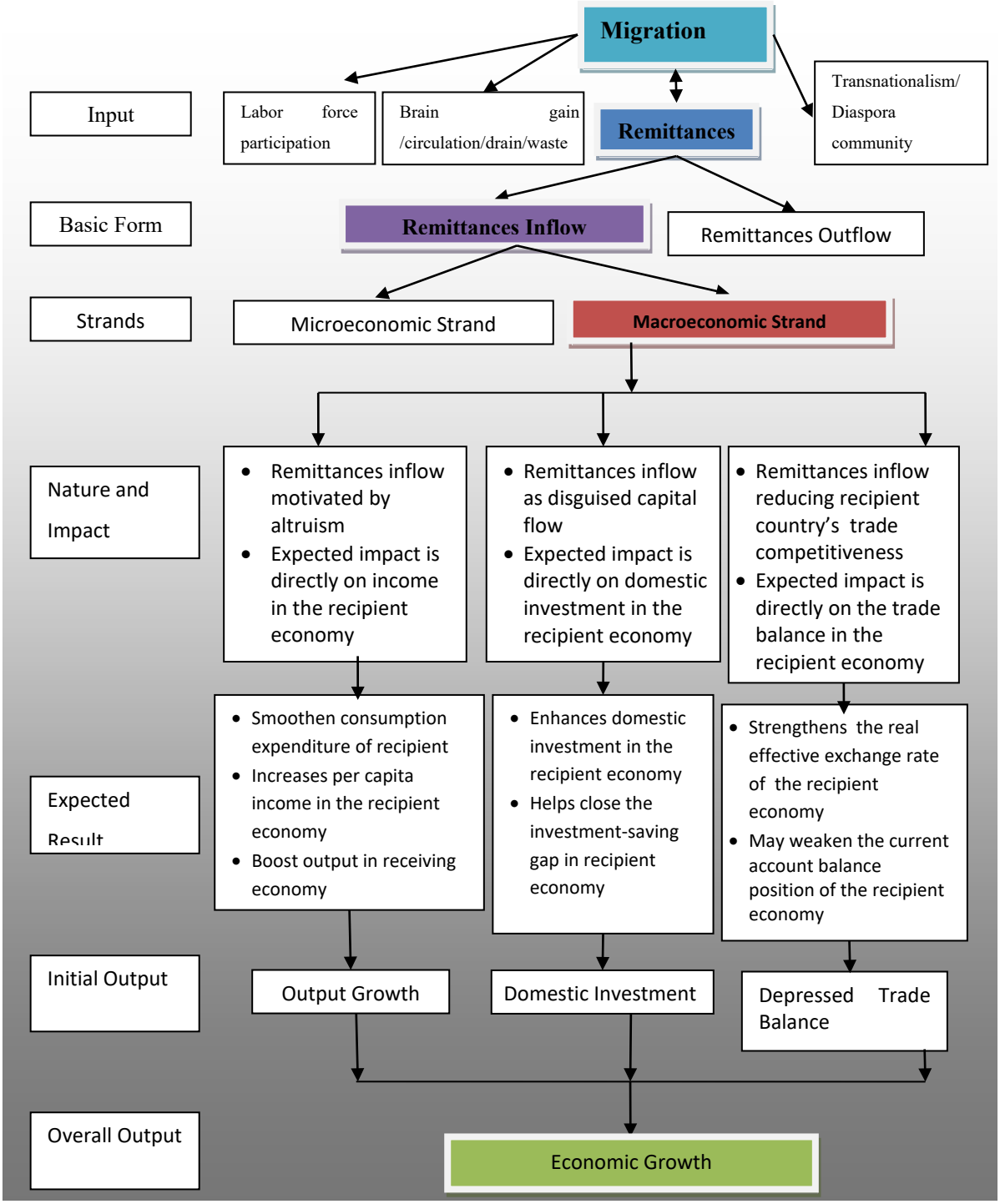
First, at macro level, migration provides possible tools for promoting growth and development as it is regarded as an export of manpower. In this study, migration is also shown as a determinant of remittances. That is why, we have shown a bidirectional arrow between migration and remittances.

There are four channels through which migration can impact on economic growth of labor sending countries. Firstly, it can bring about a change in labor force participation, hence, call for a change in the average skills level of labor thus affecting the quality of labor, a reduction in unemployment and a change in total income or output. The second channel through which migration can impact on economic growth is remittances. We provide description of this channel on how and through which factors remittances impact economic growth within the framework. Thirdly, in transnationalism and Diaspora[2] community, migration can promote transfer of skills and knowledge, foster business partnerships and foreign direct investment, and enhance translocal provision of public goods. Finally, through return migration channel, migration may provide the benefit of brain circulation or brain gain, or it may provide negative consequences on economic growth by influence of brain drain or brain waste, thus depriving the economy of the skilled and most productive workers. Now consider the most visible and tangible outcome of migration, that is remittances.

---

[2] Diaspora means emigrants and their descendants, who live outside the country of their birth or ancestry, either on a temporary or permanent basis, yet still maintain effective and material ties to their countries of origin.

**Figure 5.1: Schematic Frameworks of Migration, Remittances and Economic Growth**




Second, remittances may be in the form of inflows or outflows. There are macroeconomic and microeconomic strand in analyzing the growth effect of remittance inflows. The

macroeconomic impact of remittances on growth and development depends on the motives of remitting remittance inflows.

Third, remittances motivated primarily by altruistic considerations tend to be countercyclical in its effect on the receiving economy. Within this context, remittances flow is likely to smoothen consumption expenditure of recipient households at all times, increase per capita income and boost aggregate output in the receiving economy. Overall, the occurrence of remittance receipts motivated by altruism positively impacts on economic growth as well as the economic development of the receiving economy

Fourth, remittances motivated essentially by migrant's self interest tend to flow as disguised capital into the receiving economy. The overall assumption here is that remittances flow responds to real investment opportunities in migrants' country of origin. Thus, it represents direct investments by migrants in the receiving economy. The consequence is that remittances as disguised capital flow enhance domestic investment in the recipient economy and help close the investment-saving gap in recipient economy, hence, positively impact on economic development of the receiving country.

Fifth, remittances inflow may be so significant in volume as to result in an artificial appreciation of the real exchange rate of the receiving economy. In this case, remittances inflow may reduce the foreign trade competitiveness which in turn, weakens the real external balance and by implication, the current account balance position of the recipient economy. Consequently, remittances halt the receiving country's trade balance via a reduction in exports of traded goods. Overall, the occurrence of remittance receipts in volumes that reduce the foreign trade competitiveness of the receiving economy, adversely impact the trade balance as well as the economic development of the receiving economy.

Finally, positive output growth, increased domestic investment and depressed trade balance impact overall economic growth of a remittance receiving economy.

## 5.4 Conceptual Models

On the basis of the framework discussed in Section 5.3, we present the conceptual models on the basis of economic theories. Firstly, we give the model of macroeconomic determinant of remittances by considering a representative migrant's utility function. Then

we provide remittance- growth model to measure the relationship between remittances and economic growth within the framework of a neo-classical growth model.

### 5.4.1 Theoretical Model of Macroeconomic Determinants of Remittances

Considering the theoretical ideas of Lucas and Stark (1985) and taking the ideas of mathematical formulation of Rapoport and Docquier (2005), Vargas-Silva and Huang (2005) and Adenutsi (2014), an optimal theoretical framework is designed to determine the macroeconomic determinants of remittances in South Asian countries. Within this framework, a representative migrant maximizes his or her life time consumption/utility and transfers/remittances to his or her family at home with respect to his/her income constraint, initial divergence constraint and impetus effect constraint. The utility function is composed of consumption goods and remittances.

The income constraint reflects the fact that the migrant's total disposable income must be equal to the total expenditure on his/her own consumption of composite goods, remittances and financial asset holdings. The initial divergence constraint highlights the initial difference in the migrants' home country and host country conditions. It is actually a total wealth constraint. The impetus effect constraint suggests that the total amount of funds transferred is dependent upon the prevailing economic conditions and regulatory environment in the migrants' home country. The transversatility conditions are imposed to reflect the fact that no individual/household can be in a 'Ponzi-Game' situation. That is, none can continue borrowing perpetually without loan repayment and at the terminal stage, the migrant must repay all his/her debt. For optimality in consumption, the individual dies with no saving. The steady-state solution of the model allows us to hypothesize how remittances respond to changes in the economic conditions of the host and home country and to determine the quantity of composite goods and amount of remittances that individual migrant chooses to maximize his/her utility. With this framework, the explicit intertemporal equilibrium relationships between the inflows of remittances and other relevant macroeconomic factors at home and host country are established.

We assume that we have a two period model in which remittances are sent in the first period. First period represents an initial stage of international migration of an individual

(emigrant) typically from a less developed country (home country) to a more developed country (host country). Thus, the economically active migrant resides in a relatively industrialized country where she/he is engaged in an income-generating economic activity whilst her/his dependants continue to live in her/his low income home country. In this context, the utility of the migrant depends on his/her personal consumption in the host/foreign country ($C_f$) and the consumption of his/her family at home country ($C_h$). The utility function of the representative migrant in the first period is written as:

$$U(C_f, C_h) \text{ with } U_1 > 0, U_{11} < 0, U_2 > 0, U_{22} < 0$$

For simplicity, we assume that utility is additively separable. The consumption expenditure of the migrant's household living at home depends on the income and remittances received ($\emptyset R$), where parameter $\emptyset$ represents the cost associated with sending remittances and ($\emptyset R \leq 1$). This implies that although a migrant remits *r* dollars back home but the household only receive a fraction ($\emptyset R$).

Migrant's household income is separated into two components. The first component is the fraction of household income that is not susceptible to changes in the macroeconomic conditions of the home country ($Y_h$). The second component is the fraction of household income, $\gamma Y_h$, that is susceptible to changes in the macroeconomic conditions on the home country. Therefore, the income received by the migrant's household living at home is given by:

$$Y_h + \gamma Y_h$$

with $\gamma$ capturing the relationship between the economic conditions in the migrant's native country and the average income earned by his/her family at home. It is assumed that $\gamma \geq 0$ which implies that an improvement in the economic conditions in the home country is associated with an improvement in the household, even though the magnitude of $\gamma$ may differ across households.

The consumption function of the migrant's household living at home is given by:

$$C_h[(Y_h + \gamma Y_h), \emptyset R]$$

The consumption function is additively separable with $C_{h_1} > 0$, $C_{h_2} > 0$, $C_{h_{11}} < 0$ and $C_{h_{22}} < 0$. Likewise, the income of the migrant is in the form of $Y_f + \eta Y_f$ such that $\eta$ reflects the relationship between the economic conditions and the income the migrant earns in the host country. In addition to consuming and sending remittances, the migrant saves a percentage of his/her income in the home country, $s$. Thus, the income constraint of the migrant during the first period can be written as:

$$Y_f + \eta Y_f = C_f + R + s$$

where, $Y_f$ is the fraction of emigrant's income in the first period that is not susceptible to changes in macroeconomic conditions of the host country, $\eta Y_f$ is the fraction that is susceptible to change and $R$ is the proportion of the migrant's disposable income which she/he remits home, whilst '$s$' represents the fraction of migrant's income saved in the home country. In the second period, migrant's household migrates to the host country and joins the emigrant. Similar results can be obtained assuming that in the second period the emigrant returns to the home country and joins the household. If this assumptions hold, the optimization problem of a migrant is written as

$$\max_{\{c,r,s\}} U(C_f, C_h) + \psi V(C_z) \tag{5.1}$$

subject to, $$Y_f + \eta Y_f = C_f + R + s \tag{5.2}$$

and $$C_z = Y_z + \eta Y_z + (1 + i)s \tag{5.3}$$

where, $V(C_z)$ is the utility from second period consumption with $V_1 > 0$, $V_{11} < 0$, and $i$ is the interest rate (intuitively the deposit rate) of the host country, $\psi$ is a discount factor, and $Y_z$ and $\eta Y_z$ have similar interpretations to $Y_f$ and $\eta Y_f$ but for the second period. The first order condition of the optimization problem yields:

$$U_1 = \psi V_1 (1 + i) \tag{5.4}$$

$$\phi U_2 C_{hR} = \psi V_1 (1 + i) \tag{5.5}$$

From equations (5.4) and (5.5), we get the derivative of $R$ with respect to host country income $Y_f$ as:

$$\frac{\delta R}{\delta Y_f} = \frac{\eta\psi U_{11}(1+i)^2}{D} \geq 0 \tag{5.6}$$

where D is the determinants of the matrix of the second derivatives that can be written as:

$$D = U_{11}\psi V_{11}(1+i)^2 + \emptyset^2\psi V_{11}(1+i)^2\left[U_{22}C_{h_r} + U_2 C_{h_{rr}}\right] + U_{11}\emptyset^2[\left(C_{h_r}\right)^2 U_{22} + \quad U_2 C_{h_{rr}}] > 0$$

The central implication of equation (5.6) is that an improvement in the economic conditions of the host country positively affects remittance flows from the host country to the migrants' home country. This is so because an increase in $Y_f$ implies improvements in economic conditions in the host country which enable a migrant to remit more as $\eta \geq 0$, given that households spend their incomes on normal goods. It can also be shown that an improvement in the economic conditions of the migrant's home country is associated with a decrease in remittance inflows in the home country, that is:

$$\frac{\partial r}{\partial Y_h} = (-)[\frac{\emptyset\gamma U_{22}C_{h_R}C_{h_{y_h}}\left[U_{11}+\psi V_{11}(1+i)^2\right]}{D}] \leq 0 \tag{5.7}$$

Equation (5.7) is non positive when a migrant is remitting for altruistic purposes. Under this assumption, the migrant remits low amount of funds to his/her family in the home country because the target household is better off ($\gamma \geq 0$).

This framework allows us to hypothesize how remittances respond to changes in the conditions of the host and home country. We estimate those responses including some other responses in the empirical section.

### 5.4.2 Theoretical Model of Remittances-Economic Growth

The remittances-growth nexus in South Asian countries is explored by adopting Neo-classical growth model that considers capital accumulation and technological progress as driver of economic growth. This research attempts to address the issue of remittances-growth nexus by following an extended neo-classical growth model proposed by Mankiw, Romer and Weil (1992). It introduces remittances into the model and then, empirically tests the impacts of remittance flows on economic growth and development in a dynamic

panel data model. Specifically, this study evaluates whether remittance flow is a significant determinant of growth when it is integrated into the neo-classical growth model. Neoclassical remittance growth model starts with the simple following model: assuming that remittances are sent by altruistic motive. The assumption of altruistically motivated remittances is adequately captured within a system of equations characterized by three endogenous variables in three equations namely: growth rate of output (*RGDP*), workers' remittances (*REM*), and per capita income (*PCI*). The first equation is a neoclassical production function of the Cobb-Douglas form in which output (GDP) is specified as a function of labor (L), capital (K), workers' remittances, and a technological factor or efficiency parameter (A). This equation can be written explicitly as follows:

$$\text{RGDP} = f\,(\text{A, L, K, REM, PCI}) \tag{5.8}$$

Where A is the technological efficiency factor within the system and (5.8) can be re-written in more explicit terms as:

$$RGDP = AL^{\alpha}K^{(1-\alpha)}REM\ PCI \qquad (0 < \alpha < 1) \tag{5.9}$$

where α is the relative share of labor in total output and (1-α) is the relative share of capital in total output. On a *priori* ground, the followings are expected:

$$\frac{\delta RGDP}{\delta L}, \frac{\delta RGDP}{\delta K}, \frac{\delta RGDP}{\delta REM}, \frac{\delta PCI}{\delta REM} > 0$$

In turn, the second equation endogenizes PCI as a function of EXR, INF, FDI, ODA,TRAD, GFCF, GFCE, DCPS, PR and the one period lag values of growth ($RGDP_{i,t-1}$) and it can be expressed as:

$$PCI = f(RGDP_{t-1}, EXR, INF, FDI, ODA, TRAD, GFCE, DCPS, PR) \qquad (5.10)$$

The a *priori* expectations are

$$\frac{\delta PCI}{\delta RGDP_{t-1}}, \frac{\delta PCI}{\delta ODA}, \frac{\delta PCI}{\delta GFCE} > 0, and \ \frac{\delta PCI}{\delta INF}, \frac{\delta PCI}{\delta EXR} < 0$$

The structural forms of Equations (5.9 –5.10) are rewritten in their linear forms as shown below.

$$RGDP_{it} = \delta_{11i} + \delta_{12i}L_{it} + \delta_{13i}K_{it} + \delta_{14i}REM_{it} + \delta_{15i}PCI_{it} + \varepsilon_{1it} \qquad (5.11)$$

$$PCI_{it} = \delta_{21i} + \delta_{22i}RGDP_{i,t-1} + \delta_{23i}EXR_{it} + \delta_{24i}INF_{it} + \delta_{25i}FDI_{it} + \delta_{25i}ODA_{it} + \delta_{27i}TRAD_{it} + \delta_{28i}GFCE_{it} + \delta_{29i}DCPS_{it} + \delta_{210i}PR_{it} + \varepsilon_{2it} \qquad (5.12)$$

$$i = 1, 2, \dots 5 \ (countries); \ \ t = 1, 2, \dots, 38 \ (years)$$

Neo classical growth model in (5.11) is intended to capture the role played by remittances in the economic growth of the remittances recipient economy as well as the distributional effect of previous period growth levels on the economy. By substituting equation (5.12) into equation (5.11), a single equation of the linear dynamic panel data model type is obtained. After rearranging finally we obtain an equation as:

$$RGDP_{it} = \delta_{15i}\delta_{22i}RGDP_{i,t-1} + \delta_{12i}L_{it} + \delta_{13i}K_{it} + \delta_{14i}REM_{it} + \delta_{15i}\delta_{23i}EXR_{it} + \delta_{15i}\delta_{24i}INF_{it} + \delta_{15i}\delta_{25i}FDI_{it} + \delta_{15i}\delta_{25i}ODA_{it} + \delta_{15i}\delta_{27i}TRAD_{it} + \delta_{15i}\delta_{28i}GFCE_{it} + \delta_{15i}\delta_{29i}DCPS_{it} + \delta_{15i}\delta_{210i}PR_{it} + \{(\delta_{11i} + \delta_{15i}\delta_{21i}) + (\delta_{15i}\varepsilon_{2it} + \varepsilon_{1it})\} \qquad (5.13)$$

where,

RGDP= Real Gross Domestic Product;

L = Total Labor Force represented by economically active population;

K=Capital stock, represented by gross fixed capital formation

REM= Real Remittance Inflows

EXR= Official Exchange Rate

INF= Inflation Rate

FDI= Foreign Direct Investment

ODA = Official Development Assistance

TRAD= Total trade GDP ratio

GFCE= Government Final Consumption Expenditure

DCPS= Domestic Credit to Private Sector

PR+ Political Rights Index

$\delta$= Vector of parameters to be estimated

$\varepsilon$= Error term

**5.5 Conclusion**

We analyze the relationship among migration, remittances and economic growth within a conceptual framework in this Chapter. Before that we explain the key concepts used in this study. We define the concepts of migrants, migration, remittances and economic growth. From the conceptual framework, we observe that there are strong economic linkages among migration, remittances and economic growth. This framework also reveals that migration is a determinant of remittances and remittances impact on economic growth through some channels namely consumption smoothening, enlarging domestic investment and affecting real effective exchange rate. On the basis of conceptual framework we specify economic models to empirically measure the relationship among the variables and to test the hypotheses that are stated in the Chapter 1. We give macroeconomic determinants of remittance model within the framework of a representative migrant's additive utility function. We also provide remittance-growth model within the framework of a neo classical growth model to measure impact of remittance on economic growth.

# Chapter 6

## Empirical Framework of the Study

### 6.1 Introduction

This chapter details the empirical framework for assessing the macroeconomic determinants of remittances and the relationship between remittances and economic growth. The two models are used in this study to test the two hypotheses which state that remittances in South Asia are mostly determined by home and host country's economic conditions, number of emigrants and macroeconomic factors of home country and that remittances do not significantly promote economic growth in South Asian countries, i.e., there is no relationship between workers' remittances and economic growth in South Asian countries. We describe the importance of remittances, the channels affecting remittances and of remittances' determinants. An empirical framework of remittance determinant model which is elaborated in Chapter 5 based on additive utility function. We give a short description of sources of economic growth, and establish argument in favor of remittances as one of the main sources of economic growth. An empirical framework of remittances and economic growth is given on the basis of economic model described in Section 5.4.2 of chapter 5 in econometric form. Definitions and expected signs of the variables used in the remittance determination model, and remittances and economic growth model are also mentioned.

The outline of this Chapter is as follows: Section 6.2 discusses the determinants of remittances; Section 6.3 gives empirical model and methodological issues of remittances determination model; definition and expected signs of the variables used in the remittances determination model are described in Section 6.4; Section 6.5 describes remittances as a source of economic growth; empirical framework of remittances and economic growth model is elaborated in Section 6.6. Descriptions and the expected signs of the variables used in the remittances- economic growth model are given in Section 6.7 and Section 6.8 concludes the Chapter.

## 6.2 Determinants of Remittances

Remittances to developing countries are increasing substantially in the recent years. According to Migration and Development Brief 23 (World Bank, 2014), international migrant remittances to developing countries are projected to grow by 5.0 percent to reach US$435 billion in 2014, accelerating from the 3.4 percent expansion of 2013 and rise further by 4.4 percent to reach US$ 454 billion in 2015. Global remittance flows, including flows to higher-income countries, are expected to follow a similar pattern, rising from US$582 billion in 2014 to US$508 billion in 2015. In 2013, remittances are more than three times larger than Official Development Assistance (ODA), steadier than both private debt and portfolio equity flows, and excluding China significantly exceeded foreign direct investment (FDI) flows to developing countries. They are also more stable component of receipts in the current account, reliably bringing in foreign currency that helps sustain the balance of payments and dampen gyrations. The main drivers of growth in remittance flows are migrant stocks and the expansion of incomes in the destination countries. Remittance flows from major oil producing countries track closely with oil prices, as do other factors affecting migrant employment opportunities. Exchange rates and the cost of sending remittances are also important determinants. Appreciation of the remittance source country's currency against that of the recipient country boosts remittance flows. Similarly, the falling costs and increasing convenience of sending money are helping lift remittance flows, especially through formal remittance channels. Conversely, compliance with international anti-money laundering and counter financing of terrorism regulations may be a significant cost factor putting upward pressure on prices, which may in turn leave substantial flows in underground channels.

In 2014, South Asia receives US$117 billion as remittance income from the rest of the world up from US$111 billion in 2013 and US$ 82 in 2010. In 2013, remittances to India, the world's largest recipient, are likely to expand by only 1.5 percent in 2014 to US$71 billion, partly as a result of firming exchange rates. However, partial year data for this year point to very strong growth in Pakistan (15.5 percent), Nepal (12.2 percent), and Sri Lanka (12.1 percent). Growth in remittances to Pakistan may also be motivated on humanitarian grounds following the floods in mid-2014. The expansion is being led by flows from the Gulf Cooperation Council (GCC) countries, where the number of skilled workers has increased, and unskilled migrants are also again finding opportunities (as new migrants

take the places of deportees). In Nepal, the outflow of migrant workers rose 15 percent in fiscal 2013-14 compared with a year earlier, supporting robust growth in remittances that have been expanding at double-digit rates since 2010. However, within this region, Bangladesh is now facing a slow growth in remittance inflows due to sending relatively less migrants in abroad than previous period.

The amount of remittances coming through the formal channel depends upon several factors that play important role in the decision matrix of remittances. According to an OECD (2005) study, the level of migrants' remittance flows depends on both the migrants' ability, i.e., their income and savings from income, and their motivations to remit savings back to the home country. The existing literature has identified two types of determinants of remittance inflows. The first category refers to the microeconomic determinants that operate mostly at household level and link with socio-demographic characteristics of migrants and their families. These factors include migrant's income, gender, marital status, age, education level, number of years in abroad, migration costs, risk, household income, wealth, shocks and dependency ratio, living expenses in the country of destination and number of children. The second type of determinants includes economic, political and institutional factors affecting the economy in general. It is generally known as macroeconomic determinants of remittances generally include number of migrants, economic activity in the host and home countries, exchange rates, interest rate, unemployment rate, inflation rate, financial development, monetary policy, fiscal policy, political and economic environment, cost of transferring remittances and black market premium.

Schrooten (2005) categorizes the factors determining remittance inflows into two: objective and subjective factors. Objective factors are related to macroeconomic conditions in the home country that include the average income level and the unemployment rate. The subjective factors are duration of stay of migrants in the host country, level of migrants' skills, earnings of the migrants as well as economic condition of the family at home.

In general, empirical research on determinants of remittance inflows has focused on microeconomic survey data. Microeconomic case studies have, however, been criticized for undervaluing the macroeconomic impact of remittances by focusing on isolated

community (Buch and Kuckulenz, 2004). That is why, this study deviates from the microeconomic perspective and concentrates on determining macroeconomic factors affecting remittance inflows.

In addition to microeconomic and macroeconomic factors, remittance inflows are motivated by the following factors. First, remittances may be motivated by altruism. Altruism as defined in the Cambridge University Press Dictionary Online is 'willingness to do things which benefit other people, even if it results in disadvantage for yourself'. The altruistic theory of remittances from the macroeconomic perspective suggests that remittances are higher when negative shocks and high frictions in the labor market occur in low-income countries, creating an incentive for the active population to migrate to the industrialized world in search of higher-wage jobs. Given an existing strong social tie between a migrant and his/her family left behind, the theory of pure altruism predicts that the migrant will remit more funds to his/her family back home during severe economic hardships in the home country and reduce both the amount and the frequency of funds transferred during economic boom at home. Accordingly, with a decrease in real per capita income (or during economic recession), inflation episodes, exchange rate instability and constraints in the credit market of a typical labor-exporting country, the migrant is expected to remit more money and more regularly to his/her family back home.

Secondly, remittances may also reflect a portfolio choice about investment opportunities in the home and host country. This implies that as economic conditions in labor-exporting countries improve relative to the labor-importing country, more remittances are received in the labor-exporting countries through higher migrant savings and investment (Coulibaly, 2009). For instance, increased real per capita income in a migrant's native country is considered by the migrant as a positive signal of higher return on investment at home. Also, with higher economic prospects at home, a migrant, who hitherto had lost confidence at home and decided to return home never, could now consider returning home in the future. Such a migrant can increase his/her savings at home. It is for this reason that a higher real deposit interest rate of a migrant's home country relative to the migrant's host country is expected to impact positively on remittance inflows in the labor-exporting country. In a similar manner, as the national currency of a migrant's home country becomes stronger and stable domestically (low inflation) and internationally (exchange appreciation), the migrant may regain his/her confidence in his/her home country and,

consequently, remit home more funds for the commencement of income-generating projects. Thirdly, remittances can be driven by mixed motives rather than pure altruism and pure self-interest. This is most likely to be the case at the macroeconomic level where economic models are formulated from the mixed motive viewpoint, which involves a combination of pure altruistic motive and pure self-interest motive. Finally, once migrants have decided how much to remit, must decide how to send it. High official costs such as money transfer fee or the presence of dual exchange rate or the level of financial development would affect the extent to which remittances are transferred formally and recordedly.

## 6.3 Empirical and Methodological Issues of Remittances Determination Model

The empirical model of remittance determinants based on the theoretical framework is described in the Section 5.4.1 of chapter 5 can be specified within a framework of dynamic panel data method. The general dynamic panel data model can be written as

$$R_{it} = \alpha_i + \rho R_{i,t-l} + X_{it}^{'}\beta + \varepsilon_{it} \qquad (6.1)$$

where the residuals $\varepsilon_{it}$ are white noise error such that $\varepsilon_{it} \sim N(0, \delta_{\varepsilon}^2)$ and $\alpha_i \sim iid\ (0, \delta_{\alpha}^2)$ and $\rho$ is a scalar such that $|\rho| < 1$; i= 1, 2, 3…5 is an index for five South Asian countries; t= 1, 2, 3, ….T is an index for time variants, in this case years, so that T=38 for the overall period, 1975-2012. The endogenous variable R is a measure of remittances, $X_{it}^{'}$ is a row vector of explanatory variables that affect the inflow of remittances with the dimension k where k=n×1 and n is the number of exogenous variables. $R_{i,t-1}$ is included as an explanatory variable so as to capture the theoretical conviction of dynamic effects of remittance inflows. This suggests that migrant remittances could either decay or decrease in value overtime, often by the second generation as family and social ties become weak (Glytsos, 1997). Moreover, the inclusion of the lagged dependent variable in the regression model (6.1) is justified by two reasons. First, by including the lagged value of remittances as a regressor we control for all the unobserved factors which affect remittances and which, at the same time, are potentially correlated with other macroeconomic explanatory variables in the model. Thus, the inclusion of the lagged

dependent variable in the regression model allows avoiding the problem of omitted variable bias. Second, remittances are persistent as they tend to adjust to a certain long-run desired level. Hence, the inclusion of dependent variable captures this effect (Melkadze, 2012).

The explanatory variables are official exchange rate, home country inflation rate, migrant's host country income, migrant's home country income, broad money as a percentage of GDP in the home country, number of migrants to population ratio in the home country, and institutional quality. A time-dummy (D1) is introduced as an explanatory variable to capture post-9/11, 2001 effect such that D1=0 for 1975-2001 and D1=1 for 2002-2012. The introduction of D1 is also important as it helps to prevent any possible cross-individual correlation or contemporaneous correlation. $\rho$ is the unknown parameter of the lagged endogenous variable, $\beta$ is the unknown parameter vector of the k exogenous variables and $\alpha_i$ shows the individual country specific fixed effects. A more specific version of (6.1) can be written as:

$$R_{i,t} = \propto_0 + \sum_{\rho=1}^{n} \alpha_\rho R_{i,t-\rho} + \alpha_1 PCGDP_{f_{i,t}} + \alpha_2 PCGDP_{h_{i,t}} + \alpha_3 OEXR_{i,t} + \alpha_4 INF_{i,t} + \alpha_5 M2GDP_{i,t} + \alpha_5 PR_{i,t} + \alpha_7 D1_{i,t} + \alpha_8 Migpop_{i,t} \quad (6.2)$$

where

$R_{i,t}$ is the remittances to GDP ratio,

$R_{i,t-\rho}$ is the lagged remittances to GDP ratio,

$PCGDP_{f_{i,t}}$ is the host country's per capita GDP,

$PCGDP_{h_{i,t}}$ is the home country's per capita GDP,

$OEXR_{i,t}$ is the home country's official exchange rate,

$INF_{i,t}$ is the home country's inflation rate,

$M2GDP_{i,t}$ home country's broad money as a percentage of GDP,

$PR_{i,t}$ denotes index of political rights of home country,

$D1_{i,t}$ is the time dummy and

$Migpop_{i,t}$ indicates the number of emigrants to population from home country.

The specification in (6.2) cannot be easily estimated with the standard panel data methods of Ordinary Least Square (OLS), panel Fixed Effect (FE) or Random Effect (RE) because

of endegeneity problem. Generally, GMM method proposed by Arellano and Bond (1991) is employed to estimate the parameters in dynamic panel data model. In this method first differenced transformed series are used to adjust for the unobserved individual specific heterogeneity in the series. But Blundell and Bond (1998) find that this method has poor finite sample properties in terms of bias and precision, when the series are persistent and the instruments are weak predictions of the endogenous changes. Arellano and Bover (1995) and Blundell and Bond (1998) propose a Systems of Generalized Method of Moments (SGMM) based approach to overcome these limitations in the dynamic panel data models. This method uses extra moment conditions that rely on certain statioanrity conditions of the initial observations. The SGMM estimator combines the standard set of equations in the first differences with suitably lagged levels as instruments, with an additional set of equations in the levels with lagged first differences as instruments. The SGMM estimators are based on the assumptions: 1) the error term is orthogonal to the exogenous variables so that, $E(X_{it}^{'}\varepsilon_{it}) = 0$, (2) the error term is uncorrelated with the lagged endogenous variable implying that $E(R_{i,t-l}\varepsilon_{it}) = 0$, and (3) the exogenous variables might be correlated with the individual effect in which case $E(X_{it}^{'}\alpha_i) \neq 0$.

## 6.4 Definitions and Expected Signs of the Variables Used in the Determinants of Remittances Model

Definitions and expected signs of the variables used in the model are given in Table 6.1. The study includes remittance-GDP ratio as dependent variable. Our explanatory variables are not strictly exogenous because we include lagged dependent variable as an exogenous variable in the dynamic panel data. In addition to lagged remittance GDP ratio, we use domestic inflation rate, official exchange rate, home and host country's income level, broad money to GDP ratio and political freedom as explanatory variables. Moreover, a time dummy of 9/11, 2001 has been incorporated to see whether there is any change in remittance inflows that come through formal channel.

Our first variable is the income level of the migrant in its host country. Whatever the motivation of the migrant is, the expected sign of the variable is positive. If the earnings of the migrants increase, he will remit more.

Our second variable is the income of the family of the migrant. If the altruistic motivations dominate the remitting behavior, the expected sign of the variable is negative. When the income level of the family in the home country declines, the migrants send more money for his family at home to assure the same level of utility. In the case of insurance motivation, a decrease in the income of the family in the home country will also decrease the remittances, because the migrant will think that his assets at home are not properly taken care of. This also means that the bargaining power of the family members decreases. This is also valid for investment motives. When the income of the family in the home country increases, the migrant will send more money for financial investments or for inheritance reasons, because his potential of inheritance will increase.

Third variable is exchange rate. Bilateral exchange rate between host and home country plays an important role in workers' motive to remit. Two opposing effects may arise as a result of exchange rate depreciation; namely, wealth effect and substitution effect (Bouhga-Hagbe, 2004). Depreciation or devaluation of home currency reduces the prices of goods and services in the foreign currency, which allows a remitter to buy more foreign goods rather than domestic ones. On the other hand, the remitter is better-off as her income increases in the domestic currency, thereby encouraging her to buy more goods (including real estates) and services in home country. Bouhga-Hagbe (2004) points out that even though depreciation may temporarily increase the flow of workers' remittances in the home country, in the long run, it might undermine remitters' confidence in the economy. When altruistic motivations are concerned, for an appreciation of the origin country's currency, the expected sign of the variable is positive. To ensure the same amount of income in the national currency, the migrant is obliged to send more in foreign currency. However, in case of depreciation, migrant can decrease the amount of remittances because he can ensure the same amount in the local currency with less foreign currency. If altruistic motive are the dominant motivation in the remitting decision, the expected sign of this variable is negative both for investment and insurance motivations. The impact of an appreciation of the local currency in case of insurance motivation would be the same as the impact of inflation. The migrant would prefer to remit more later to offset the impact of the appreciation of the local currency (because he must send more money in the form of foreign currency). In case of investment motives, especially for the investment in housing, the migrant is expected to decrease the amount of remittances in

case of an appreciation of the origin country's currency. This is because the cost of the construction increases in the currency of his host country.

**Table 6.1: List of Variables, Definition and Expected Signs**

| Name of the variables | Definition of the variables | Expected signs |
|---|---|---|
| Remittance-GDP Ratio | Personal remittances comprise personal transfers and compensation of employees. Data are the sum of two items defined in the sixth edition of the IMF's Balance of Payments Manual: personal transfers and compensation of employees. It is measured as a ratio of GDP. | Dependent Variable |
| Lagged Remittance-GDP Ratio | The immediate past values of the Remittance-GDP ratio. | +/- |
| Inflation Rate | Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. | +/- |
| Official Exchange Rate | The annual value of domestic currency in terms of US Dollars. | +/- |
| Per Capita GDP of Home Country | GDP per capita of a typical South Asian country is gross domestic product divided by midyear population. Data are in current U.S. dollars. | - |
| Per Capita GDP of Host Country | Average GDP per capita of a typical South Asian country's GDP divided by midyear population. Data are in current U.S. dollars. | + |
| Broad Money to GDP Ratio | Broad money is the sum of currency outside banks, demand deposits other than those of the central government, time, savings, and foreign currency deposits of resident sectors other than the central government, bank and traveler's checks, and other securities such as certificates of deposit and commercial paper. | +/- |
| Political Rights | Political Rights are measured on a one-to-seven scale, with one representing the highest degree of political freedom and seven the lowest. | +/- |
| Post 9/11,2001 | A dummy to capture post-September 11, 2001, when the US and other migrant-host countries improved regulation on international money transfers, which has discouraged migrants from using informal channels to remit. | + |
| Migrant Population Ratio | Total number of migrants are divided by population size to get data on migrant population ratio | + |

Fourth variable is the domestic inflation in the home country. When the altruistic motives dominate the remitting decision, the expected sign of the inflation variable will be positive. With an increase in the inflation in the home country, the real income of the family will decrease. To offset the decrease, the migrant will remit more. However, in case of insurance motivation, the migrant will prefer to remit later for not to afford the inflationist effect. In case of investment motivation, inflation would not have any effect.

Fifth variable is broad money to GDP ratio. The more developed and efficient the financial sector of recipient countries is, the more likely that it allows migrants to send money through formal channels as it lowers the transaction costs and increases the accessibility of recipients to the money sent through the formal banking system. Hence, we will assess whether financial sector development has any positive impact on remittance flows using the ratio of broad money to GDP.

Our sixth variable is Political Rights (PR) that is extracted from the Freedom House Foundation (2014). In this case, the political rights index is used to capture the qualities of democratic governance and institutions in a typical South Asian home-country. It ranges between 1 for low democratic governance (including dictatorship and autocratic regimes) and weak institutions, and 7 for high democratic governance and strong institutions. It is assumed that good institutional quality has a positive impact on remittance inflows.

Seventh variable is used as Dummy variable. World Bank (2006) observe that the recent worldwide surge in the flow of workers' remittances has been brought about mainly by regulatory tightening following the terrorist attack on USA on September 11, 2001. Two different factors are supposed to have contributed in this regard; one is the increase in monitoring by financial regulators on remittance service providers, which caused a shift of remittances from informal to formal sources. Another may have resulted from the uncertainty of deportation among undocumented migrants, inducing them to send a larger proportion of their income. Gupta (2005) includs a dummy variable (D2001) to reflect post September 11, 2001 effect had had no unusual pattern in remittances. Therefore, D1 is used to reflect post 9/11, 2001 effect and it takes the value of 1 for 2002-20012 periods and 0 otherwise for inflow of workers' remittances from the rest of the world.

Our final variable is emigrant population ratio. It is commonly believed that increase in the number of migrant workers abroad is directly correlated with level of remittances.

However, compositional features of migrants are also important in determining the amount of remittance sent home (World Bank, 2006). Moreover, Freund and Spatafora (2005) find in their work that the level of migration is likely to be the most important determinant of the size of remittances. This variable will be expressed as the logarithm of migrants abroad in our estimation. The key issue that needs to be properly addressed is the endegeneity bias since the desire to send remittances is among the main reasons behind the migration decision of most people. We control for the endegeneity bias through the IV estimation. The female labor market participation rate, the population density, the percentage of urban population, and the passport cost as a share of GDP per capita of home country are employed as an instrument for the level of migration.

## 6.5 Impact of Remittances on Economic Growth

In the history of economic thought, there are different views on identifying the factor behind economic growth. In ancient and medieval period, economic growth is closely related to the extent of cultivated land, natural resources and dimension of labor force in any particular state entity. During the mercantilist period, economic growth is seen as the increase of the total quantity of gold or silver coins through trade. The Physiocrats discover that the obstacles to human well-being are not of natural origin, but are created by man. In their view, only production capacity can increase economic growth through capital accumulation. Hume (1739) shares the idea that the development of international trade has increased diversity and wealth in all countries. Smith (1776) identifies capital accumulation, division of labor and technological progress as sources of growth. Malthus (1798) observes that population expands labor supply, but, given the limited land, this doesn't increase productivity, but decreases production per capita. According to Ricardo (1817), economic growth decreases and will cease because land is limited and therefore marginal productivity will decline. In Mill`s (1848) view, growth may be only temporary in a world with limited resources, as population growth exerts pressure on agricultural land and food supply. He points out that a stationary economy is an opportunity to achieve a scale transformation of society values. According to Marx (1859), surplus labor value generated from labor exploitation is considered as an important ingredient of economic growth. Marshall (1881) assumes that economic progress will be achieved by businessmen who adopt economic chivalry. The work environment created by such entrepreneurs has

beneficial effects on work and improving work conditions leads to better living standards. Schumpeter (1934) argues that the main feature of capitalism is innovation through the process of creative destruction. For Kuznets (1955), the economic growth of one country can be defined as a long run increase of the capacity to deliver various economic goods to the population, based on advanced technologies and institutional and ideological adjustments. Solow (1956) shows the way in which an increase in saving rate, population increase and technological changes influence the level of economic growth during certain time intervals. From the Keynesian perspective, economic growth rates vary depending on aggregate demand to which companies react by producing more or less goods and services for the consumer market. In his model, Keynes (1936) argues that economic growth adjusts itself, evolving cyclically from bottom up. In von Mises`s (1949) conception, labor productivity growth is achieved through specialization and trade. Labor is the human effort which includes what modern economists call "human capital". Samuelson (1948) argues that monetary and fiscal policies have an essential contribution to social development and economic growth by sustaining price stability and increasing production capacity. For Porter (1990), the endowment with natural resources or production factors is less important. Things that really matter in obtaining a competitive advantage are capital formation and investment efforts in terms of quality and not quantity. Stiglitz (2006) and Sen (1983) argue that the main focus of development is the quality of life (health, education, leisure) not only the methods of promoting economic growth and structural changes but also a process of enlarging people's choices and capabilities.

Therefore, in empirical macroeconomic literature, different sources are identified as sources of economic growth. While numerous studies have been devoted to physical capital investment and technological change (Solow, 1956), to savings ratio, capital output ratio (Harrod-Domar, 1945), foreign direct investment (FDI) (De Mello, 1999), openness of the economy, investment in human capital (Schultz,1980), research and development (Romer, 1990) as a source of economic growth, relatively little attention has been given to workers' remittances as a potential source of economic growth in developing countries.

The reasons behind little attention to worker's remittances as sources of economic growth are that remittance flows are used for consumption purposes for a long time and their impact on investment is insignificant or totally absent. In other words, remittances are widely used as compensatory transfers between family members who lost skilled workers

due to migration and migrants. But recently this trend has changed because remittances are now profit-driven, and used for investment where the financial sector does not meet the credit needs of local entrepreneurs (Giuliano and Ruiz-Arranz, 2005). Moreover, consumed remittances have positive effect on growth because of their multiplier effect. In this regard, there are two main schools of thoughts on the growth effects of remittances. These two schools of thought include the 'migration optimists' and the 'migration pessimists'. Migration optimists argue for positive growth effects of remittances. They demonstrate the positive indirect growth effects of remittances through economic channels such as increased savings, investment capital, human capital, extra employment and the overall multiplier effects of consumption on aggregate demand and output (Adenutsi, 2010). According to migration pessimists, remittances have either negative growth effects or zero impact on economic growth. They argue that remittances are mostly used for consumption instead of productive investments. They also argue that remittances create moral hazard problems which reduce labor supply in recipient countries (Chami et al. 2009). Migration pessimists also indicate that remittances have negative growth effects as a result of reduced human capital investments, inflationary pressures and Dutch disease effect.

There are both direct and indirect channels through which we are able to know the direct and indirect macroeconomic effects of remittances on economic growth. The direct macroeconomic effects of remittances are measured using a set of control variables such as gross fixed capital formation to GDP, secondary school enrollment as an index of human capital, broad money to GDP as an index of financial development, final government spending as an index of fiscal policy and initial GDP.

Remittances indirectly increase economic growth by reducing output volatility; speeding up the development of financial sector by increasing depth and breadth of banking, number of branches, number of accounts and the ratio of deposits to GDP; forming human capital; financing investment in microenterprises; smoothening consumption and contributing to the stability of recipient economies by compensating for foreign exchange losses due to adverse macro economic shocks, increasing savings, improving a country's credit worthiness and thereby enhancing its access to international capital markets, stabilizing the current account of recipient countries through reducing volatility of overall

capital flows (Chami et al., 2009), providing a monetary base for the creation of new assets, importing scarce inputs and facility benefit the overall community .

Remittances decrease economic growth rate by appreciating foreign exchange rate i.e., Dutch Disease effect[1] (Mandelman and Acosta, 2008), reducing labor market participation, i.e., a situation of moral hazard as remittances take place under asymmetric information and economic uncertainty (Chami et al., 2005), reducing government incentives for implementing sound macroeconomic policy or instituting necessary structural reforms (Catrinescu et al. 2009), disproportionate financing of consumption and inflationary pressures. Therefore, we see remittances have both positive as well as negative impacts on economic growth. We summarize those impacts in Table 6.2:

**Table 6.2 Possible Positive and Negative Impacts of Remittances**

| Level of Analysis | Positive Impacts | Negative Impacts |
|---|---|---|
| Macroeconomic Level | 1. Strengthen balance of payments by provision of foreign exchange | 1. Deteriorate of balance of trade by stimulation of import and appreciation of local currency (Dutch disease effect) negative impact on economic growth |
| | 2. Have stable and counter-cyclical effect | 2. Deteriorate 'social balance' |
| | 3. Provide savings and investment for capital formation and development | 3. Decrease remittance flow as migrant community is more established in the destination country |
| | 4. Facilitate investment in children's education and human capital formation | 4. Create economic dependency on remittances |
| | 5. Raise standard of living of recipients through increasing consumption | 5. Ease pressure on governments to implement reforms and reduce external imbalances (moral hazard) i.e., contribute to the privatization of services that could/should be delivered through public means. |
| | 6. Reduce income inequality | 6. Reduce savings of recipient families and thus negatively impact on growth and |

[1] **Dutch disease** is the negative impact on an economy of anything that gives rise to a sharp inflow of foreign currency, such as the discovery of large oil reserves. The currency inflows lead to currency appreciation, making the country's other products less price competitive on the export market.

| | | |
|---|---|---|
| | | development (moral hazard) |
| | 7. Reduce poverty | 7. Reduce labor effort of recipient families and thus negatively affect on growth (moral hazard) |
| | 8. Increase national income if remittances are transferred through formal channels | 8. Exert negative impact on economy Brain drain and brain waste that are not fully compensated by remittance transfers |
| | 9. Increase creditworthiness Recipient countries in international credit markets | 9. Increase income inequality |
| | | 10. Destabilize of weak economies |
| | | 11. Rise in inflation |
| | | 12. Aggravate regional inequalities between receiving and non-receiving areas; |
| Household /Community Level | 1. Allow family to meet basic needs | 1. Create dependence on remittances and neglect of local productive activities by families |
| | 2. Open up opportunities for investing in children's education, health care etc. | 2. Hardly used for productive investment |
| | 3. Loosen constraints in family budget to invest in business or savings | 3. Redress relative deprivation (access to what others in the immediate environment have) |
| | 4. Work as emergency resources | 4. Generate a demand for imported (rather than locally produced) goods |
| | 5. Increase social security resource base | 5. Increase the price of land, property, construction materials |
| | 6. Face risks (unemployment, disability, accidents, illness) | 6. Exacerbate structural inequalities between recipients and non-recipients |
| | 7. Afford social/family events, strengthen social networks, gain prestige, power and resources | 7. Foster dependency links between senders and recipients and put pressure on senders, leading to the deterioration of their living conditions |

Barajas et al. (2009) use a framework for the building blocks of the theory of how remittance inflows impact economic growth. They identify three channels through which remittances may impact economic growth. Those channels are capital accumulation, labor force growth and total factor productivity (TFP) growth. Capital accumulation can be divided into two types: physical capital and human capital.

Physical capital is primarily understood as machinery or technology that is used in the production process, while human capital as knowledge and technical know-how of the labor force.

The effects of remittances on physical capital accumulation can be observed through easing financial constraints, improving credit worthiness of domestic economy, thus enlarging their access to international capital markets, increasing the macroeconomic stability of domestic economy and counter-cyclical financing.

Remittances can impact economic growth by affecting labor force growth. These can impact labor inputs through labor force participation in the economy or through fertility. There is general view of negative impact of remittances on labor force participation. The reason is that households may simply substitute unearned remittance income for labor income and enjoy more leisure. In addition these flows may be subject to moral hazard problems because remitter and recipients are usually separated with long distances and distance makes it difficult for the remitter to monitor and enforce applicable measures in order to use remittances efficiently. On the other hand, better economic and financial conditions and more leisure time especially among women in the recipient countries followed by the remittance inflows may encourage higher fertility rates. In general, existing literature supports the idea that remittances tend to increase nonparticipation rate of household head and other members in the labor market, as they reduce their labor market effort.

Total factor productivity (TFP) can be affected by remittances through efficiency of domestic investment and the size of domestic productive sectors. In turn, the efficiency of investment may be affected by remittances through changing the quality of domestic financial intermediation. Remittances impact the efficiency of investment, depending on informational advantage or disadvantages on financial intermediation (Barajas et al., 2009). Efficiency of domestic investment generally depends on relative skillness of family

members in allocating capital and the amount of remittances intended to be invested as well. If the recipient makes the decision on behalf of the remitter, it is likely that the decision is not as efficient as one made by a skilled domestic financial intermediary in the case of formal capital inflow. Remittances may result in greater financial development and financial development system may in turn, lead to higher economic growth by increased economies of scale in financial intermediation. However, remittances can also result in exchange rate changes- inflow of funds can result in the 'Dutch disease', i.e., currency appreciation and thus lower exports.

Remittance inflows may result in no or little incentive for the people to monitor and assess the domestic government's performance. Because remittance transfers come from outside and provide a source of income to the households that are not related to the domestic production process. Moreover, migrants transfer more remittances when the home country is at odds and this process shifts costs of poor macroeconomic policy performance at home, at least partially to migrants. It is moral hazard problems for domestic government. This effect of remittances is similar to those of large resource flows and paves the way to the domestic government to engage more in corruption, because access to remittance income makes government corruption less costly for the domestic households to bear. Remittance incomes may have adverse effects on the domestic institutional quality, especially on quality of domestic governance (Abdih et al., 2008).

Whether remittances impact on economic growth depend on specific characteristics of remittances. Analytically, there are two broad categories of remittances: wage or family remittances and capital or productive remittances. Wage remittances are transferred directly for family use either as family consumption, savings for future family consumption or family emergencies or to cover the expenses of the reproduction of family customs and traditions implied by the reproduction of cultural relationships. Family remittances contribute to sustaining the income-spending balance. The impact can be perceived in two different and complementary ways. By contributing to family consumption, they contribute to elevating the standard of living and welfare of receiving homes, at the same time, have an effect on the dynamics of economic inequality and the conditions of poverty. This same contribution to home spending creates multiplier effects in the rest of the local, regional and national economy.

Productive remittances, on the other hand, correspond to various forms of private or social investment, which do not go through family budget. Capital remittances contribute to the savings-investments balance. As a source of investments productive remittances can be considered as an instrument of economic growth, which together with other investment funds, form the basis of development process.

Remittances can negatively affect economic growth by technological capacity of the economy through appreciating the real exchange rate (Chami et al., 2008). Usually, an economy's technical capacity largely depends on the size of its tradable goods sector. Production of some components of traded goods sector such as non-traditional manufactures intended for export can spur technological diffusion and increase the technological capacity for other form in the country. Arrival of remittances can appreciate the economy's real effective exchange rate and render the tradable sector uncompetitive. This 'Dutch disease' effect shrinks tradable goods sector and allow resources to shift to the non tradable goods sectors and thus diminish the growth of technological capacity of the whole economy and subsequently reducing economic growth.

There are two different conclusions regarding the relationship between remittances and financial development and its impact on economic growth. First, remittances' effect on growth is stronger in countries with developed financial systems. Financial development leads to an efficient use of these remittance inflows (Bettin and Zazzaro, 2009). A second set of result suggests that remittances enhance economic growth in countries with less developed financial systems. In this case, they simply substitute to the existing financial system by offering an alternative source of funding to small investors (Giuliano and Ruiz-Arranz, 2005). In both cases, remittances and financial development indicators show positive correlation. In the first case, developed financial systems are more attractive for remittances, whereas in the second case, remittances promote financial development through financial inclusion.

Finally, we can say that theoretical literature does not provide much guidance about the size and or even direction of the impact of remittances on economic growth. According to Chami and Fullencamp (2013), there are different paths through which remittances affect an economy. None of these paths are necessarily active at any given time, that is, many economic and social conditions determine whether any given path is active or significant.

And many of these paths have opposing or conflicting economic effects. Therefore, the appraisal of remittances' impact on economic growth suggests a wide range of multifaceted causal links and presents both positive and negative aspects which may vary depending on the socioeconomic factors pertaining to each country or region. Actually, this is an empirical issue. To solve this inconclusive result of the growth impacts of remittances, we perform an empirical analysis in this research.

### 6.6 Empirical Model of Remittances and Economic Growth

The empirical model of remittances-economic growth is derived from the Section 5.4.2 of Chapter 5. From the equation (5.13) of Chapter 5, we can form the following dynamic panel data model:

$$RGDP_{it} = \pi_1 RGDP_{i.t-1} + \pi_2' X_{it} + \pi_3' W_{it} + U_{it} \quad (6.3)$$

$Where: \pi_1 = \delta_{15i}\delta_{22i}$ *and*

$$U_{it} = \{(\delta_{11i} + \delta_{15i}\delta_{21i}) + (\delta_{15i}\varepsilon_{2it} + \varepsilon_{1it})\} = (\mathrm{v_i} + e_{it}) \quad (6.4)$$

$For: v_i = (\delta_{11i} + \delta_{15i}\delta_{21i})$ *and* $e_{it} = (\delta_{15i}\varepsilon_{2it} + \varepsilon_{1it})$

$X_{it}$ is a vector of strictly exogenous variables which include the following variables:

$X_{it}' = (K, L, EXR, INF, FDI, ODA, TRAD, GFCE, DCPS, PR)'$

$W_{it}$ on the other hand, is a vector of endogenous and predetermined variables which include the following variables:

$W_{it}' = (RGDP_{t-1}, REM)'$

$\pi_i$ are vectors of parameters to be estimated.

The assumption of altruistically motivated remittances is thus adequately captured within the resulting linear dynamic panel data model in equation (6.3).

$v_i + e_{it}$ is the usual error component decomposition of the error term;

$v_i$ are unobserved individual-specific effects;

$e_{it}$ are the observation-specific (idiosyncratic) errors;

$\pi_i$ are vectors of parameters to be estimated.

The individual-specific effects, $v_i$ are assumed to be uncorrelated across individuals, $\{E(v_i, v_j) = 0; \forall i \neq j\}$ and with the disturbance of any individual at all leads and lags $\{E(v_i e_j) = 0;\ \forall\ i, j\}$, but may be correlated with the explanatory variables $\{E(X_{it} v_j) = unknown, \forall\ i, t\}$. The mean of $v_i$ is zero $\{E(v_i) = 0,\ \forall i\}$ and its variance $(\sigma_{vi}^2)$ may differ across individuals. The observation-specific disturbance has mean zero, that is, $\{E(e_{it}) = 0,\ \forall i, t\}$ and is uncorrelated across individuals and $\{E(e_{it} e_{js}) = 0\ \forall i \neq j,\ t \neq s\}$. In general, its variance $(\sigma_{eit}^2)$ may differ across both individuals and periods. The initial observation $YGR_{i0}$ is uncorrelated with the disturbance of any individual for all periods $\{E(RGDP_{i0} e_{jt}) = 0\ \forall i, j, t\}$ but may be correlated with the individual effects $\{E(RGDP_{i0} v_j) = unknown\ \forall i, j\}$. The autoregressive parameter satisfies that $|\delta_1| < 1$ (dynamic stability). The vector $x_{it}$ may include lags of explanatory variables. It may also include covariates that are fixed over time for a given individual, and/or covariates that vary over time but are shared by all individuals.

All $X_{it}$ variables' definition are given in the Chapter 5.

$W_{it}$ Variables, on the other hand, are defined as follows:

$RGDP_{t-1} =$ the first period lag of the dependent variable, RGDP

$REM =$ real remittances

In order to get a consistent estimate of δ as N →∞ with T fixed, equation (6.16) may be rewritten in first differenced notations. This also eliminates the individual effects as follows:

$$\Delta RGDP_{it} = \delta_1 \Delta RGDP_{i.t-1} + \delta_2' \Delta X_{it} + \delta_3' \Delta W_{it} + \Delta e_{it} \qquad (6.5)$$

The implication of transforming equation (6.3) into (6.5) is that the unobserved individual-level effects, $v_i$ has disappeared from the differenced equation (6.5) because it does not vary over time. In this way, differencing has successfully dealt with the issue of country or individual specific effect, known as fixed effect. The Δs are the first difference operators.

## 6.7 Description of Variables and Their Expected Signs in Remittances-Growth Model

1) Workers' remittances can affect economic growth positively or negatively as suggested by theory and existing literature. Therefore, it is difficult to predict the exact sign of the coefficient of *REM* in advance.

2) Capital is represented by gross fixed capital formation. We assume capital is very important for economic growth thus expecting a positive coefficient of gross fixed capital formation.

3) The coefficient of economically active population is expected to have a positive effect due to the increased availability of labor. Increased population tends to results in increased labor supply which has a positive effect on economic growth.

4) The relation between economic growth and exchange rate is ambiguous. Theoretically, the appreciation of local currency reduces export earning and hence reduces growth. However, the impact of currency appreciation and depreciation depends on the economic situation of a particular country and it cannot be predicted accurately. For some countries, exchange rate is an important policy instrument. In this equation, exchange rate also controls for the macro-economic volatility.

5) Inflation rate has been used as a measure of macroeconomic stability in growth literature. Although Temple (1999) claims that the association between growth and inflation is controversial, evidence found by Fischer (1993), Bruno and Easterly (1998), Fuentes and Kennedy (2009) weighs heavily on inflation having negative impact on growth. High inflation can create political instability and other adverse situation that can depress long term investment. We expect a negative coefficient of inflation rate.

6) Foreign direct investment is used to capture the effect of external sources of capital on growth. The sign of this parameter is expected to be positive as foreign direct investment is widely viewed as transfer of (new) technology and (new) knowledge which enables the recipient country to exploit the experience of others for their

development. Chami et al (2008) state that foreign direct investment is positively correlated with output growth during the 1990s.

7) The official development assistance (ODA) is used to capture the impact of an external source of capital on economic growth. Proponents of aid argue that overseas capital flows are necessary for the economic growth of developing countries (Chenery and Strout, 1955; Fayissa and El-Kaissy, 1999). On the other hand, opponents of foreign aid argue that it has a negative effect on domestic savings and economic growth in less developed countries (Boone, 1994). So the coefficient of ODA can be positive or negative.

8) Trade (i.e. export plus import) as a share of GDP is used to measure the impact of openness or trade of the economy on economic growth. Traditional views of openness of the country to trade describe positive effect of the openness on the economic growth, allowing countries to allocate resources efficiently by promoting innovation and entrepreneurial activities resulting from competition and access to larger markets. We expect a positive coefficient of the variable.

9) Government consumption expenditures are very commonly used as a fiscal policy measure. The coefficient of government consumption is expected to be negative. Because government consumption is regarded as non-productive investment and thus negatively impact economic growth. Such spending is sometimes associated with the crowding out effect which has negative effect on financial development and growth. Although government expenditures do not affect productivity directly, it brings about distortion in private decision and thus hampers growth. In addition, if government is too big, then higher spending undermines economic growth by transferring additional resources from the productive sector of the economy to government, which uses them less efficiently.

10) Domestic credit to private sector (DCPS) in this model indicates the financial depth of a country. Levine and Renelt (1992) find domestic credit positively related to growth which is also the assumption of this study.

11) Institutional quality and various environmental factors are captured by the political, economic and financial risk indicators. Well-functioning political and legal institutions help sustain growth (Barro and Sala-i-Martin, 2004). Evidence indicates that growth enhancing policies are less effective when political environment is unstable and institutions are weak. Economic policies and strong institutions are instrumental in shaping overall environment to foster growth. Thus countries showing less risk in terms of risk indicators should be able to grow more. Sen (1999) argues that freedom (political, economic, social, transparency and security) is a necessary condition for economic growth and development. Thus, we use the political rights index (*PR*) to capture the effect of this institutional factor, obtained from the Freedom House's Freedom in the World Country Ratings. The political rights index goes from 1 to 7, where 1 denotes "most free" and 7 denotes the least level of political liberty. Hence, we expect the sign of the political rights index to be negative.

12) Theory of economic growth predicts that countries that start out with low levels of income tend to grow relatively faster than the countries with higher initial income and that allows low level income countries to converge to the higher income countries. Hence, it is logical to expect negative sign of the coefficient of this parameter, but Blomstrom (1995) contradicts this prediction of convergence. The impact of the initial level of GDP (*RGDP*) on economic growth has been controversial. On the one hand, Casseli, et al. (1996) reports a positive relationship between growth rate and the initial level GDP through its positive impact on capital formation. On the other hand, Barro (1997) finds a negative relationship between the initial GDP and the GDP growth rate in a cross-country empirical study which interprets to imply a case of conditional convergence. Consequently, we cannot, *a priori*, predict the sign of the initial level of GDP coefficient.

## 6.8 Conclusion

This Chapter gives the details of empirical framework of modeling the macroeconomic determinants of remittances in South Asian countries. We discuss determinants of remittances that are used in the previous research. There are microeconomic and macroeconomic determinants of remittances. Economic, political and institutional factors are normally used as macroeconomic determinants of remittances. We mention motives behind sending remittances. Definitions and expected signs of variables used in remittance determinants model are provided. This Chapter also provides the empirical framework of estimating the relationship between remittances and economic growth in this region. Different sources of economic growth are mentioned along with remittances. Remittances can affect economic growth directly through some control variables such as gross fixed capital formation, financial index, and government spending. In a tabular form positive and negative impact remittances at macroeconomic and household level are mentioned in this Chapter. Descriptions and expected signs of the variables in remittance growth model are provided. For estimating these two models, we discuss thoroughly the determinants of remittances as well as the channels through which remittances can impact economic growth. We estimate the models by using Static and dynamic panel data estimation procedures as an econometric framework. The detail description of the econometric framework is given in the Chapter 7.

# Chapter 7

## Econometric Methodology

### 7.1 Introduction

In this Chapter, we discuss the econometric methodology of our study. Since the study is based on panel data, we incorporate the detail and concrete description of panel data framework. Three types of data are used for empirical analysis. These are time series, cross section and pooled data. A time series data is a set of observations on the values that a variable takes at different times. Such data may be collected at regular time intervals, such as daily, weekly, monthly, quarterly, annually, quinquennially or decennially. Cross-section data are data on one or more variables collected at the same point in time. Pooled data has the elements of both cross section and time series data. Pooling data refers to two or more independent data sets of the same type. Pooled data can be of two types- pooled time series and pooled cross section. In case of pooled time series, observations are viewed as repeated measures at each point in time. In case of pooled cross sections, for the same variables various observations are taken from various cross sections.

Panel data is a special type of pooled data in which the same cross section unit is surveyed overtime. Panel data have space as well as time dimensions. A panel data set has both a cross-sectional and time series dimension, where all cross section units are observed during the whole time period. For example, $X_{it}$, $(i = 1,2 \dots N, t = 1, 2, \dots T)$ is panel data variable where 'i' stands for the $i^{th}$ cross sectional unit and t for the $t^{th}$ time period. It is assumed that there are a maximum N cross sectional units and a maximum of T time periods. If each cross sectional unit has the same number of time series observations, and then such a panel data is called a balanced panel data. On the other hand, if the number of observations differs among panel members we call such a panel an unbalanced panel.

This chapter mainly gives the details of the econometric methodology which is applied in this study. Starting with a short introduction about panel data, section 2 describes the advantages of panel data. Section 3 details the static panel data model. Within this section we have given the econometric model of pooled regression, random effects model (REM) and fixed effects model (FEM). We also discuss which of the REM or FEM is better in

this section. Next section describes the dynamic panel data model and its estimation techniques. Section 5 concludes the chapter.

### 7.2 Advantages of Panel Data

Panel data model contain the following features (Gujarati, 2004):

1) By combining time series of cross-section units, panel data increases the number of data points and give 'more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency'.
2) Since panel data relate to cross sectional observations over time, there may exist heterogeneity in these units. The technique of panel estimation can take such heterogeneity explicitly into account by allowing for individual-specific variables.
3) By studying the repeated cross section of observations, panel data are better suited to study the dynamics of change.
4) The use of panel data allows researcher to analyze a number of important economic questions not readily answerable either by a cross section or a time series alone.
5) Panel data enables us to study more complicated behavioral models.
6) By making data available for several thousand units, panel data can minimize the bias that might result if we aggregate individuals or firms into broad aggregates.
7) Dynamic effects cannot be estimated using cross-sectional data; even time series data may give imprecise results. In this case panel data can improve the precision of the estimates.
8) Panel data models often control for omitted or unobserved variables.

### 7.3 The Panel Data Model

Use of panel data in estimating common relationships across countries is particularly appropriate because it allows the identification of country-specific effects that control for missing or unobserved variables. The standard form of a panel data model with i= 1…,N, t= 1,…,T is given by:

$$Y_{it} = \beta_0 + \acute{X}_{it}\beta + \varepsilon_{it} \qquad (7.1)$$

where, $X_{it}$ is a K- dimensional vector of explanatory variables without a constant term, $\beta_0$ is the intercept coefficient, $\beta$ is a $(k \times 1)$ vector of slope coefficient which is independent of *i* and *t*, and $\varepsilon_{it}$ is the error term that varies over *i* and *t*.

The estimation of equation (1) depends on the assumptions we make about intercept, the slope coefficients and the error term. Following possibilities may arise:

i. The intercept and slope coefficients are constant across time and space and the error term captures differences over time and cross sectional units.
ii. The slope coefficients are constant but intercept varies over cross sectional units.
iii. The slope coefficients are constant but intercept varies over cross sectional units and time.
iv. All coefficients (the intercept as well as slope coefficients) vary over cross sectional units.
v. All intercept as well as slope coefficients vary over cross sectional units and time.

Each of the above cases introduces increasing complexity in estimating panel data regression model. We consider only some of the cases below:

### 7.3.1 Pooled OLS Regression Model

If we disregard the space and time dimension of our data series, that is, the intercept and slope coefficients are constant, then we get a pooled regression or simply known as OLS regression. Assuming error terms are identically and independently distributed and they are not correlated with exogenous variables, that is, $E(\varepsilon_{it}) = 0$ and $E(X_{it}\varepsilon_{it}) = 0$ we may get consistent estimates. Since cross sectional unit are repeatedly observed in the model, the problem of autocorrelation in the error terms arise, i.e.,$Cov(\varepsilon_{i,s}, \varepsilon_{i,t}) \neq 0 \; with \; s \neq t$. This gives inefficient outcome of OLS estimation results.

### 7.3.2 Fixed Effects Model (FEM)

If we account the individuality of each cross-sectional unit and let the intercept vary for each cross-sectional unit but still assume that the slope coefficients are constant across cross-section or over time, and then the model is known as FEM. The term 'fixed effects' is due to the fact that, although the intercept may differ across individuals, each individual's intercept does not vary over time; that is, it is time invariant (Gujarati, 2004). The FEM can be written as

$$Y_{it} = \beta_{0i} + X'_{it}\beta + \varepsilon_{it} \quad (7.2)$$

We can allow for the fixed effect intercept to vary between cross-sectional units by following dummy variable technique, thus, incorporating differential intercept dummies in the model. For this reason, FEM is also known as least squares dummy variable (LSDV) regression model. The panel model of LSDV form can be written as:

$$Y_{it} = \beta_{0i}D_i + X'_{it}\beta + \varepsilon_{it} \quad (7.3)$$

where D is the dummy variable for different cross-sectional units. Through incorporating dummy variables the unobserved heterogeneity problem disappears. The FEM concentrates on the differences within cross sections. It explains to what extent $Y_{it}$ differs from $\overline{Y_i}$. It does not explain why $\overline{Y_i}$ is different from $\overline{Y_j}$ where i and j are two different cross-sectional units. The estimator of FEM is referred to as the covariance estimator or the within-cross-sectional estimator because only the variation within each group is used in forming the estimator. It is possible to test the FEM against the pure pooled OLS regression model. This procedure comprises a test of whether the model should include N intercepts for each group against just one intercept term. Using $R^2$ the restricted F-test could be used to test the hypothesis.

$$F = \frac{[R^2_{UR} - R^2_R] \div g}{[1 - R^2_{UR}] \div DF_{UR}} \quad (7.4)$$

Where $g$ is the number of restrictions under test in this case this is N-1. $DF_{UR}$ is the number of degrees of freedom from unrestricted fixed effects model. In this case, $DF_{UR} = NT - N - k$, where k is the number of parameters to be estimated. A rejection of the null hypothesis represents a rejection of the pooled OLS regression model.

There are some caveats of fixed effects models that need to be addressed.

First, introducing too many dummy variables reduces degrees of freedom.

Second, the inclusion of so many variables in the model introduces a potential multicollinearity problem.

Third, examining the effect of time invariant variables such as sex, color and ethnicity is not possible in fixed effect model as they do not change over time.

Fourth, heteroscedasticity, autocorrelation and measurement error problems may arise in fixed effects model.

Finally, FEM gives biased estimates of the lagged dependent variable.

### 7.3.3 Random Effects Model (REM)

In REM individual specific effects and time specific effects are treated random. This model is sometimes referred to as a variance or error components model (ECM). In ECM, it is assumed that the intercept of an individual unit is a random drawing from a much larger population with a constant mean value. The individual intercept is then expressed as a deviation from this constant mean value. One advantage of ECM over FEM is that it is economical in degrees of freedom, as we do not have to estimate all cross-sectional intercepts. ECM is appropriate in situation where the random intercept of each cross-sectional unit is uncorrelated with the regressors. The basic equation of a ECM can be written as

$$Y_{it} = \beta_{0i} + \acute{X}_{it}\beta + \varepsilon_{it} \tag{7.5}$$

Now instead of treating $\beta_{0i}$ as fixed we assume that it is a random variable with a mean value of $\beta_0$ (no subscript $i$ here). And the intercept value of a single cross-sectional unit can be expressed as

$$\beta_{0i} = \beta_{0i} + u_i\,, \qquad i = 1, 2, \dots N \tag{7.6}$$

Where $u_i$ is a random error with a mean value of zero and variance of $\sigma_u^2$. Substituting equation (7.6) into (7.5) we obtain:

$$Y_{it} = \beta_0 + \acute{X}_{it}\beta + \varepsilon_{it} + w_{it} \tag{7.7}$$

Where $w_{it}$ is a composite error term, i.e., $w_{it} = u_i + \varepsilon_{it}$, $u_i$ is the cross-section error component and $\varepsilon_{it}$ is the combined time series and cross-section error component. The term error components model derives its name because the error term $w_{it}$ consists of two (or more) error components. The ECM assumes that the individual error components are not correlated with each other and are not autocorrelated across both cross-section and time series units. The estimation of this type of model requires implementing a more complicated Generalized Least Squares (GLS) procedure than the simpler OLS procedure.

### 7.3.4 Fixed Effects Model (FEM) versus Random Effects Model (REM)

There arises a challenge to the researcher to choose which of FEM or REM is better.

i. The answer to the question hinges around the assumption one makes about the likely correlation between the individual, or cross-section specific, error component, $u_i$ and $X_{it}$ regressors. If it is assumed that $u_i$ and $X_{it}$'s are uncorrelated , REM may be appropriate it gives consistent and efficient estimator. Whereas, if $u_i$ and $X_{it}$'s are correlated, FEM may be appropriate, and it gives consistent and efficient estimator.

ii. If T (number of time series data) is large and N (number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by FEM and REM. Hence the choice here is based on computational convenience. On this score, FEM may be preferable.

iii. When N is large and T is small, the estimates obtained by the two methods can differ significantly. In FEM, intercept coefficients are treated as fixed and statistical inference is conditional on the observed cross-sectional unit in the sample. This is appropriate if we strongly believe that the cross-sectional units in sample are not randomly drawing from a larger sample. In that case, FEM is appropriate. However, FEM may costly in terms of losing degrees of freedom. If the cross-sectional units in the sample are regarded as random drawings, then REM is appropriate, for in that case statistical inference is unconditional.

iv. If the individual error component $u_i$ and one or more regressors are correlated, then the REM estimators are biased, whereas those obtained from FEM are unbiased.

v. If N is large and T is small, and if the assumptions underlying REM hold, REM estimators are more efficient than FEM estimators.

vi. Finally, one can use Hausman Test for discriminating between these two models. On the assumption of just one explanatory variable in the regression, the Hausman test is expressed as

$$H = \frac{[\beta_{RE} - \beta_{FE}]}{var(\beta_{FE}) - var(\beta_{RE})} \sim \chi_1^2 \quad (7.8)$$

Housman tests the hypothesis, $H_0$ that $u_i$ and $X_{it}$'s are uncorrelated, that is REM is appropriate against that FEM is appropriate. A statistically significant value of $\chi_1^2$ indicates the rejections of the null hypothesis of REM as an appropriate model and accept that FEM is appropriate.

### 7.4 Dynamic Panel Data Model

A panel model is known as dynamic panel model when it uses the lags of the dependent variable as explanatory variables to measure the past realizations of dependent variable. Although the coefficients on lagged dependent variables might be far from our interest, the introduction of these lags becomes crucial to control for the dynamics of the process. Very often allowing dynamic processes is very crucial for recovering consistent estimates of other parameters. Panel data is now widely used to estimate dynamic econometric models. Its advantage over cross-section data in this context is obvious: we cannot estimate dynamic models from observations at a single point in time, and it is rare for single cross-section data to provide sufficient information about earlier time periods for a dynamic relationship to be investigated. Its advantages over aggregate time series data include the possibility that underlying macroeconomic dynamics may be obscured by aggregation biases and the scope that panel data offers to investigate heterogeneity in adjustment dynamics between different types of cross-sectional units.

The basic form of a dynamic panel data model that contains explanatory variables $X_t$ as well as the lagged endogenous variable $Y_{t-1}$ can be written as:

$$Y_{it} = \rho Y_{i,t-1} + \beta_{0i} + X_{it}^{\prime}\beta + \varepsilon_{it} \quad (7.9)$$

where $\varepsilon_{it} \sim N(0, \sigma_\varepsilon^2)$ $and$ $|\rho| < 1$

i= 1,…N index for cross-sectional units

t= 1,... T index for time periods

$X_{it}^{/}$ is the row vector of explanatory variables with k dimension

$\rho$ is the unknown parameter of the lagged endogenous variable

$\beta$ is the unknown parameter vector of the k explanatory variables

$\beta_{0i}$ is the individual specific fixed effects

We make the following assumptions to estimate the model:

i) The error term is orthogonal to the exogenous variables, i.e., $E\left(X_{it}^{'}, \varepsilon_{it}\right) = 0$
ii) The exogenous variables might be correlated with the individual effects, i.e., $E\left(X_{it}^{'}, \beta_{0i}\right) \neq 0$

The error term is uncorrelated with the lagged endogenous variable: $E\left(Y_{i,t-1}, \varepsilon_{it}\right) = 0$

The dynamic structure of equation (7.9) suggests that the OLS estimator will be upward biased and inconsistent, this is because that the lagged level of dependent variable is correlated with the error term. The problem will not be solved even if the within transformation is applied owing to a downward bias (Nickell, 1981) and inconsistency.

If we estimate model (7.9) by applying simple FEM, then we see the assumption of uncorrelated error term with lagged dependent variables violates and that gives biased estimators. Therefore, we need to find some other methods to estimate the panel data model. In dynamic panel econometric analysis, there are three methods, namely, the Anderson-Hsiao method, the Areellano-Bond method and the Blundell-Bond method.

The Anderson- Hsiao method tries to solve the problem of FEM model by instrumenting the lagged endogenous variable. The idea behind instrumental variables is to find a set of variables, termed instruments that are both correlated with the explanatory variables in the equation but uncorrelated with the disturbances. These instruments are used to eliminate the correlation between regressors and the disturbances. The instrumental variable estimators are consistent when N or T or both tend to infinity. But they are inconsistent if N is fixed and T tends to infinity. This is the basic problem of the Anderson- Hsiao method.

### 7.4.1 The Arellano-Bond Estimation Technique

Arellano and Bond (1991) propose a method that exploits all possible instruments. Using the Generalized Method of Moments (GMM), they obtain estimators using the moment conditions generated by lagged levels of the dependent variable, $(Y_{i,t-2}, Y_{i,t-3} \ldots)$ with $\Delta Y_{it}$. These methods are called difference GMM methods. Similar to all instrumental variables regressions, GMM estimators are unbiased. Arellano and Bond (1991) compared

the performance of difference GMM, OLS, and GLS estimators. Using simulations, they find that GMM estimators exhibit the smallest bias and variance. The Arellano-Bond estimator is similar to the estimator suggested by Anderson and Hsiao but exploits additional moment restrictions, which enlarges the set of instruments. The dynamic equation to be estimated in levels is given as:

$$Y_{it} = \rho Y_{i,t-1} + \beta_{0i} + X'_{it}\beta + \varepsilon_{it} \tag{7.9}$$

where differencing eliminates the individual effects of $\beta_{0i}$ and we get the following equation:

$$Y_{it} - Y_{i,t-1} = \rho\left(Y_{i,t-1} - Y_{i,t-2}\right) + \left(X'_{it} - X'_{it-1}\right)\beta + \varepsilon_{it} - \varepsilon_{it-1} \tag{7.10}$$

For each year, we now look for the instruments available for instrumenting the difference equation. For t= 3 the equation to be estimated is:

$$Y_{i3} - Y_{i,2} = \rho(Y_{i2} - Y_{i1}) + \left(X'_{i3} - X'_{i2}\right)\beta + \varepsilon_{i3} - \varepsilon_{i2} \tag{7.11}$$

Where it is assumed the instruments are available. Similarly we can enlarge the instrumentation and for the equation in the final period T we get:

$$Y_{iT} - Y_{i,T-1} = \rho\left(Y_{i,T-1} - Y_{i,T-2}\right) + \left(X'_{iT} - X'_{iT-1}\right)\beta + \varepsilon_{iT} - \varepsilon_{iT-1} \tag{7.12}$$

Assuming the instruments $Y_{i,1}, Y_{i,2}, \ldots Y_{i,T-2}$ and $X'_{i1}, X_{i2} \ldots X'_{iT-1}$ are available, finally, we get the following instrumented equation that is given in matrix form as:

$$\acute{W}F_y = \acute{W}F\, X_i + \acute{W}F_\varepsilon \tag{7.13}$$

Although the differencing procedure eliminates the specific country effect, it introduces a new way by construction of new error term, which is correlated to delayed dependent variable. According to the suppositions that the error term (ε) is not serially correlated, and the explanatory variables (X) are weakly exogenous, Arellano and Bond (1991) propose the following moment conditions:

$$E\left[Y_{i,t-s}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0, \text{for } s \geq 2; t = 3 \ldots T \tag{7.14}$$

$$E\left[X_{i,t-s}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0, \text{ for } s \geq 2; t = 3 \ldots T \tag{7.15}$$

By using these conditions of moment, they propose a two step GMM estimator. In the first stage, the error terms are assumed to be independent and homoscedastic through countries and time. In the second stage, residuals obtained in the first stage are used to build a coherent estimation of variance-covariance matrix, so relaxing suppositions of independence and homoscedasticity. Following simple case of instrumental variable estimation, the Arellano-Bond estimation can be seen as two-step estimation. First, a cross-section auxiliary equation is estimated and in the second step the resulting estimates are used as explanatory variables in the equation of original interest. The two step estimator is so asymptotically more efficient than that of obtained in the first step.

### 7.4.2 The Blundell-Bond Estimation Technique

The GMM estimator which is suggested by Arellano-Bond (1991) is known to be rather inefficient when instruments are weak because of making use of the information contained in differences only. Blundell and Bond (1998) show that in case of persistent explanatory variables, delayed explained variable in level form becomes weak instruments for difference equation regression. Asymptotically, there will have an increase in the variance of coefficients. In short samples, simulations of Monte Carlo show that weaknesses of instruments can produce biased coefficients. To reduce the potential of the way and the indistinctness associated with the GMM difference estimator, Arellano and Bover, (1995), and Blundell and Bond, (1998) suggest using a GMM system method which combines difference regression with level regression. So the combination of moment restrictions for the differences and levels results in a method which is called GMM-system method by Blundell-Bond method.

Instruments for difference regression are smae as above presented in section 7.4.1. Instruments for level regression are the delays of corresponding variables differentiated. These are instruments suited under the additional suppositions below: although it can have a correlation between the levels of the explanatory variables and the specific effect country in the equation (7.9), there is no correlation between the differences of these variables and the country specific effect. Given that the delayed levels are used as instruments in difference regression, the most recent difference is used as an instrument in level regression. The use of delays of additional differences would succeed in the conditions of

moment superfluous, (Arellano and Bover, 1995). So, additional conditions of moment for level regression are:

$$E[(Y_{i,t-s} - Y_{i,t-s-1})(\beta_{0i} + \varepsilon_{it}] = 0 \; for \; s = 1 \tag{7.16}$$

$$E[(X_{i,t-s} - X_{i,t-s-1})(\beta_{0i} + \varepsilon_{it}] = 0 \; for \; s = 1 \tag{7.17}$$

Hence, we use the moment conditions presented in equations (7.16) to (7.17) and employ the system GMM method to generate consistent and efficient parameter estimates.

**7.5 Empirical Estimation Issues**

If we use panel data techniques in empirical economic research, the following points must be considered in estimating macroeconomic determinants of remittances and in examining the relationship between remittances and economic growth.

One limitation of using the OLS estimation technique in a dynamic panel model is that the method does not account for country specific effects. In order to account for such country specific effects, it is advisable to use the REM which can help to capture the qualitative and unobserved effects in a model. However, there is a problem of unobserved heterogeneity in REM which can give biased result. FEM can handle this issue. The fixed effect model removes all the omitted variables that are constant over time hence solve the possible bias that would have resulted if omitted variables are correlated to the included explanatory variables. But FEM suffers from a serious problem of endogeneity. This problem happens when there is a bi-directional causal relationship between the dependent variable and its regressors. This problem often results in misspecified models which lead to biased estimations. There are at least two sources of endogeneity that may bias estimates of how the explanatory variables affect the dependent variable in the specified models: first is the unobservable heterogeneity (which arises if there are unobservable factors that affect both the dependent and explanatory variables) and, second is simultaneity (which arises if the independent variables are a function of the dependent variable or expected values of the dependent variable). One other likely important source of endogeneity often overlooked in most empirical researches arises because of the fact that the relations among individual's or country's (in this case) observable characteristics are likely to be dynamic. That is, a country's current performance affects her future realizations, which in turn affects her future performance.

Working within the context of remittance inflows, current country remittance realizations affects future economic performance and this may, in turn, affect future country remittance realizations. Thus, this gives rise to the problem what may be termed as "dynamic endogeneity". The argument here centers on the fact that cross-sectional variation in observed country economic structures is driven by both unobservable heterogeneity and the country's history. As such, any attempt to explain the role of remittance flows or its effect on economic performances of selected countries that does not recognize these sources of endogeneity may be biased.

The emphasis on unobservable heterogeneity in the literature as the major source of endogeneity often accounts for the widespread use of panel data and fixed-effects estimator. However, traditional fixed-effects (or "within") estimates that eliminate unobservable heterogeneity are only consistent under the assumption that country characteristics or structures are strictly exogenous. That is, they are purely random observations through time and are unrelated to the country's history. This is a strong assumption that is unlikely to hold in practice. So, while pooled OLS method may give biased estimate because it ignores unobservable heterogeneity, FEM may also give biased estimates since it ignores dynamic endogeneity.

The problem of endogeneity that is often associated with the use panel data analysis is thus resolved in this study by the choice of the System GMM method to estimate the relation between remittance flows and country economic performance in the Dynamic Panel Data Model framework. This methodology not only eliminates any bias that may arise from ignoring dynamic endogeneity, but also provides theoretically sound and powerful instruments that account for simultaneity while eliminating any unobservable heterogeneity. Dynamic panel estimation is most useful in situations where some unobservable factor affects both the dependent variable and the explanatory variables, and some explanatory variables are strongly related to past values of the dependent variable. This is likely to be the case in regressions of remittance flows on economic performance. This is because remittance flows tend to exert a strong, immediate and persistent effect on economic performance.

The dynamic panel data regression model is in fact characterized by another source of persistence over time. That is the problem of autocorrelation which is due to the presence

of a lagged dependent variable among the regressors. There are also two major and important complications arising from efforts to estimate the models using macroeconomic panel data: first, the presence of endogenous and/or predetermined covariates, and second, the small time-series and cross-sectional dimensions of the typical panel data set. These identified complications may be addressed applying the Arellano and Bond (1991) generalized method of moments (GMM) method (usually called standard first-differenced GMM method) or the augmented version proposed by Arellano and Bover (1995) and Blundell and Bond (1998), known as (system GMM method).

The dynamic structure of a panel data model suggests that the OLS estimator is upward biased and inconsistent, this is because the lagged level of income is correlated with the error term. The problem is not solvable even if the within transformation is applied owing to a downward bias (Nickell, 1981) and inconsistency. The Generalized Method of Moments (GMM) technique turns out to be the possible solution. Blundell and Bond (1998) show that when α (the coefficient of the lagged dependent variable in the dynamic model) approaches one, so that the dependent variable follows a path close to a random walk, the differenced GMM (Arellano and Bond, 1991) has poor finite sample properties and it is downwards biased, especially when T is small. Therefore, the Blundell and Bond (1998) system GMM derived from the estimation of a system of two simultaneous equations, one in levels (with lagged first differences as instruments) and the other in first differences (with lagged levels as instruments) becomes a more viable method.

The extended GMM (system GMM) method incorporates additional moment conditions for the untransformed equations in levels, and it relies on instrumental variables that are orthogonal to the individual-specific effects. Blundell and Bond (1998) show that an additional mild stationarity restriction on the initial conditions process allows the use of an extended system GMM method that uses lagged differences of the dependent variable as instruments for equations in levels, in addition to lagged levels of dependent variable as instruments for equations in first differences (Baltagi, 2005).

Bond, Hoeffler and Temple (2001) opine that in estimating the dynamic panel economic model applying the system GMM (Blundell-Bond method) estimation techniques, the pooled OLS and the FEM estimators should be considered respectively as the upper and lower bound. As a result, whether the differenced GMM coefficient is close to or lower

than the within group one; this is likely a sign that the estimates are biased downward (may be because of a weak instrument problem). Thus, if this is the case, the use of System– GMM is highly recommended and its estimates should lie between OLS and FEM. Moreover, Presbitero (2006) provides the evidence that the System GMM produces results that: (1) lies between the upper and lower bound represented by OLS and FEM, (2) shows an efficiency gain, and (3) has valid instrument set. Therefore, we produce the empirical results of system GMM along with the results obtained from pooled OLS regression and FEM.

## 7.6 Conclusion

This Chapter gives a brief description panel data model. We give definition of panel data, its types and advantages. We present static panel data models. We also discuss about pooled OLS regression, FEM and REM with their shortcomings. In dynamic panel analysis, we details mainly Anderson-Hsiao method, Arellano-Bond method and Blundell-Bond method and conclude that Blundell-Bond Systems GMM method gives consistent and efficient estimates. Finally, we critically analyze empirical estimation issues of dynamic panel data method. And find that Blundell-Bond SGMM method is good at handling problems faced (for example, autocorrelation, heterogeneity and dynamic endogeneity bias) in dynamic panel model. The dynamic structure of a panel data model tells that the OLS estimator is upward biased and inconsistent, this is because the lagged level of dependent variable is correlated with the error term. The problem is not solvable even if the within transformation is applied owing to a downward bias and inconsistency. FEM estimator is found to have downward bias. The Generalized Method of Moments (GMM) method turns out to be the possible solution. This methodology not only eliminates any bias that may arise from ignoring dynamic endogeneity, but also provides theoretically sound and powerful instruments that account for simultaneity while eliminating any unobservable heterogeneity.

# Chapter 8

## Empirical Results of the Study

### 8.1 Introduction

In Chapter five and six, we discuss the conceptual, theoretical and empirical framework of macroeconomic determinants of remittances and macroeconomic impact of remittances on economic growth in South Asian countries. The macroeconomic determinants of remittance model are estimated to test the hypothesis I which states that remittances in South Asia are mostly determined by home and host country's economic conditions, number of emigrants and macroeconomic factors of home country. We measure the macroeconomic determinants of remittances using additive utility function as a theoretical base. Empirical model of macroeconomic determinants of remittances is given in the form of static and dynamic panel model. In that model we have included the variables to estimate the macroeconomic determinants. Then we calculate the macroeconomic impact of remittances on economic growth in South Asian countries with the help of neoclassical growth model. The impact of remittance on economic growth model is estimated to test the hypothesis II which states that remittances do not significantly promote economic growth in South Asian countries. In estimating the models of remittance determinants and macroeconomic impact on economic growth, we have given the econometric methodology in chapter seven. Chapter seven covers the ins and outs of static and dynamic panel data model. On basis of chapter five, chapter six and chapter seven, the empirical models are estimated. Empirical results are reported in this chapter. Firstly, we give results of macroeconomic determinants of remittances in South Asian countries, and then we provide those of macroeconomic impact of remittances on economic growth in the region by using the econometric procedure of pooled Ordinary Least Squares (OLS), fixed effects model (FEM), random effects model (REM) and System Generalized Method of Moment (SGMM) model. Before explaining results of our empirical models, we give statistical characteristics of data used in remittance determinants model and remittance-growth model in the form of summary statistics and bivariate correlation coefficients.

We organize this Chapter as follows: Section 8.2 gives summary statistics and bivariate correlation coefficients of the variables; Section 8.3 describes empirical results of the model of macroeconomic determinants of remittances in South Asian countries; Section 8.4 presents empirical results of the model of impact of remittances on economic growth; and Section 8.5 provides conclusion.

## 8.2 Statistical Characteristics of the Variables Used in the Models

The statistical characteristics of the variables used in the macroeconomic determinants of remittances model and macroeconomic impact of remittance model are given in Table 8.1 to Table 8.4. For estimating macroeconomic determinants of remittances, we take remittances to GDP ratio as explained variable; and inflation rate, official exchange rate, per capita GDP of home country, per capita GDP of host country, broad money to GDP ratio, migrant population ratio, political rights index and a time dummy as explanatory variables. In estimating the model of macroeconomic impact of remittances on economic growth, we take real GDP as explained or endogenous variable; whereas real remittances, inflation rate, official exchange rate, economically active population, real gross fixed capital formation, real government final consumption expenditure, domestic credit to private sector by bank as a share of GDP, total trade GDP ratio, real foreign direct investment, real official development assistance and political rights index are taken as explanatory variables.

### 8.2.1. Results of Summary Statistics of the Variables Used in the Empirical Models

Summary statistics of the variables used in the macroeconomic determinants of remittances model are given in Table 8.1 which produces information on number of observations of each variables used in the macroeconomic determinants of remittances model with their maximum and minimum values. The mean values with standard deviation are also given. From the table we can say that the mean value of remittances to GDP ratio is 5.190721 with minimum ratio of 0.186065 and maximum ratio 24.95688 in the sampled period. The standard deviation of the variable remittances to GDP ratio is 4.586014. Summary results indicate that mean inflation rate in South Asian countries over the sampled period is 8.21196 with a maximum inflation rate of 25.61889 and a minimum rate of -17.6304. Similarly, summary statistics of all other variables are given in Table 8.1.

**Table 8.1: Summary Statistics for the Variables Used in the Macroeconomic Determinants Remittances Model**

| Name of the Variable | No. of Observation | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Remittances GDP Ratio | 158 | 5.190721 | 4.586014 | 0.186065 | 24.95688 |
| Inflation Rate | 158 | 8.21196 | 4.73994 | -17.6304 | 25.61889 |
| Official Exchange Rate | 158 | 46.94726 | 27.63238 | 7.862945 | 127.6034 |
| Per capita GDP of Home Country (US$) | 158 | 554.3882 | 466.0123 | 126.9433 | 2921.736 |
| Per Capita GDP of Host Country (US$) | 158 | 19792.7 | 9701.557 | 8592.372 | 48052.15 |
| Broad Money to GDP Ratio | 158 | 42.60334 | 14.7927 | 11.41806 | 80.66311 |
| Migrant Population Ratio | 158 | 0.002958 | 0.003698 | 6.59 | 0.0140009 |
| Political Rights Index | 158 | 3.651899 | 1.377375 | 2 | 7 |
| Time Dummy, 9/11,2001 | 158 | 0.348101 | 0.477883 | 0 | 1 |

Summary statistics of the variables used in remittances-growth model are given in Table 8.2. In this Table we see that all the variables have 185 observations. Mean values of each variable with their standard deviations, minimum and maximum values are given in the Table. The mean value of real GDP is US$ 214142 with a maximum value US$1175474 and minimum value US$5821.796 and its standard deviation is 324632.4. The mean value of real remittances is found to be US$ 3657.595 with a maximum value of US$25600.18 and minimum value of US$18.11651 and its standard deviation is found to be 4897.801. The mean value of inflation rate is 8.661851 with a maximum rate of 25.61889 and a minimum rate of -17.63042 and standard deviation of 5.018. The mean value of official exchange rate against $US is found to be 42.90631 with a maximum rate of 127.6034 and minimum rate of 7.862945 and standard deviation of 27.52126. The mean value of economically active population in South Asian countries is found to be 58.25072 with a maximum value of 67.53 percent and a minimum of 51.91 percent and standard deviation of 4.48. Similarly, summary statistics of all other variables in the remittance-growth model can be explained.

**Table 8.2: Summary Statistics of the Variables in Remittances-Growth Model**

| Name of the Variable | NO. of Observation | Mean | Standard Deviation | Minimum Value | Maximum Value |
|---|---|---|---|---|---|
| Real GDP (million $) | 185 | 214142 | 324632.4 | 5821.796 | 1175474 |
| Real Remittances (million $) | 185 | 3657.595 | 4897.801 | 18.11651 | 25600.18 |
| Inflation Rate | 185 | 8.661851 | 5.018019 | -17.63042 | 25.61889 |
| Official Exchange Rate | 185 | 42.90631 | 27.52126 | 7.862945 | 127.6034 |
| Economically Active Population, | 185 | 58.25072 | 4.476066 | 51.90529 | 67.53043 |
| Real Gross Fixed Capital Formation (million $) | 185 | 77011.49 | 130682.9 | 1824.755 | 548621.9 |
| Real Government Final Consumption Expenditure (million $) | 185 | 36598.23 | 58773.34 | 853.5132 | 196658.5 |
| Domestic Credit to Private Sector By Bank as a Share of GDP, | 185 | 23.9798 | 11.04303 | 2.96406 | 58.77493 |
| Total Trade GDP Ratio, | 185 | 40.05045 | 19.27403 | 12.00868 | 88.63646 |
| Real Foreign Direct Investment (million $) | 185 | 2307.504 | 6884.799 | -434.6665 | 53899.37 |
| Real Official Development Assistance (million $) | 185 | 3920.667 | 3953.963 | 424.7762 | 22779.49 |
| Political Rights | 185 | 3.583784 | 1.365235 | 2 | 7 |

### 8.2.2. Results of Correlation Coefficients of the Variables Used in the Models

The results of bivariate correlations between variables used in the macroeconomic determinants of remittances model are given in Table 8.3. The principal diagonal value gives the relationship between the same variables. That is why, we get the coefficient value 1 along the diagonal. The bivariate correlation coefficient shows the relationship between two variables. Results show that most of the correlation coefficients are positive indicating that there are positive associations between variables except broad money to GDP ratio and inflation rate, political rights index and broad money to GDP ratio, and time dummy variable and inflation rate. We find negative correlation coefficients for these variables. We find that the correlation coefficient of remittances- GDP ratio and per capita GDP of host countries is 0.3711. It indicates that there is a positive relationship

between the two variables. We also find a strong correlation between remittance-GDP ratio and migrant population ratio in our data.

**Table 8.3: Bivariate Correlation among the Variables used in the Remittances Determinants Model**

| | REMGDP | INF | EXR | $PCGDP_{home}$ | $PCGDP_{host}$ | M2GDP | MIGPOP | PR | D2001 |
|---|---|---|---|---|---|---|---|---|---|
| REMGDP | 1.000 | | | | | | | | |
| INF | 0.0342 | 1.000 | | | | | | | |
| EXR | 0.4993 | 0.0515 | 1.000 | | | | | | |
| $PCGDP_{home}$ | 0.2413 | 0.1477 | 0.6931 | 1.000 | | | | | |
| $PCGDP_{host}$ | 0.3711 | 0.1526 | 0.5659 | 0.7558 | 1.000 | | | | |
| M2GDP | 0.5089 | -0.0665 | 0.3531 | 0.2585 | 0.5631 | 1.000 | | | |
| MIGPOP | 0.6553 | 0.1120 | 0.7551 | 0.5960 | 0.3507 | 0.1690 | 1.000 | | |
| PR | 0.2736 | 0.0360 | 0.1018 | 0.0242 | 0.0335 | -0.1550 | 0.1203 | 1.000 | |
| D2001 | 0.5461 | -0.0102 | 0.6956 | 0.5759 | 0.7822 | 0.6314 | 0.4262 | 0.0982 | 1.000 |

Results of the correlation coefficients of the variables of remittance-growth model are produced in Table 8.4. Diversified results in terms bivariate correlation coefficients are observed from the Table. For example, we get negative association between real GDP and real remittances, real GDP and inflation rate, real GDP and official exchange rate, real GDP and trade GDP ratio, and real GDP and political rights index. On the other hand, we get positive association between Real GDP and economically active population, real GDP and real gross fixed capital formation, real GDP and government final consumption expenditure, real GDP and domestic credit to private sector by bank, real GDP and foreign direct investment; and real GDP and official development assistance. Similarly, remaining other positive correlation coefficients show positive association between the variables and negative correlation coefficient show negative association between the variables.

**Table 8.4: Bivariate Correlations among the Variables used in the Remittances-Growth Model**

| | RGDP | RREM | INF | OEXR | EAPOP | RGFCF | RGFCE | DCPSB | TRAD | RFDI | RODA | PR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RGDP | 1.0000 | | | | | | | | | | | |
| RREM | -0.0846 | 1.0000 | | | | | | | | | | |
| INF | -0.1055 | 0.0255 | 1.0000 | | | | | | | | | |
| OEXR | -0.3364 | -0.0547 | -0.0453 | 1.0000 | | | | | | | | |
| EAPOP | 0.1226 | -0.1744 | -0.0087 | 0.6164 | 1.0000 | | | | | | | |
| RGFCF | 0.9701 | -0.1353 | -0.1035 | -0.2530 | 0.2281 | 1.0000 | | | | | | |
| RGFCE | 0.9935 | -0.1232 | -0.0917 | -0.3218 | 0.1494 | 0.9675 | 1.0000 | | | | | |
| DCPSB | 0.2554 | 0.1525 | -0.1188 | 0.5084 | 0.4719 | 0.3309 | 0.2450 | 1.0000 | | | | |
| TRAD | -0.4156 | 0.0379 | 0.1999 | 0.4740 | 0.6001 | -0.3049 | -0.4035 | 0.2530 | 1.0000 | | | |
| RFDI | 0.5500 | 0.0159 | -0.0758 | 0.0327 | 0.3031 | 0.6959 | 0.5261 | 0.4488 | 0.0444 | 1.0000 | | |
| RODA | 0.5566 | 0.1787 | 0.1569 | -0.6213 | -0.2456 | 0.4040 | 0.5450 | -0.1996 | -0.3284 | -0.0760 | 1.0000 | |
| PR | -0.4286 | 0.4691 | 0.0080 | 0.1510 | -0.2788 | -0.4597 | -0.4520 | -0.1237 | -0.0434 | -0.2577 | -0.1458 | 1.0000 |

## 8.3. Empirical Results on the Model of Macroeconomic Determinants of Remittances

Empirical results of the macroeconomic determinants of remittances model are presented in this section. These results are the outcome of the estimation exercises involving the model given in Chapter five using system Generalized Method of Moments (GMM) estimation technique. Results of pooled OLS, random effects model and fixed effects model are presented to verify the position of Bond, Hoeffler and temple (2001) that the pooled OLS and the FEM estimators are should be considered respectively as the upper and lower bound for the system GMM coefficients. We report the estimated Housman $\chi^2$ value to determine either FEM or REM is the right static panel data model in our empirical estimation. STATA 12.0 statistical software is used to estimate parameters.

Empirical results of the estimated model are presented in turn after interpreting the one presented. The discussion of results places much emphasize on the results of system GMM estimation procedure.

Results of pooled OLS estimation of remittances determination model are presented in Table 8.5. The value of F-statistic in the pooled OLS regression measures the overall significance of our estimated model. We get a satisfactory result with one percent level of significance. It indicates that all the exogenous variables used in the remittances

determination model in South Asian countries jointly and significantly explain the macroeconomic determinants of remittances in the region.

**Table 8.5: Results of Pooled OLS Estimation of Remittances Determinant Model**

| Variable | Coefficient | Probability Value |
|---|---|---|
| Lag Remittances to GDP Ratio | 0.8632959*** | 0.000 |
| Inflation rate | -0.0351227* | 0.075 |
| Official exchange rate | -0.003113 | 0.609 |
| Home-country income | -0.001546*** | 0.000 |
| Host-country income | 0.0000271 | 0.156 |
| Broad money to GDP | 0.014828* | 0.091 |
| Number of migrants to Population in Home Country | 218.5936*** | 0.000 |
| Political rights | 0.2220031*** | 0.001 |
| Dummy for September 11, 2001 | 0.6931617** | 0.050 |
| Constant term | -0.5909857 | 0.229 |
| Number of observations<br>F-Statistic<br>Adjusted $R^2$ | 153<br>370.49***<br>0.9563 | 0.000 |

**Note**: *, ** and *** indicate significance at 10 percent, 5 percent and 1 percent respectively.

Results indicate that remittances have strong and positive feedback effect in South Asian countries which is indicated by the coefficient of 0.8632959 for lag remittance-GDP ratio with 1 percent level of significance.

Remittance inflows are negatively related inflation rate of home country. Result of pooled OLS regression shows that one unit increase in inflation rate reduces remittance-GDP ratio by 0.0351227 units.

The impact of official exchange rate is found to be negative though it is statistically insignificant. Although host country's income positively impact on remittance inflows, it remains statistically insignificant.

Number of migrant to population ratio has a positive and significant impact on remittance inflows in this region. Results indicate that one unit change in migrant population ratio will increase remittance-GDP ratio by almost 219 units.

Broad money to GDP has a positive impact on remittance inflows with 10 percent level of significance which implies that wider and improved financial development attracts more remittances.

Political rights in domestic country play a positive and significant impact on remittances inflows in South Asian countries which indicate that improved political institutions and stable political environment is conducive to receive more remittances.

The coefficient of time dummy for 9/11, 2001 is found to be positive and statistically significant which implies that remitters are remitting more remittances through formal channel after 2001 attack.

Results of FEM and REM are presented in Table 8.6. In case of FEM, the value of F-statistic of 244.61 is statistically significant at one percent level. In case of REM, the value of Wald ($\chi^2$) statistic of 3334.40 is also statistically significant at one percent level. Therefore, in both models, the regressors used in the model jointly and significantly determine the remittance inflows in South Asian countries.

In both FEM and REM, we find that remittances have strong feedback effect with one percent level of significance. Inflation rate of domestic country negatively impact on remittance inflows though it is significant in REM while insignificant in FEM.

In Both FEM and REM, we see that remittances has a shock absorbing role as coefficients of home country's income are found to be negative and significant with one percent level.

Although host country's income shows a positive impact in both models they found to be statistically insignificant. Coefficients of official exchange rate are found to be insignificant which implies that it does not have any impact on remittance inflows in South Asian countries.

Remittance inflows in South Asian countries are positively and significantly related with migrant to population ratio in both models. However, impact of REM is found to be higher than that of FEM.

In both models, coefficients of political rights are found to be positive with one percent level of significance implies that improved political situation attracts more remittances.

Coefficients of broad money to GDP and time dummy are found to be positive in both models but they are significant in REM while insignificant in FEM.

**Table 8.6: Empirical Results of FEM and REM on Remittances Determinant Model**

| | FEM | | REM | |
|---|---|---|---|---|
| Variable | Coefficient | Probability Value | Coefficient | Probability Value |
| Lag1 Remittances to GDP Ratio | 0.8520626*** | 0.000 | 0.8632959*** | 0.000 |
| Inflation rate | -0.029237 | 0.145 | -0.0351227* | 0.073 |
| Official exchange rate | -0.0085986 | 0.261 | -0.003113 | 0.608 |
| Home-country income | -0.0011378*** | 0.010 | -0.001546*** | 0.000 |
| Host-country income | 0.0000303 | 0.144 | 0.0000271 | 0.154 |
| Broad money to GDP | 0.0176579 | 0.119 | 0.014828* | 0.088 |
| Number of migrants to Population in Home Country | 206.2757*** | 0.001 | 218.5936*** | 0.000 |
| Political rights | 0.2728349*** | 0.001 | 0.2220031*** | 0.001 |
| Dummy for September 11, 2001 | 0.588927 | 0.112 | 0.6931617** | 0.048 |
| Constant term | -0.850886 | 0.162 | -0.5909857 | 0.227 |
| Number of observations | 153 | | 153 | |
| Number of Cross Section | 5 | | 5 | |
| F-Statistic/Wald ($\chi^2$) | 244.61*** | 0.000 | 3334.40*** | 0.000 |

**Note**: *, ** and *** indicate significance at 10 percent, 5 percent and 1 percent respectively.

In choosing between these two models we run Housman specification test. Housman $\chi^2$ value is found to be 1.94 with the probability value of 0.7464. This means that our null hypothesis of appropriateness of REM cannot be rejected as we get insignificant p-value. Therefore we interpret REM in estimating the macroeconomic determinants of remittances in South Asian countries.

Results of determinants of remittances in South Asian countries using system GMM estimation technique are presented in Table 8.7.

**Table 8.7: Results of SGMM Estimation on Remittances Determinant Model**

| Variable | Coefficient | Probability Value |
|---|---|---|
| Lag1 Remittances GDP Ratio | 0.8250098*** | 0.000 |
| Inflation rate | -0.0282266* | 0.090 |
| Official exchange rate | -0.0079307 | 0.174 |
| Home-country income | -0.001472*** | 0.000 |
| Host-country income | 0.000024 | 0.148 |
| Broad money to GDP | 0.0185221* | 0.037 |
| Number of migrants to Population in Home Country | 285.7256*** | 0.000 |
| Political rights | 0.2859274*** | 0.000 |
| Dummy for September 11, 2001 | 0.9007509*** | 0.002 |
| Constant term | -0.8755116* | 0.067 |
| Number of observations<br>Number of Cross Section<br>Wald ($\chi^2$) | 148<br>5<br>4949.11*** | <br><br>0.000 |

**Note**: *, ** and *** indicate significance at 10 percent and 1 percent respectively.

A one percent level of statistical significance of the Wald statistics shows that the explanatory variables jointly explain the dependent variable in the models. The positive statistical value of lagged remittance GDP ratio indicates that remittances have strong feedback effects on attracting more remittances. Results show that 1 unit past year remittance GDP ratio contributes 0.825 units current year's remittance GDP ratio.

The rate of inflation affects remittance inflows negatively and significantly. Result shows that one unit changes in inflation rate reduces remittance GDP ratio by 0.0282266 units. This indicates that inflation is regarded as a symptom of economic instability in home country to the migrant population. That is why, they remit less amount of remittances rather they prefer to remit later for not to afford the inflation effect. Insurance motivation may work here in sending remittances.

The coefficient of official exchange rate in remittance determinants model is found to be -0.0079307 with a probability value of 0.174. Therefore, official exchange rate does not affect remittance inflows significantly in South Asian region. However, the negative sign attached to official exchange rate indicates that the investment and insurance motivations are the dominant motivation in the remitting decision. The impact of an appreciation of the local currency in the case of insurance motivation would be the same as the impact of inflation. The migrant would prefer to remit more later to offset the impact of the appreciation of the local currency (because he need to send more money in the foreign currency). In the case of investment motives, especially for the investment in housing, the migrant is expected to decrease the amount of remittances in the case of an appreciation of the origin country's currency. This is because, the cost of the construction increases in the currency of his host country.

Remittances to South Asian countries do seem to play a shock-absorbing role. The coefficient of per capita GDP in the home country's per capita GDP is significantly negative. It shows that if per capita GDP of home country decreases by one unit, remittance GDP ratio rises by 0.001472 units. This suggests that when adverse economic shocks decrease incomes in their home country, migrants would remit more to protect their family from those shocks. Another way of interpreting this result is that migrants send remittances so that those left behind can maintain a certain quality of life. In that case, migrants must send more if those who receive remittances become poorer. That is, migrants are altruistically motivated to send remittances.

As expected, the coefficient of host country's per capita GDP is found to be positive, 0.000024, which means that the location of migrant communities matters—the wealthier the country where migrants are located, the higher the remittances they send back home.

However, the coefficient is found to be insignificant, probably as a result of not including all host countries where migrants are residing.

The coefficient of political rights is found to be 0.2859 with 0.000 probability value. It indicates that countries with better institutions or a more stable political system would receive more remittances relative to GDP. Institutional quality, political rights and governance situation can be viewed as reflecting the business environment, which in turn should influence the amount of remittances driven by the investment motive. This reflects the portfolio approach to send remittances in this region.

The coefficient of broad money (M2) to GDP ratio as an index of financial development is found to be significantly positive. SGMM result shows that one unit change in broad money to GDP ratio attracts 0.0185221 unit remittance-GDP ratio. This suggests that remittances are positively correlated with financial deepening. Countries with more developed financial markets would attract more remittances relative to GDP. Because financial development ease the process of money transfers and reduce the fee associated with sending remittances through competition, so that it can raise the amount or share of remittances transferred through official channels. Our finding is consistent with those of Freund and Spatafora (2005) and Singh et al. (2010).

Number of migrants to population ratio is positively correlated with the level of remittance to GDP ratio implying that growing stock of migrants abroad contributes to higher level of remittances. Results indicate that if migrant population ratio changes by one unit remittances GDP ratio rise by 285.7256 units. This result complies with those of Singh et al. (2010) and Barua et al (2007).

The coefficient of dummy variable ($D_1$) is significantly positive. This indicates that there is an upward shift in the flow of remittances from abroad, in the aftermath of September 11, 2001. Probably, this happens because of tighter regulations of international money transfers, clampdown on the use of informal transfer channels and channeling more remittances through formal channel.

## 8.4 Empirical Results of the Model of Macroeconomic Impact of Remittances on Economic Growth

In this section we give description of the estimated results of model on macroeconomic impact of remittances on economic growth. In line with previous section, present the results of the model (6.5) given in chapter six following pooled OLS regression, FEM, REM and SGMM) methods. We emphasize on the results and interpretations of SGMM estimation of the macroeconomic impact of remittances on economic growth in South Asian countries.

**Table 8.8: Results of Pooled OLS Estimation Technique on Remittances-Growth Model**

| Regressors/ Explanatory Variables | Coefficients | Probability |
|---|---|---|
| Initial Real GDP | 0.38287*** | 0.000 |
| Official Remittance Inflows | 1.279221** | 0.017 |
| Gross Fixed Capital Formation | 0.8959291*** | 0.000 |
| Economically Active Population | -1479.277* | 0.096 |
| Official Exchange Rate | 308.96** | 0.042 |
| Inflation Rate | 1317.837*** | 0.005 |
| Foreign Direct Investment | -1.240787* | 0.072 |
| Official Development Assistance | 5.050821*** | 0.000 |
| Total Trade GDP Ratio | -363.338** | 0.054 |
| Government Final Consumption Expenditure | 1.388638*** | 0.000 |
| Domestic Credit to Private Sector | 76.1633 | 0.780 |
| Political Rights Index | -1514.271 | 0.442 |
| Constant | 94912.95** | 0.040 |
| Number of Observations<br>Adjusted $R^2$<br>F-statistic (p-value) | 177<br>0.9944<br>2583.08*** | <br><br>0.000 |

**Note**: *, ** and*** indicate significance at 10 percent, 5 percent and 1 percent respectively

Results of pooled OLS estimation of remittance growth model are presented in Table 8.8. In this model, we consider remittances along with some other control variables as determinants economic growth. We find a statistically significant F-statistic value with 1

percent level which indicates that all the regressors in the model jointly and significantly influence the economic growth in South Asian countries. Adjusted value of $R^2$ is found to be 0.9944 which implies that explanatory variables explained dependent variable 99 percent i.e., this model fits very well.

Result of pooled OLS regression shows that initial real GDP has a positive and significant coefficient which implies that past year GDP has 38 percent contemporaneous effect on present growth level.

The impact of remittance inflows on economic growth is found to be significant and positive in South Asian countries. Results indicate that one unit change in remittance inflows induces 1.28 units real GDP.

The coefficient of gross fixed capital is 0.8959 with 1 percent level of significance which implies that physical capital formation plays a positive role in economic growth process in South Asian countries.

One of the significant results is found in case of economically active population, foreign direct investment and trade GDP ratio. It is assumed that these variables have positive influence on economic growth. But we get negative coefficients for these variables.

Official development assistance and government final consumption expenditure impact positively on economic growth with one percent level of significance. One unit official development assistance increases 5 units real GDP whereas one percent increase in final consumption increases 1.39 units real GDP in South Asian countries.

Domestic credit to private sector positively impact economic growth and political rights impact negatively but their coefficients are found to be statistically insignificant.

Estimated results of the remittance growth model applying FEM and REM methods are given in Table 8.9. In Table 8.9, we present the coefficients of the regressors that are used in the model of macroeconomic impact of remittances on economic growth with their respective probability value. If we look at the estimated F-statistic value (220.70) of FEM and Wald $\chi^2$ statistic (30997.1) of REM, we find both are statistically significant at 1

percent level which indicates that, in both models, economic growth in South Asian countries are jointly and significantly explain by the regressors.

One of the notable results is found in FEM estimation where, the coefficient of remittances found to be statistically insignificant which implies that remittances do not promote economic growth in South Asian countries. However, in REM, we get statistically significant coefficient of remittances along with economically active population, official exchange rate and trade GDP ratio which are insignificant in FEM estimation results.

**Table 8.9: Results of FEM and REM on Remittances-Growth Model**

| | FEM | | REM | |
|---|---|---|---|---|
| Explanatory Variables | Coefficients | Probability | Coefficients | Probability |
| Initial Real GDP | 0.3362874*** | 0.0000 | 0.38287*** | 0.000 |
| Official Remittance Inflows | 0.2224654 | 0.756 | 1.27921** | 0.016 |
| Gross Fixed Capital Formation | 0.8952086*** | 0.000 | 0.8959291*** | 0.000 |
| Economically Active Population | 595.36 | 0.657 | -1479.28* | 0.094 |
| Official Exchange Rate | 186.43 | 0.239 | 308.96** | 0.041 |
| Inflation Rate | -1292.54*** | 0.006 | -1317.837** | 0.004 |
| Foreign Direct Investment | -1.531092** | 0.030 | -1.240787* | 0.070 |
| Official Development Assistance | 5.580009*** | 0.0000 | 5.050821*** | 0.000 |
| Total Trade GDP Ratio | 103.12 | 0.722 | -363.34** | 0.052 |
| Government Consumption Expenditure | 1.827167*** | 0.0000 | 1.388638*** | 0.000 |
| Domestic Credit to Private Sector | -227.96 | 0.454 | 76.16 | 0.780 |
| Political Rights Index | -587.93 | 0.771 | -1514.27 | 0.441 |
| Constant | -39399.5 | 0.593 | 94912.95** | 0.039 |
| Number of Observations | 177 | | 177 | |
| Number of Cross sections | 5 | | 5 | |
| F-statistic (p-value)/ Wald ($\chi^2$) | 220.70*** | 0.000 | 30997.01*** | 0.000 |

**Note**: *, ** and *** indicate significance at 10 percent, 5 percent and 1 percent respectively

In selecting between these two models we run Housman specification test. In Houseman specification test null hypothesis is REM is appropriate. Alternative hypothesis: FEM is

appropriate. Housman $\chi^2$ value is found to be 12.74 with the probability value of 0.2388. Here the probability value is very high. It means that our null hypothesis of appropriateness of REM cannot be rejected. So, REM is appropriate model to explain the outcome of the macroeconomic determinants of remittances in South Asian countries.

Empirical result of system GMM estimation technique is presented in Table 7.10. The result is the outcome of the estimation of equation (6.5) estimated by applying the system Generalized Method of Moment (SGMM) estimation technique.

**Table 8.10: SGMM Estimation Results of Remittances-Growth Model (Dependent Variable: Real Gross Domestic Product)**

| **Regressors/ Explanatory Variables** | Coefficients | Probability |
|---|---|---|
| Initial Real GDP | 0.3220386*** | 0.000 |
| Official Remittance Inflows | 0.8483845** | 0.029 |
| Gross Fixed Capital Formation | 0.9347643*** | 0.000 |
| Economically Active Population | -1131.044 | 0.131 |
| Official Exchange Rate | 343.02*** | 0.000 |
| Inflation Rate | -1778.74*** | 0.000 |
| Foreign Direct Investment | -1.3672*** | 0.000 |
| Official Development Assistance | 6.5054*** | 0.000 |
| Total Trade GDP Ratio | 155.349 | 0.334 |
| Government Final Consumption Expenditure | 1.3886*** | 0.000 |
| Domestic Credit to Private Sector | -199.1859 | 0.286 |
| Political Rights Index | -1705.78 | 0.148 |
| Constant | 63301.91 | 0.122 |
| Number of Observations | 177 | |
| Number of Cross sections | 5 | |
| F-Statistic (Wald $\chi^2$) | 69763*** | 0.000 |
| F-statistic (p-value) | 0.000 | |

**Note**: *, ** and *** indicate significance at 10 percent, 5 percent and 1 percent respectively

The result is given on the remittances-growth nexus which involves measuring the impact of remittances and other control variables on the economic growth of the five South Asian countries.

The F-statistic is the small-sample counterpart of the Wald $\chi 2$ statistic and it is a measure of the overall significance of the estimated models. The estimated value of Wald $\chi 2$ statistic is highly significant which indicates that all the explanatory variables jointly explain the economic growth of five South Asian countries.

The positive significant coefficient of initial real gross domestic product indicates that past realizations of economic growth produce some contemporaneous positive impact on economic growth. Precisely, a 100 percent increase in the past realizations of growth explained positively, about 32 percent of current growth levels. This result complies with the results of Okuda, (2010) and Ahortor and Adenutsi, (2009).

The coefficient of official remittance inflows is found to be positive and statistically significant. This indicates that remittances exert positive impact on economic growth in South Asian countries. More precisely, a $1 increase in remittance inflows increases real GDP by$ 0.85.

Result indicates that physical capital accumulation is very crucial for economic growth in the region. The coefficient of gross fixed capital formation is positive with 1 percent level of significance. The value assigned to the coefficient is 0.95 which indicates that $1 physical capital adds $0.93 real GDP to the economy of five South Asian countries.

The percentage of economically active population negatively affects economic growth. However, the coefficient is not statistically significant. We get negative value, probably, because of insufficient capital accumulation to cover the required investment for stimulating growth due to high population growth.

The coefficient of official exchange rate is found to be positive with 1 percent level of significance. It implies that depreciation of official exchange rate increases real GDP of this region through encouraging more exports abroad. The coefficient of official exchange rate indicates that 1 percent depreciation of foreign exchange increases real GDP by $343 million.

The coefficient of inflation rate is significantly negative. This result indicates that a 1 percent increase in inflation rate explains about $1778.75 million reduction in real GDP in the selected South Asian economies. The negative coefficient for inflation rate is of course not unexpected as it hampers economic stability and acts like tax on the income of the people.

Though, we have positive priori expectation regarding the impact of foreign direct investment on economic growth, we obtain a statistically negative coefficient of foreign direct investment. The reason behind this negative impact of FDI may be that foreign investors repatriate more funds to their countries than they invest.

The coefficient of official development assistance is positive and significant with 1 percent level of significance. The official development assistance provides a stable and active source external capital which promotes economic growth in this region. The estimated coefficient of official development assistance indicates that $1 official development assistance increases $6.51 real gross domestic product in South Asian countries.

The impact of trade-GDP ratio on economic growth is found to be positive but statistically insignificant. Trade-GDP ratio is used as an index of openness and globalization. So, the impact of external trade is important in South Asian countries as it exerts positive influence on economic growth.

Though previous empirical study assumes that government consumption is detrimental to economic growth, we find it is conducive to economic growth. The coefficient of government final consumption expenditure is positive and statistically significant with 1 percent level. The result indicates that $1 government spending increases real GDP by about $1.39 in South Asian countries. In this case, government spending may boost up aggregate demand by which economic growth may be accelerated.

Domestic credit to private sector by bank as a share of GDP is used as an index of financial development. Our estimated result indicates that financial development fails to impact significantly on economic growth in South Asian countries. The reasons behind this negative and insignificant impact of domestic credit may include still maximum people remain outside banking channels or domestic credit to private sector by bank to GDP share may not be good index of financial development.

The estimated coefficient of institutional variable is found to be -1705.78 with a probability value of 0.133.That is, we get a negative and statistically insignificant value of political right index. This means that institutions fail to affect economic growth in South Asian countries.

## 8.5 Conclusion

This Chapter presents the empirical results of the models of macroeconomic determinants of remittances and macroeconomic impact of remittances on economic growth in South Asian countries over the period of 1976-2012. We estimate the models applying pooled OLS, FEM, REM and the Arellano-Bover/Blundell-Bond Systems of Generalized Method of Moments (SGMM) method. Before presenting the estimated empirical results, we discuss the statistical properties of the data used in the models. Results of the macroeconomic determinants of remittances in South Asian countries show that the main determinants of remittance inflows in South Asian countries are host and home countries income, number of migrants abroad and financial deepening, domestic inflation and domestic political rights. Empirical results suggest that remittances in South Asia are mainly driven by altruistic motive which is indicated by significant negative coefficient of domestic per capita GDP. That is, the inflow of remittances increases when domestic economic conditions in this region worsen, emphasizing compensatory nature of remittances. The positive coefficient of 9/11, 2001 dummy indicates that migrants are now channeling more remittances through formal channel. Our findings also suggest that well functioning domestic institutions and stable political environment seem to receive more remittances in this region. A deeper, wider and stable financial sector creates a conducive environment to channel more remittances to friend and family of migrant.

Results of the remittance growth model indicate that remittances play a very significant role in promoting economic growth in South Asian countries. Physical capital, government spending and official development assistance play positive role on economic growth. Official exchange rate plays a positive role on growth that is, depreciation of foreign currencies promote exports and attract more remittances which in turn promote economic growth. Inflation rate exerts negative influence on economic growth. Financial development, political rights index, trade GDP ratio and economically active population do not show significant role on economic growth in South Asian countries.

# Chapter 9

## Summary, Conclusion and Policy Implication

### 9.1 Introduction

This Chapter goes on to give a brief summary of previous Chapters concludes this research. It reiterates the research hypothesis and research findings. We also raise some policy implications to address our objective on how to make migration and remittances a more effective tool for promoting economic growth in South Asian countries.

This Chapter is organized as follows: Section 9.2 presents the summary of the chapters, Section 9.3 gives the concluding remarks of the study, Section 9.4 provides implications of results, Section 9.5 mentions policy implications for Bangladesh, some policy suggestion are given in Section 9.6 and Section 9.7 identifies some scope of further research.

### 9.2 Summary of the Chapters

South Asia is basically a remittance economy as it sends out a significant number of migrants in other countries every year and receives a huge amount of remittances. In 2014, it is projected that South Asian region receives US$ 117 billion remittances. It is found that South Asia has a comparative advantage in sending low-skilled manpower at low costs. South Asian countries are now enjoying the benefits of demographic dividends. International migration provides the maximum benefits of this dividend by providing employment opportunities of the economically active labor force. Migration is now recognized as a key enabler of equitable, inclusive and sustainable development. Migration can promote economic development with effective, conducive and right migration policies. It contributes to achieving the MDGs by raising incomes, funding investment in human capital, contributing to the transfer of knowledge and ideas, and promoting trade and investment flows between countries of origin and destination. It is basically a multilateral phenomenon as it is incorporated in the basic ideas of World Trade Organization (WTO) in the form of Mode 4 (movement of natural person) of General

Agreement of Trade in Services (GATS). However the negotiating status of Mode 4 is still negligible. Remittances are the most significant and tangible outcome of international migration. At the macroeconomic level, remittances can provide positive impact on economic growth for the recipient countries by augmenting their disposables incomes, savings and investments; booming foreign currency reserves thus increasing creditworthiness of the country. If remittances are saved and invested by the migrants and their family they can contribute directly to economic growth, if they are consumed they impact positively on growth through multiplier effects.

In Chapter 2, we review in detail the literature related to migration, remittances and economic growth in South Asian countries. Literatures on macroeconomic determinants of remittances are reviewed to find out the factors influencing remittances and the empirical and econometric methods used in the remittance determination model. The variables- home country income, host country income, inflation rate or inflation differentials between home and host countries, exchange rate or real effective exchange rate, interest rate or interest rate differentials, private sector credit to GDP or broad money (M2) to GDP, institutional quality index, political rights index, total number of migrants abroad, net migration, total labor force, economically active labor force, rate of unemployment in home country and host country, wage rate at home and host country, oil price, lagged remittances, agricultural GDP of home countries, adjusted savings, age dependency ratio and dual exchange rate have been found as determinants of remittance inflows. In estimating the macroeconomic impact of remittances on economic growth in the South Asian countries, we review the literatures on remittances-growth nexus. We identify the other control variables in addition to remittances which impact on economic growth. Moreover, literatures on methodological issues, and other issues related to migration remittances and economic growth are also reviewed. From the literature review, research gap is identified to carry on our study on macroeconomic relationship of migration, remittances and economic growth in South Asian countries.

A brief description of the theories of migration, theories of remittances and theories of economic growth is given in Chapter 3. Description of these theories provides us the indication of how and why migration, remittances and economic growth are related with each other. Migration theories can be classified and analyzed on the basis of level they focus on, such as, micro level, meso level and macro level, on the basis of initiation and

perpetuation of migration, and on the basis of various discipline of science. From the theories of migration we are able to know that migrants do not take decision to migrate in a vacuum rather they are influenced by some factors. They take the decision to migrate on the basis of the costs and benefits of migration at the micro-level. The most important factors of taking migration decision include the push and pull factors of origin and destination countries, feelings of relative deprivation, risks and dysfunctional credit markets, segmentation of host countries' labor market, demography of labor supply, network influence, institutional set up, prospect of improved income and sending remittances to home countries, penetration of developing countries into capitalist world system and structural inflation. In the next section, remittance theories are presented which describe the motivations behind remitting income to home country. The remittance theories also provide guidelines to identify determinants of remittances. In sending remittances migrants are motivated by altruism, self-interest, exchange, insurance, investment, strategies, loan repayment, inheritance and enforcement. Then, theories of economic growth are given briefly. We know that the quantitative change in output is regarded as economic growth. Generally, economic growth is estimated from production function by relating input and output. There are various theories of economic growth which try to explain the mechanics of economic growth. From the described theories of growth, we can identify the following factors as indicators of economic growth: rate of investments, accumulation of labor surplus value, national savings ratio and national capital output ratio, capital accumulation and human capital formation.

The Chapter 4 describes the trends and patterns of migration, remittances and economic growth in South Asian countries with a view to showing the direction of the trends and links among the variables. We start this chapter by describing the global trends of migration and remittances. The number of international migration is increasing from 154 million in 1990 to 232 million in 2013. There are four migration path ways. Migration within the same region is increasing in the recent years. It is estimated that South-South, i.e., developing countries to developing countries, migration (36 percent) migration larger than South-North, i.e., developing countries to developed countries, migration (35 percent) and found that international migration is highly concentrated in some countries namely USA, Saudi Arabia, UAE, Malaysia, South Korea, Canada, France, UK and Australia. Remittances become the most stable and resilient source of external income of

developing countries. In 2014, remittances to developing countries are projected to reach $435 billion. Remittances are more than three times larger than official development assistance (ODA), and excluding China, significantly exceed foreign direct investment (FDI) flows to developing countries in 2013. Three South Asian countries are included in the world's top ten remittances receiving countries in 2013 with India in the first position and Pakistan and Bangladesh in the 7th and 8th position respectively. South Asia remains a good source of international migrants in the world. However, there are variations of female migration in this region. In compare to other countries in this region, Bangladesh sends very few numbers of female migrant abroad. Very low percentage of migrants to population in South Asian countries indicates that still more scopes are remaining in sending more migrants abroad. Remittances are the largest sources of external resource flows in South Asian region and it exceeds the amount of ODA, FDI and private and portfolio equity flows received in this region. Country specific trends of migration, remittances and economic growth are explained in this chapter. We find upward trends of migration and remittances in all our sampled countries. But in case of growth trend we find upward trend for Bangladesh, India and Sri Lanka; almost constant growth trend for Nepal and negative growth trend for Pakistan.

Chapter 5 presents the conceptual framework of the relationship among migration, remittances and economic growth to show how they are interlinked with each other. The key issues and concepts are explained in this chapter. In this Chapter, we describe the economic models on the basis of the conceptual framework. We form the model of macroeconomic determinants of remittances with the help of additive utility function of a representative migrant who maximizes his/her life time consumption and transfers in the form of remittances to his/her families at home with respect to income constraint, initial divergence constraints and impetus effect constraints. We further form a neo-classical growth model of Cobb-Douglas form to show the remittances-economic growth nexus.

Chapter 6 discusses the empirical framework of this study. To test the two research hypotheses, two empirical models are applied. To test the first hypothesis - remittances in South Asia are mostly determined by home and host country's economic conditions, number of emigrants and macroeconomic factors of home country- we execute the empirical model of macroeconomic determinants remittances. Before constructing the model of determinants of remittances we discuss the potential factors and motivations of

determining remittance inflows. The model of macroeconomic impact of remittances on economic growth is constructed to test the hypothesis that remittances do not significantly promote economic growth in South Asian countries. There are different sources of economic growth, such as, natural resources, gold and silver, capital accumulation, savings rate, surplus labor value, technological progress, monetary and fiscal policies, FDI, human capital etc. Remittances are also considered as a potential indicator of economic growth recently. Remittances can impact on economic growth through the channels of capital accumulation; labor force growth; and total factor productivity growth. They may exert positive impact on economic growth by increasing incomes and savings, smoothening consumption, reducing output volatility, speeding up financial development, forming human capital, increasing foreign currency and country's creditworthiness. They may also decrease economic growth by appreciating foreign exchange rate i.e. Dutch diseases effect, reducing labor market participation, i.e., moral hazard problem, reducing government initiatives to public expenditures and exerting inflationary pressures on the economy. We construct an empirical model of impact of remittances on economic growth by considering real GDP as an index of economic growth and real remittances along with some control variables as explanatory variables.

Chapter 7 presents the econometric methodology of the study. It includes the detailed elaboration of panel data estimation techniques. We give the description of panel data, pooled OLS regression, Fixed Effects Model, Random Effects Model, dynamic panel data model, Arellanno-Bond GMM model and Blundell-Bond SGMM model. We conclude that Blundell-Bond Systems GMM method gives consistent and efficient estimates. Finally, we critically analyze empirical estimation issues of dynamic panel data method. And find that Blundell-Bond SGMM method is good at handling problems faced (for example, autocorrelation, heterogeneity and dynamic endogeneity bias) in dynamic panel model. The dynamic structure of a panel data model tells that the OLS estimator is upward biased and inconsistent, this is because the lagged level of dependent variable is correlated with the error term. The problem is not solvable even if the within transformation is applied owing to a downward bias and inconsistency. FEM estimator is found to have downward bias. The Generalized Method of Moments (GMM) method turns out to be the possible solution. This methodology not only eliminates any bias that may arise from ignoring dynamic endogeneity, but also provides theoretically sound and powerful

instruments that account for simultaneity while eliminating any unobservable heterogeneity.

Chapter 8 is the main analytical one of our study. Estimated empirical results of the macroeconomic determinants of remittances model and the impact of remittances on economic growth model are presented in this chapter. Before presenting the results of the models, we give the statistical properties of the data that are used in the models in the form of summary statistics and bivariate correlation matrix. Then, results obtained from pooled OLS regression, Fixed Effects Model, Random Effects Model and System Generalized Method of Moments (SGMM) techniques are given. We mainly interpret the results obtained from SGMM estimation technique along with pooled OLS, FEM and REM results.

We estimate the macroeconomic determinants of remittances model to check the hypothesis that remittances in South Asian countries are mostly determined by home and host country's economic conditions, number of emigrants and macroeconomic factors of home country. Results from SGMM, pooled OLS, FEM and REM methods show that home country's economic condition is providing a significant and negative impact on remittances in South Asian countries. This implies that remittances are regarded as compensatory transfers and they are altruistically motivated. We find that host country's economic condition has a positive impact on remittance inflows in this region, that is, we get the expected sign. However, the coefficient of this variable is found statistically insignificant. The number of migrants to mid-year population is found to be a positive and significant determinant of remittance inflows in South Asian countries in all econometric methods that are applied. This finding indicates that there is a significant relationship between migration and remittances in this region. Among the macroeconomic factors of home countries, we obtain that domestic inflation rate plays a negative influence on remittance inflows in pooled OLS, REM and SGMM methods, that is, rising inflation rate discourages remitters to remit their money in home country. But in case of FEM methods, we get expected negative sign with insignificant coefficients. The coefficients of financial development and political rights index are found to be significantly positive. This implies that improved financial and political institutions play important role to receive more remittances in South Asian countries. However, FEM method gives insignificant result for financial development.

We empirically estimate the remittances-economic growth nexus model to test the hypothesis that remittances do not promote economic growth in South Asian countries. Results from the model applying pooled OLS, REM and SGMM methods indicate that remittance is a positive and significant factor of economic growth in South Asian countries. This implies that increasing volume of remittances contribute positively to economic growth in the South Asian region. However, in case of FEM methods, we obtain a positive but insignificant impact of remittances on economic growth. Among other control variables of our remittances-economic growth nexus model, we get a positive and significant impact of official exchange rate on growth in pooled OLS, REM and SGMM methods which imply that depreciation of official exchange rate increases economic growth in South Asian countries. Like remittances, we get insignificant impact of official exchange rate on growth in case of FEM methods. The impact of gross fixed capital formation, official development assistance and government final consumption expenditure are found to be significantly positive in all econometric methods. This indicates that these variables exert positive impact on economic growth in South Asian countries. The negative and significant coefficients of foreign direct investment and inflation rate in pooled OLS, FEM, REM and SGMM methods indicate that they play a negative role in promoting economic growth in this region. The coefficients of economically active population, trade GDP ratio, domestic credit to private sector and political rights index are found to be statistically insignificant implies that they do not play any role in promoting economic growth in South Asian countries.

## 9.3 Conclusion

In this study, we examine the macroeconomic determinants of remittances in South Asian countries forming a dynamic panel data model by using time series data from 1976 to 2012. We estimate the model of macroeconomic impact of remittances on economic growth in this region. As an econometric methodology we apply most recent panel data estimation technique of system Generalized Method of Moments (SGMM) along with pooled OLS regression model, FEM and REM. The macroeconomic determinants of remittances model are constructed within the framework of additive utility function and the remittance-growth nexus model is formed within the framework of neo-classical growth model.

Results of the model of macroeconomic determinants of remittances indicate that migration is a significant factor of receiving remittances in South Asian countries. We conclude from the estimated result of the remittance-growth model that remittance inflows are significant determinants of economic growth in the region. This confirms that the concepts of migration, remittances and economic growth are statistically and significantly interlinked with each other and the most visible outcome of migration which impact economic growth is remittance. The importance of the overwhelming flow of remittances in the economies of South Asian countries cannot be ignored at the face of changing global order where most of the economies in the world are transforming themselves to the call of increasing economic liberalization, and globalization and transmuting towards more open markets with freer flows of goods and other factors including labor across borders.

### 9.4 Implication of Empirical Results

- Since results imply that the rate of inflation affects negatively the inflow of remittances, a stable macroeconomic environment with low level of inflation is needed to offer an incentive to the migrants to send more remittances to home countries.

- Better institutions and more stable political system and good governance of home country can contribute to attractive environment to receive more remittances as political rights index is found to be positively significant.

- A vibrant, well organized and wider, speedy and cost efficient financial system, and accelerated financial intermediation is very important to receive more remittances since financial development shows a positive impact on remittance GDP ratio.

- Migration friendly policy formulation is mandatory to send more migrants abroad thus receiving more remittances in South Asian countries as we get a significant positive impact of migrant to population ratio on remittance GDP ratio.

- Tighter monetary regulation to prohibit money laundering, lower and competitive cost of transferring remittances can create an environment to channel remittances

through formal channel, thus, increase the inflow of remittances which is indicated by results obtained for time dummy.

- Incentive oriented policy measures should be adopted receive more remittances, as it is private transfer. Moreover, government should ensure cheap, efficient, safe and cost effective formal channels for sending and receiving remittances to boost up economic growth in South Asian countries which is indicated by the positive impact of remittances on economic growth.

- This region should create effective policies to reduce the transaction cost to ensure the continuous inflows of workers' remittances. The cost of sending and receiving remittances is still very high (global average 7.9%). The rate should be reduced by creating an attractive business environment for money transfer service operators; reforming the monetary policies related to foreign exchange restrictions or channeling of all the foreign exchange dealing through the central bank; removing regulatory obstacles that affects the availability or outreach of financial services; and reducing the legal and bureaucratic barriers to the money transfer market entry. We need to reduce informality and improve competition in transferring remittances.

- It is found that gross fixed capital formation positively affects economic growth. It implies that accumulation of physical capital and its utilization in investment projects promotes economic growth in this region.

- We find a negative but insignificant coefficient of economically active population. The insignificant coefficient implies that population has no effect on economic growth and attached negative sign implies that majority of the active population fail to provide an effective role in productive activities. So governments should take policy to make this population into a really active part of the economic activities.

- The coefficient of official exchange rate is found significantly positive. It implies that depreciation of exchange rate exerts positive impact on economic growth in South Asian countries.

## 9.5 Policy Implications for Bangladesh

On the basis of discussions and findings of the research, this section provides policy implications for Bangladesh. Bangladesh is a densely populated country and she lacks adequate resources and infrastructures to boost up her economic growth. World Bank (2012) reveals that Bangladesh is the only country in South Asia where growth in labor force outpaced growth in employment during the last decade. Official statistics reports that Bangladesh has only 5 percent unemployment rate (Labor Force Survey, BBS, 2010), but unemployment rate for 2010 becomes as high as 24.0 percent if underemployment is added to unemployment rate (Khatun, 2014). Economist Intelligence Unit Report-2014 reveals that 47 percent Bangladeshi graduates are unemployed. Bangladesh ranks 7$^{th}$ position in the world and 3$^{rd}$ position in South Asia to receive remittance. But remittance as percentage of GDP, Bangladesh is far behind Nepal. At present, Bangladesh is enjoying demographic dividends, i.e., a larger volume of working age population. If we consider these characteristics of Bangladesh, we find migration as alternative solution to mitigate unemployment and underemployment pressures, to provide employment opportunity for graduate students, to open avenues for receiving more remittances and to boost up economic growth.

Country specific summary statistics in Chapter 4 and empirical findings of Chapter 8 indicate us to provide further policy suggestions for Bangladesh. Mean capita GDP of Bangladesh is found to be lower than those of other 4 countries of South Asia. Since, we find remittance as compensatory transfer of incomes, so Bangladesh receives more remittances than other countries in the region. During the study period, mean remittance GDP ratio in Bangladesh is found to be lower than that of Nepal, Sri Lanka and Pakistan, so, she should formulate policy to facilitate remittances flow and receive more remittances. Financial indicator's of Bangladesh, i.e., broad money as a percentage of GDP, is lower than other countries used in this study. Since financial development is regarded as a positive factor of receiving more remittances, Bangladesh should strengthen her financial sector. Physical capital accumulation is found to be an important determinant of growth in this study and Bangladesh's mean gross fixed capital formation is also found to be lower than that of India, Pakistan and Sri Lanka. Therefore, Bangladesh should formulate policy to stimulate physical capital to increase economic growth rate. Since political rights index plays a positive role to attract more remittances and the mean

political rights index is found to be lower than that of Pakistan, Nepal and Sri Lanka, so, Bangladesh should ensure political stability and good governance, and increase institutional and governance quality. Bangladesh's mean value of migrant population is lower than that of Nepal and Sri Lanka. Since migration is found to be one of the main determinants of remittances in this study, and she has excess population and enjoying demographic dividends, so migration friendly policy formulation is needed to send more migrants abroad without any harassment and excess cost.

### 9.6 Policy Suggestions

Empirical results of the study show that there are significant relationships among migration remittances and economic growth in South Asian countries. Results of macroeconomic determinants of remittance model imply that migration is a significant factor of remittance inflows and the results of remittance-economic growth model confirms that remittances significantly and positively affect economic growth in this region. Therefore, right and effective policies are very important to accelerate the migration from South Asian countries to the rest of the world so that more remittances can promote economic growth in this region. In this context, we can mention the following suggestions to complement the above policy implications:

- Governments in the South Asian countries need to develop effective migration management policies that protect migrants and enhance their rights making migration safe and orderly. The migration process must be well-managed so that migrants receive complete information about employment and implementing regulations. The home and host countries are encouraged to ratify and effectively implement all core international human rights instruments including the migrants' rights.

- Government should emphasize on ensuring quality migration rather on its quantitative aspects. In this context, basic understanding of language, culture, legal, social and political set up of destination countries along with proper education and training is needed.

- Migration policies in the South Asian countries should be gender sensitive, taking into account specific needs of men and women, and women migration should be

placed at the center of migration policy. In the process of migration, government should act as an enabler of migration process rather than a controller so that irregular forms of migration can be reduced. The governments can monitor and oversee the activities of private recruiting agencies and prevent the unfair means in dealing with international migration but should not control or stop their activities strictly.

- To ensure equitable, sustainable and inclusive development from international migration, policy coherence at all levels through local, national, regional and global cooperation should be strengthened; cooperation among origin, transit and destination countries should be deepened; and global partnerships in the post-MDGs framework should be established.

- The governments and related institutions should promote matching of skills and jobs as well as labor supply and demand between origin and destination countries; they should calibrate skill training and education to the sectors with good prospects for robust job growth in the destination countries' labor market and tap into the networks of highly skilled emigrants to create more opportunities for new comers; facilitate circular migration through enhancing portability of social security entitlements and recognition of professional qualifications.

- Remittances are mostly spent on consumption; other forms of investment opportunities are limited except buying land, rearing livestock and building livestock. So policies should be formulated keeping in view the creation of investment climate and provide incentives to migrants and diasporas to promote domestic investment in South Asian countries. In this context, facilities to import machinery and equipment at concessional duty rate for investment in the business enterprises can be given to the migrants and diasporas.

- Remittances even if are used for consumption, there is a need for policies that protect local industries. Because remittances can exert positive growth when they are used to buy locally produced products. The proportion of consumption spending from workers' remittances on imported goods should be reduced.

- The governments of South Asian countries can raise the required foreign currency for economic development by issuing diaspora bond. To make this offer attractive to the diaspora, the governments should ensure good governance, transparency and rule of law. Our empirical results also confirm that the quality of political institutions plays a dominant role in attracting remittance inflows and increasing its impacts on economic growth in the region.

### 9.7 Scope of Further Research

We examine the macroeconomic relationship among migration, remittances and economic growth in South Asian countries by using dynamic panel data estimation technique. The research field of migration and remittances is vast and various studies on migration and remittances may be further conducted. We suggest following areas for further research:

- South Asia is a disaster prone area in the world, so one can examine a study on environmental impact of migration in this region.
- Human rights, workers rights and migrant rights are the most talked issues in the recent time. Therefore, a study can address the issues of migrants' rights in the light of decent work framework.
- The impact of migration and remittances on the level of poverty in South Asian region can be investigated.
- There are different methods of assessing the impact of migration and remittances. One can attempt to examine the effects of migration and remittances by using Computable General Equilibrium (CGE) framework or Impulse response function.

# Bibliography


Abdih Y., Chami R., Dagher J., and Montiel P., 2008, Remittances and Institutions: Are Remittances a Curse?, IMF Working Paper 08/29 (Washington: International Monetary Fund).

Adenutsi D. E., 2014, Macroeconomic Determinants of Workers' Remittances and Compensation of Employees in Sub-Saharan Africa, The Journal of Developing Areas Vol 48, No.1, pp. 337-360.

Adullalev R., 2011, Impact of Remittances on Economic Growth in Selected Asian and Former Soviet Union Countries, Master's Thesis, School of Economics and Management, Lund University.

Aguinas D. R., 2006, Remittances and Development Trends, Impacts and Policy Options A Review of the Literature, Migration Policy Institute, Washington D.C.

Ahmed N., 2008, Economic Determinants of International Remittances in Pakistan, Ph D. Thesis, Department of Economics, University of Sargodha, Pakistan.

Ahmed J., Zaman K. and Shah, I. A., 2011, An Empirical Analysis of Remittances-Growth Nexus in Pakistan Using Bound Testing Approach, Journal of Economics and International Finance, Vol. 3, No. 3, pp. 176-186.

Ajilore T. and Ikhhide S., 2013, Growth Effects of Migrants' Remittances in Selected Sub-Saharan African Countries, Journal of Economic and Financial Sciences, Vol. 6 No.3, pp. 707-730.

Alam A.N.M. F., 2012, Macroeconomic Implications of International Migrant's Remittances in Bangladesh, Master's Thesis, Asian Institute of Technology, School of Management, Thailand.

Ali M. B., 2012, Macroeconomic Factors Influencing Foreign Remittances: The Case of Bangladesh, International Journal of Academic Research in Accounting, Finance and Management Sciences, Vol. 2, Issue 3, pp. 217-229.

Alleyne D., Claremont D. K. and Figueroa M., 2008, Macroeconomic Determinants of Migrant Remittances to Caribbean Countries: Panel Unit Roots and Cointegration, The Journal of Developing Areas, Vol. 41, No. 2, pp. 137-153.

Alleyne D., 2006, Motivations to Remit in CARICOM: A GMM Approach, Social and Economic Studies, Vol. 55, No. 3, pp. 68-87.

Anderson T.W. and Hsiao C., 1982, Formulation and Estimation of Dynamic Models using Panel Data, Journal of Econometrics Vol.18, pp. 47-82.

Arellano M. and Bover O., 1995, Another Look at the Instrumental Variable Estimation of Error-Components Models, Journal of Econometrics, Vol. 68, No. 1, pp. 29-51.

Arellano M. and Bond S., 1991, Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, Review of Economic Studies, Vol. 58, No. 2, pp. 277-297.

Balde Y., 2009, Migrnats' Remittances and Economic Growth in Sub-Saharan Africa, Laboratoire d'Analyse et de Prospective Economique (LAPE) Université de Limoges, France.

Moon B. K., 2013, Making Migration Work: an Eight Point Agenda for Action, High Level Dialogue on International Migration and Development, New York.

Barajas A., Chami R., Fullenkamp C., Gapen M. and Peter M., 2009, Do Workers' Remittances Promote Economic Growth?, IMF Working Paper No. WP/09/153.

Barbora S. 2007. Land, Class and Ethnicity: Permutations of Environmental Conflicts in Two Districts of Assam [PhD dissertation], North Eastern Hill University, Department of Sociology, Shillong, India.

Barguellil A., Zaiem M. H. and Zmami M., 2013, Remittances, Education and Economic Growth A Panel Data Analysis, Journal of Business Studies Quarterly, Vol. 4, No. 3, pp. 129-139.

Barro R. J., 1997, Determinants of Economic Growth: A Cross-Country Empirical Study Cambridge, MA: MIT Press.

Barro R, J. and Sala-i-Martin X., 1995, Economic Growth, McGraw-Hill, London.

Barua S., Majumder M. A. and Akhtaruzzaman M., 2007, Determinants of Workers' Remittances in Bangladesh: An Empirical Study, Working paper Series: WP 0713, Policy Analysis Unit, Bangladesh Bank, Dhaka.

B.B.S., 2014, Report on Survey on the Use of Remittances (SUR) 2013, Bangladesh Bureau of Statistics, Statistics and Information Division, Ministry of Planning.

Begum M. N. and Sutradhar R. R., 2012, Behavior of Remittance Inflows and its Determinants in Bangladesh, Working Paper Series: WP1202, Research Department, Bangladesh Bank, Head Office, Dhaka.

Bettin G. and Zazzaro A., 2009, Remittances and Financial Development: Substitutes or Complements in Economic Growth?, MoFir Working Paper No. 28.

Bhatta G. R., 2013, Remittances and Trade Deficit Nexus in Nepal: A VECM Approach, NRB Economic Review.

Blomstrom M., Lipsey R. and Zejan M., 1995, Is Fixed Investment the Key to Economic Growth?, The Quarterly Journal of Economics, Vol. 111, No 1, pp. 269-276.

Blundell R. W. and Bond S., 1998, Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, Journal of Econometrics, Vol. 87, No. 1, pp. 115-143.

Bond S. R., Hoeffler A. and Temple J., 2001, GMM Estimation of Empirical Growth Models, Center for Economic Policy Research Discussion Paper No. 3048.

Bouhga-Hagbe, J., 2004, A Theory of Workers' Remittances with an Application to Morocco, IMF Working Paper 04/194. Washington, DC: The International Monetary Fund.

Bougha-Hagbe J., 2006, Altruism and Workers' Remittances: Evidence from Selected Countries in the Middle East and Central Asia, IMF Working Papers WP/06/130, Middle East and Central Asia Department, International Monetary fund.

Braun, J., 1993, Essays on Economic Growth and Migration. Ph.D. Dissertation, Harvard University.

Bruno M. and Easterly W., 1998, Inflation Crises and Long Rung Growth. Journal of Monetary Economics, Vol. 41, No. 1, pp. 3-26.

Buch C. and Kuckulenz A., 2004, Worker Remittances and Capital Flows to Developing Countries, Centre for European Economic Research (ZEW) Discussion Paper No. 04 31, ZEW, Mannheim.

Carling, J., 2005, Gender Dimensions of International Migration, Global Commission on International Migration, Geneva.

Casseli F., Gerardo E. and Lefort F., 1996, Re-opening the Convergence Debate: A New Look at Cross-country Growth Empirics, Journal of Economic Growth, Vol.1, Issue 3, pp. 363-389.

Castles S. and Kosack G., 1973, Immigration Workers and Class Structure in Western Europe, Institute of Race Relations, London.

Castle S. and Miller M.J., 2003, The Age of Migration, (Third Edition), Macmillan, London.

Castles S. and Miller M. J., 2009, The Age of Migration: International Population Movements in the Modern World, (Fourth edition), Guilford Press New York.

Catrinescu N., Leon-Ledesma M., Piarcha M. and Quillin B., 2009, Remittances, Institutions and Economic Growth, World Development, Vol.37, Issue 1, pp. 81-92.

CBS, 2006, Nepal Demographic and Health Survey, Population Division, Ministry of Health and Population, Government of Nepal, Kathmandu, Nepal.

Chami R., Fullenkamp C. and Jajah S., 2003, Are Immigrant Remittance Flows a Source of Capital for Development?, IMF Working Paper 03/189.

Chami R., Barajas A., Cosimano T. F., Fullenkamp C., Gapen M. and Montiel P., 2008, Macroeconomic Consequences of Remittances, IMF Occasional Paper No. 259 Washington, D.C.: International Monetary Fund.

Chami R., Hakura D. and Montiel P., 2009, Remittances: An Automatic Output Stabilizer?, IMF Working Paper 09/91.

Chami R. and Fullenkamp C., 2013, Beyond the Household. Finance & Development, International Monetary fund, Available at: http://www.imf.org/external/pubs/ft/fandd/2013/09/chami.htm.

Chang T. H. P., 1981, A review of micro migration research in the third-world context. In Migration Decision Making, Multidisciplinary Approaches to Micro level Studies in Developed and Developing Countries, Pergamon Press.

Chaudhury S., 2011, Remittance Inflow to Nepal: The Lifeline or a Cause of Trade Deficit? Available at: http://sawsea.blogspot.com/2012/08/remittance-inflow-to-nepal-thelifeline.html.

Chenery H. B. and Strout A., 1966, Foreign Assistance and Economic Development, American Economic Review, Vol. 56, No. 4, pp. 679-733.

Chowdhury M. M., 2011, Essays on International Migration, Ph.D Thesis, University of Nottingham, U.K.

Connell J. and Conway D., 2000. Migration and Remittances in Island Microstates: A Comparative Perspective on the South Pacific and the Caribbean. International Journal of Urban and Regional Research, Vol. 24, Issue 1, pp. 52-78.

Cooray A. V., 2012, The Impact of Migrant Remittances on Economic Growth: Evidence from South Asia, Review of International Economics, Vol. 20, No. 5, pp. 985-998.

Coppel J., Dumont J.C and Visco I., 2001, Trends in Immigration and Economic Consequences, OECD Economics Department Working Paper, No. 284.

Coulibaly D., 2009, Macroeconomic Determinants of Migrants' Remittances: New Evidence from Panel VAR, CES Working Papers, University of Paris.

Cox D. and Stark O., 1994, Intergenerational Transfers and the Demonstration Effect, Mimeo Boston College.

Das A. and Chowdhury M., 2011, Remittances and GDP Dynamics in 11 Developing Countries: Evidence from Panel Cointegration and PMG Techniques, The Romanian Economic Journal, Vol. XIV, No. 42, pp. 3-23.

Das A., 2012, Remittance Behavior of Migrants and its Macroeconomic Effects in Four Developing Countries, International Journal of Applied Behavioral Economics, Vol.1, Issue 1, pp. 12-25.

Datta K. and Sarker B., 2014, Relationship between Remittances and Economic Growth in Bangladesh: An Econometric Study, Bangladesh Development Research Working Seriesm, BDRWPS 19.

de Hass H., 2005, International Migration, Remittances and Development: Myths and Fact, Global Migration Perspectives No. 30, Centre for International Development Issues, Radbound University, The Netherlands.

de la Briere, Sadoulet B., de Janvry E. A. and Lambert, S., 2002, The Roles of Destination, Gender and Household Composition in Explaining Remittances: An Analysis of Dominican Sierra, Journal of Development Economics, Vol. 68, No 2, pp. 309-328.

DeJong, G. F. and Fawcett, J. T. 1981, Motivations for Migration: An Assessment and a Value-Expectancy Research Model. In: G. F. DeJong, and R. W. Gardener (eds.), Migration Decision Making: Multidisciplinary Approaches to Micro level Studies in Developed and Developing Countries. Pergamon Press, New York.

de Mello, L R., 1999, Foreign Direct Investment-led Growth: Evidence from Time Series and Panel Data, Oxford Economic Papers, Vol. 51, pp. 135-151.

Drinkwater S., Levine P., Lotti E. and Joseph Pearlman, 2002, The Economic Impact of Migration: A survey, Prepared for the Second Workshop of the Fifth Framework Program Project "European Enlargement: The Impact of East- West Migration on

Growth and Employment", Available at: http://www.eastwestmigration.org/migsurvey6.pdf.

Dilshad W. B., 2013, Impact of Workers' Remittances on Economic Growth: An Empirical Study of Pakistan Economy, International Journal of Business and Management, Vol. 8, No.24, pp. 126-131.

Domar E. D., 1946, Capital Expansion, Rate of Growth, and Employment. Econometrica, Vol. 14, No. 2, pp. 137-147.

Dos A., Santos D. and -Vinay F. P., 2003, Migration as a Source of Growth: The Perspective of a Developing Country, Journal of Population Economics, Springer, Vol. 16, No 1, pp. 161-175.

Faini R., 2002, Development, Trade, and Migration, Revue d'Economie et du Developpment Proceedings from the ABCDE Europe Conference.

Faini R., 2006, Migration and Remittances: The Impact on the Countries of Origin, University of Rome, Rome, Italy.

Faist T., 2000, The Volume and Dynamics of International Migration and Transnational Social Spaces, Oxford University Press, Oxford.

Faist T., 2008, Migrants as Transnational Development Agents: An Inquiry into the Newest Round of The Migration-Development Nexus, Population Space and Place, Vol 14, No.1, pp. 21-42.

Fayissa B. and Mohammed E. K., 1999, Foreign Aid and the Economic Growth of Developing Countries (LDCs): Further Evidence, Studies in Comparative International Development, Vol. 37, pp. 37-50.

Fayissa B. and Nsiah C., 2008, The Impact of Remittances on Economic Growth and Development in Africa, Department of Economics and Finance Working Paper series, Middle Tennessee State University, USA.

Fayissa B. and Nsiah C., 2011, Remittances and Economic Growth in Africa, Asia and Latin American-Caribbean Countries: A Panel Unit Root and Panel Cointegration Analysis, Department of Economics and Finance Working Paper Series, Middle Tennessee State University, U.S.A.

Fischer S., 1993, The Role of Macroeconomics Factors in Growth, Journal of Monetary Economics, Vol. 32, No. 3, pp. 485-512.

Freedom House, 2014, Freedom in the World Country ratings, Freedom House, USA.

Freund C. and Spatafora N., 2005, Remittances: Transaction Costs, Determinants, and Informal Flows, World Bank Policy Research Working Paper, Vol. 3704, Washington, DC: The World Bank.

Friedman U. and Ahmed D. Z., 2008, Ensuring Temporariness: Mechanisms to Incentivize Return Migration in the Context of GATS Mode 4 and Least Developed Country Interests, The Quaker United Nations Office, Geneva.

Fuentes G., Pablo A. and Kennedy P. L., 2009, Remittances and Economic Growth in Latin America and the Caribbean: The Impact of the Human Capital Development, Southern Agricultural Economics Association.

Funkhouser E., 1995, Remittances from International Migration: a Comparison of El Salvador and Nicaragua, Review of Economics and Statistics, Vol. 77, No. 1, pp. 137-146.

Global Commission on International Migration (GCIM), 2005, Migration in an Interconnected World: New Directions for Actions, GCIM, Switzerland.

Glytsos P. N., 2002, Dynamic Effects Migrants Remittances on Growth: An Econometric Model with an Application to Mediterranean Countries, The Centre of Planning and Economic Research, Athens, Greece.

Glytsos N. P., 1997, Remitting Behavior of "Temporary" and "Permanent" Migrants: The Case of Greeks in Germany and Australia, Labor, Vol. 11, No, 3, pp. 409-435.

Greenwood M. J., 1997, Internal Migration in Developed Countries, In Handbook of Population and Family Economics, ed. Mark R. Rosenzweid and Oded Stark, 647-720. Amsterdam, New York and Oxford: Elsevier Science, North-Holland.

Guiliano P. and Ruiz-Arranz M., 2005, Remittances, Financial Development, and Growth, IMF Working Paper 05/234 (Washington: International Monetary Fund).

Gupta P., 2005, Macroeconomic Determinants of Remittances: Evidence from India, IMF Working Papers WP/05/224, International Monetary Fund, Washington D. C.

Guzarati D. M., 2004, Basic Econometrics, Fourth Edition, Tata McGraw-hill Publishing Company, New Delhi, India.

Haque N. U. and Kim S. J., 1995, Human Capital Flight: Impact of Migration on Income and Growth, IMF Staff Papers Vol. 42, No.3, pp. 577-607.

Harris J. R. and Todaro M. P., 1970, Migration, Unemployment and Development: A Two-Sector Analysis, American Economic Review, Vol. 60, pp. 126-142.

Harrod R. F., 1939, An Essay on Dynamic Theory, The Economic Journal, Vol. 49, No. 193, pp. 14-33.

Hart R. A., 1975, Interregional Economic Migration: Some Theoretical Considerations, Journal of Regional Science, Vol.15, No. 3, pp. 289-300.

Hasan G. M., Shakur S. and Bhuyan M., 2012, Nonlinear Growth Effects of Remittances in Recipient Countries: An Econometric Analysis of Remittances-Growth Nexus in Bangladesh, University of Western Sydney.

Hasan M. M., 2008, The Macroeconomic Determinants of Remittances in Bangladesh, Institute of Microfinance (InM), Dhaka, Bangladesh.

Hatton T. J., 2006, Should We Have a WTO for International Migration?, Julian Simon Lecture Series, IZA, Bonn, Germany.

Hicks J. R., 1932, The Theory of Wages, London, Macmillan.

Hussain Z. and Naeem F., 2009, Remittances in Bangladesh: Determinants and 2010 Outlook End Poverty in South Asia: Promoting Dialogue on Development in South Asia, Washington, D.C., South Asia Region of the World Bank Group.

Imai S. K., Galha R., Ali A. and Kalcker N., 2012, Remittances, Growth and Poverty: New Evidence from Asian Countries, International Fund for Agricultural Development.

IMF, 2005, Workers' Remittances and Economic Development, International Monetary Fund, Washington D.C.

Jawaid S. T. and Raza S. A., 2014, Effects of Workers' Remittances and its Volatility on Economic Growth in South Asia, International Migration, International Organization of Migration.

Jawaid S. T. and Raza S. A., 2012, Workers' Remittances and Economic Growth in China and Korea: An Empirical Analysis, Iqra University, Karachi, Pakistan.

Jayaraman T.K, Choong C. K. and. Kumar R. R., 2012, Role of Remittances in India's Economic Growth, Global Business and Economics Review Vol 14, No. 3, pp. 159-177.

Jerome H., 1926, Migration and Business Cycles, NBER, Cambridge, MA, USA.

Karagoz K., 2009, Workers Remittances and Economic Growth: Evidence from Turkey, Journal of Yasar University, Vol. 4, Issue 13, pp. 1891-1908.

Katseli L., 2006, Introductory Comments of OECD debates 'Migration and Development: What Role for the WTO?' in WTO Public Forum 'What Role for the 21st Century?' Organized by the OECD Development Centre and Public Affairs and Communication Directorate, Geneva, Switzerland.

Kelegama S., 2011, Migration, Remittances and Development in South Asia, Sage Publication, New Delhi , India.

Khadria B., 2008, India in the Global Labor Market: International Economic Relations, Mobility of the Highly Skilled and Human Capital Formation, Working Paper No, 32, Institute of South Asian Studies, National University of Singapore.

Khathlan al. K., 2012, The Link between Remittances and Economic Growth in Pakistan: A Boon to Economic Stability, British Journal Economics, Management and Trade, Vol. 2, No.3, pp. 167-185.

Khatri S. K., 2007, Labor Migration, Employment and Poverty Alleviation in South Asia, South Asia Centre for Policy Studies (SACEPS), Katmundu, Nepal.

Khatun F., 2014, Employment Generation in Bangladesh, Published on Daily Sun, Available at: http://cpd.org.bd/index.php/employment-generation-in-bangladesh.

Kock U. and Sun Y., 2011, Remittances in Pakistan- Why Have They Gone Up, and Why aren't They Coming Down? IMF Working Papers WP/11/200, Middle East and Central Asia Department, International Monetary Fund.

Koryś P. and Okólski M., 2004, Time of Global Migration: International mobility in the Perspective of Globalization, ISS Working Papers 55. Center for Migration Research, Warsaw.

Kritz M., Lim L. L. and Zlotnik, H., (eds.) 1992, International Migration Systems: A global Approach. Clarendon Press, Oxford.

Lee E. S., 1966, A Theory of Migration. Demography, Vol 3, No.1, pp. 47-57.

Levine, R. and Renelt, R. D., 1992, A Sensitivity Analysis of Cross Country Growth Regression, American Economic Review Vol. 82, No. 4, pp. 942-963.

Lewis A., 1954, Economic Development with Unlimited Supplies of Labor, Manchester School of Economics and Social Studies, Vol. 28, pp. 139-191.

Lowry I. S., 1966, Migration and Metropolitan Growth: Two Analytical Models, Chandler, San Francisco.

Lucas R.E.B. and Stark O., 1985, Motivations to Remit: Evidence from Botswana, Journal of Political Economy, Vol. 93 No.5, pp. 901-918.

Lueth E. and Ruiz-Arranz M., 2007, Are Workers' Remittances a Hedge against Macroeconomic Shocks? The Case of Sri Lanka, IMF Working Paper WP/07/22, International monetary Fund, Washington DC.

Lundborg P. and Segerstrom P. S., 2000, International Migration and Growth in Developed Countries: A Theoretical Analysis, Economica, Vol. 67, No. 268, pp.579-604.

Mandelman F. S., Emmanuel K.K. L. and Acosta P. A., 2008, Remittances, Exchange Rate Regimes, and the Dutch Disease: a Panel Data Analysis, Working Paper 2008-12, Federal Reserve Bank of Atlanta.

Mankiw G. N., Romer D. and Weil D. N., 1992, A Contribution to the Empirics of Economic Growth, The Quarterly Journal of Economics, Vol. 107, No. 2, pp. 407-437.

Lescarbot M., 1907, The History of New France, The Champlain Society, Toronto.

Massey D. S., 1990, Social Structure, Household Strategies, and the Cumulative Causation of Migration. Population Index, Vol. 56, No. 1, pp. 3-26.

Massey D., Arango S., Hugo J., Kouaouci G., Pellegrino A. and Taylor J. E., 1993, Theories of International Migration: Review and Appraisal. Population and Development Review, Vol. 19, No.3, pp. 431-466.

Massey D. S., 2002, A Synthetic Theory of International Migration. In: V. Iontsev (ed.), World in the Mirror of International Migration. MAX Press, Moscow.

Massey D. S., 2003, Patterns and Processes of International Migration in the 21st Century, University of Pennsylvania, United States of America.

Massey D. S., Arango J., Hugo G., Ali K., Pellegrino A. and Taylor J. E., 1998, Understanding International Migration at the End of the Millennium, Clarendon Press, Oxford.

McKenzie D. and Sasin M. J., 2007, Migration, Remittances, Poverty, and Human Capital: Conceptual and Empirical Challenges World Bank Policy Research Working Paper No. 4272.

Givi M., 2012, Macroeconomic Determinants of Remittances in Georgia: A Dynamic Panel Data Approach, International School of Economics, Tbilisi State University, Georgia.

Mikkelsen B., 2005, Methods for Development Work and Research: A New Guide for Practitioners, (2nd ed). London: Sage Publications.

Mim B. S. and Ali M. S. B., 2012, Through Which Channels can Remittances Spur Economic Growth in MENA countries? Economics: The Open Access, Open Assessment E-Journal.

Moody C., 2006, Migration and Economic Growth: A 21st Century Perspective, New Zealand Treasury Working Paper Series 06/02.

Mouhoud E. M., Oudinet J. and Unan E., 2008, Macroeconomic Determinants of Migrants' Remittances in the Southern and Eastern Mediterranean Countries, Working Paper CEPN, Université Paris nord et GDRI DREEM.

Muchemwa L., 2012, The Effects of Remittances on Economic Growth in Sub-Saharan Africa, Master's Thesis, Department of Economics and Econometrics, University of Johannesburg, South Africa.

Muhammad M. and Ahmed J., 2009, Dynamic Impacts of Remittances on Economic Growth: A Case Study of Pakistan, Forman Journal of Economic Studies, Vol. 5, pp. 59-74.

Myrdal G., 1957, Economic Theory and Underdeveloped Region, Harper and Row.

Nabi M. G., 2012, An Empirical Inquiry into Macroeconomic Determinants of Remittance Inflows in Bangladesh, Bangladesh Journal of Political Economy, Dhaka.

NIDS, 2004, Globalization and Local Response: A Study of Foreign Labor Migration and Impact on Rural Households, Nepal Institute of Development Institute.

Niimi Y. and Ozden C., 2006, Migration and Remittances: Causes and Linkages, World Bank Policy Research Working Paper 4087.

Nyberg-Sorensen N., Hear N. V. and Engberg-Pedersen P., 2002, The Migration Development Nexus: Evidence and Policy Options State-Of-The-Art Overview, International Migration, Vol. 40, No. 5, pp. 3-47.

OECD, 2005, The Development Dimension- Migration Remittances and Development OECD Publishing, Paris, France.

Okodua H., 2010, Workers' Remittances and Economic Growth in Selected Sub- Saharan African Countries, PhD Thesis, Covenant University, Ota, Nigeria.

Ozaki M., 2012, Worker Migration and Remittances in South Asia, South Asia Working Paper no.12, Asian Development Bank.

Papademetriou D. G. and Martin P.L., 1991. The Unsettled Relationship: Labor Migration and Economic Development. Greenwood Press, New York.

Parsons C., Skeldon R., Terrie W. and Winters A., 2007, Quantifying International Migration: A Database of Bilateral Migrants Stocks, World Bank Policy Research paper 4165.

Piore M. J., 1979, Birds of Passage: Migrant Labor in Industrial Societies. Cambridge University Press, Cambridge.

Pries L., 1999, Migration and Transnational Social Spaces. Ashgate, Aldershot.

Poirine B., 1997, A Theory of Remittances as an Implicit Family Loan Arrangement, World Development, Vol.25, No.4, pp. 589-611.

Protifolon, 2011, Facing the Challenges of Labor Migration from Bangladesh, Policy Brief, Issue 4.

Puri S. and Ritzema T., 1999, Migrant Worker Remittances, Micro-Finance and the Informal Economy: Prospects and Issues. International Labor Organization, Geneva.

Qayyum A., Javid, M. and Arif, U., 2008, Impact of Remittances on Economic Growth and Poverty: Evidence from Pakistan, Munich Personal RePEc Archive, Paper No. 22941.

Rao B. B. and Hasan G., 2009, A panel Data Analysis of the Growth Effects of Remittances, Munich Personal RePEc Archive, Paper no. 18021.

Ratha D., 2012, Migration, Remittances during the Global Financial Crisis and Beyond, World Bank Publication.

Rapoport H. and Docquier F., 2005, The Economics of Migrants' Remittances, in Handbook on the Economics of Reciprocity, Giving, and Altruism, ed. by L. A. Gerard-Varet, S. C. Kolm and J. M. Ythier, Amsterdam, North Holland.

Ravenstein E. G., 1885, The Laws of Migration, Journal of the Statistical Society of London, Vol. 48, Issue 2, pp. 167-235.

Reichlin P. and Rustichini A., 1998, Diverging Patterns with Endogenous Labor Migration, Journal of Economic Dynamics and Control, Vol. 22, Issue 5, pp. 703-728.

Romer P. M., 1990, Endogenous Technological Change, The Journal of Political Economy, Vol. 98, Issue 5, pp. 71-102.

Roy A. D., 1951, Some Thoughts in the Distribution of Earnings, Oxford Economic Papers Vol. 3, No. 2, pp. 135-146.

Salahuddin M., 2013, Empirical Link between Growth and Remittances: Evidence from Panel Data. University of Southern Queensland, Australia.

Sargan J. D., 1964, Wages and Prices in the United Kingdom: A Study in Econometric Methodology, Quantitative Economics and Econometric Analysis, Basil Blackwell, Oxford.

Schrooten M., 2005, Bringing Home the Money - What Determines Worker's Remittances to Transition Countries? Discussion Paper Series, Institute of Economic Research, Hitotsubashi University.

Schultz T. W., 1980, Investment in Entrepreneurial Ability, Scandinavian Journal of Economics, Wiley Blackwell, Vol. 82, No.4, pp. 437-438.

Sen A., 1999, Development as Freedom, Alfred Knopf Publisher, New York.

Shah M. M. H. and Amir M. Z. B., 2011, The Macroeconomic Determinants of Remittances in Bangladesh: An Empirical Analysis, International Journal of Scientific and Engineering Research, Volume 2, Issue 10, pp. 1-9.

Siddique A., Selvanathan E. A. and Selvanathan S., 2010, Remittances and Economic Growth: Empirical Evidence from Bangladesh, India and Sri Lanka, The University of Western Australia Discussion Paper 10.27.

Siddiqui H., 2014, Indian Expats in Bangladesh, Available at http://drhabibsiddiqui.blogspot.com/2014/02/indian-expats-in-bangladesh.html.

Siddiqui T., 2003, Migration as a Livelihood Strategy of the Poor: the Bangladesh Case, The paper is presented at the Regional Conference on Migration, Development and Pro-Poor Policy Choices in Asia.

Singh R. J., Haacker M., Lee K. W. and Goff M. L., 2010, Determinants and Macroeconomic Impacts of Remittances in Sub-Saharan Africa, Journal of African economies, Vol 20, No 2, pp. 312-340.

Singh T. and Mehra A., 2014, Remittances and Economic Growth in India: A Time Series Analysis, Pacific Business Review International, Vol. 6, Issue 10, pp. 53-62.

Sjaastad, L. A., 1962, The Costs and Returns of Human Migration, Journal of Political Economy, Vol.70 No 5, pp. 80-93.

Smith A., 1776, An inquiry into the Nature and Causes of the Wealth of Nations, Available at: http://en.wikisource.org.

Solow R. M., 1956, A Contribution to the Theory of Economic Growth, The Quarterly Journal of Economics, Vol. 70, No. 1, pp 65-94.

Srivastava N. L. and Chaudhury S. K., 2007, Role of Remittance in Economic development in Nepal, The Journal of Nepalese Business Studies, Vol. IV No. 1, pp. 28-37.

Stark O., 1995, Altruism and Beyond, Oxford and Cambridge, Basil Blackwell.

Stark O. and Bloom D.E., 1985, The New Economics of Labor Migration, American Economic Review, Vol. 75 No. 2, pp. 173-178.

Stark O. and Wang Y., 2002, Inducing Human Capital Formation: Migration as a Substitute for Subsidies, Journal of Public Economics, Vol. 86, No.1, pp. 29-46.

Stewart J. Q., 1941, An Inverse Distance Variation for Certain Social Influences. Science, Vol. 93, No. 2404, pp.89-90.

Stouffer S. A., 1940, Intervening Opportunities: A Theory Relating Mobility and Distance. American Sociological Review, Vol.5 No. 6, pp. 845-867.

Sufian E. M. and Sidropoulos M. G., 2010, Does Workers' Remittances Affect Growth: Evidence from Seven MENA Labor Exporting Countries, International Research Journal of Finance and Economics, Issue 46, pp. 181-194.

Tansel A. and Yasar P., 2010, Macroeconomic Impact of Remittances on Output Growth: Evidence from Turkey, ERC Working Papers in Economics 10/02, Economic Research Center, Middle East Technical University, Ankara, Turkey.

Taylor J. E., 1986, Differential Migration, Networks, Information and Risk, JAI Press, Greenwich, CT.

Temple J., 1999, The New Growth Evidence, Journal of Economic Literature, Vol. 37, pp. 112-156.

Thagunna K. S. and Acharya S., 2013, Empirical Analysis of Remittance Inflow: The Case of Nepal, International Journal of Economics and Financial Issues, Vol. 3 No. 2, pp. 337-344.

The Economist, Intelligence Unit, 2014, High University Enrollment, Low Graduate Employment Analyzing the Paradox in Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka, An Economist Intelligence Unit Report for the British Council.

Ukueva N., 2010, Migration, Remittances and Growth, PhD Thesis, Department of Economics, Duke University.

United Nations (UN), 2013, International Migration Report 2013, Economic and Social Affairs, Population Division, ST/ESA/SER.A/346, United Nations, New York.

United Nations, 2014, World Economic Situation and Prospects 2014, United Nations, New York.

UNDP, 2009, Overcoming Barriers: Human Mobility and Development, the United Nations Development Program 1 UN Plaza, New York, NY 10017, USA.

Vargas-Silva C. and Huang P., 2006, Macroeconomic Determinants of Workers' Remittances: Host vs. Home Country's Economic Conditions, Journal of International Trade and Economic Development, Vol. 15, No.1, pp. 81-99.

Vargas- Silva C., 2008, Are Remittances Manna from Heaven? A Look at the Business Cycle Properties of Remittances, North American Journal of Economics and Finance, Vol. 19, Issue 3, pp. 290-303.

Veeramoothoo S., 2009, Macroeconomic Determinants of Worker Remittances to Latin American and the Caribbean Countries, The Honors Program, Senior Capstone project.

Waheed A. and Aleem A., 2008, Workers' Remittances and Economic Growth: Empirical Evidence from Pakistan, Journal of Social Science and Humanities, Vol. 47 No.1, pp. 1-12.

Wallerstein I., 1974, The Modern World-System, Vol. I: Capitalist Agriculture and the Origins of European World-Economy in the Sixteenth Century. Academic Press, New York.

Walz, U., 1996, Growth (Rate) Effects of Migration, Zeitschrift fur Wirtschafts und Sozialwissenschaften, Vol. 116, No.2, pp. 199-221.

Wickramasekara P., 2011, Labor Migration in South Asia: A Review of Issues, Policies and Practices, International Migration Paper No. 108, International Labor Office-Geneva.

Wilson A. G., 1967, A Statistical Theory of Spatial Distribution Models. Transportation Research, 1.

Wilson A. G., 1981, Catastrophe Theory and Bifurcation. Applications to Urban and Regional Systems. Croom Helm, London.

Winters A., 2005, Developing Country Proposals for the Liberalization of Movements of Natural Service Suppliers, Working Paper, T8, Sussex Centre for Migration Research.

World Bank, 2006, Global Economic Prospects: Economic Implications of Remittances and Migration (Washington: World Bank).

World Bank, 2012, Bangladesh: Towards Accelerated, Inclusive and Sustainable Growth—Opportunities and Challenges, Poverty Reduction and Economic Management Sector Unit South Asia Region, World Bank.

World Bank, 2014, Migration and Development Brief 23, Washington DC, The World Bank.

Yang D., 2008, International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks, The Economic Journal, Vol 118.

Yasmeen K., Anjum A., Ambreen S. and Twakal S., 2011, The Impact of Workers' Remittances on Private Investment and Total Consumption in Pakistan, International Journal of Accounting and Financial Reporting, Vol. 1 No.1, pp. 173 177.

Zanker J. H., 2008, Why do People Migrate? A Review of the Theoretical Literature, Working Paper MGSoG/2008/WP002, Maastricht University, Maastricht Graduate School of Governance.

Zelinsky W., 1971, The Hypothesis of the Mobility Transition. Geographical Review, Vol. 61, No.2, pp. 219-249.

Zipf G. K., 1946, The $P_1P_2/D$ Hypothesis: On the Intercity Movement of Persons. American Sociological Review, Vol. 11, No.6, pp. 677–686.

# Appendix

## Appendix 1: Bangladesh's Data for Remittance Determinants Model

| Year | REMGDP | INF | EXR | PCGDPhome | PCGDPhost | M2GDP | Mig/Pop | PR |
|---|---|---|---|---|---|---|---|---|
| **1976** | 0.186065 | -17.6304 | 15.39917 | 136.3609 | 9070.492 | 11.41806 | 8.23E-05 | 7 |
| **1977** | 0.818845 | -3.21016 | 15.3751 | 126.9433 | 10025.86 | 14.25468 | 0.000207 | 6 |
| **1978** | 0.867977 | 25.61889 | 15.01612 | 170.4792 | 9053.261 | 13.38644 | 0.000292 | 4 |
| **1979** | 1.098031 | 12.56451 | 15.55192 | 194.2375 | 10976.53 | 13.90603 | 0.000305 | 3 |
| **1980** | 1.869574 | 17.55507 | 15.45406 | 219.5756 | 14328.52 | 14.19689 | 0.000365 | 3 |
| **1981** | 1.928114 | 10.52793 | 17.98669 | 233.1522 | 15238.05 | 14.45489 | 0.000658 | 5 |
| **1982** | 2.91073 | 9.687499 | 22.11788 | 207.7519 | 13551.28 | 14.4271 | 0.000721 | 6 |
| **1983** | 3.744556 | 8.515266 | 24.61542 | 191.9 | 12132.02 | 17.938 | 0.000662 | 6 |
| **1984** | 2.545721 | 14.04688 | 25.35393 | 214.2618 | 11556.05 | 20.38213 | 0.000618 | 5 |
| **1985** | 2.324832 | 11.14966 | 27.99459 | 229.2264 | 10688.19 | 20.19561 | 0.000824 | 4 |
| **1986** | 2.723422 | 8.001182 | 30.4069 | 218.4812 | 8665.995 | 20.85331 | 0.000709 | 4 |
| **1987** | 3.144511 | 10.88005 | 30.94983 | 239.0644 | 8889.363 | 21.54083 | 0.000744 | 4 |
| **1988** | 2.978391 | 7.600678 | 31.73325 | 251.0324 | 8948.063 | 22.27273 | 0.000667 | 4 |
| **1989** | 2.825621 | 8.500223 | 32.27 | 256.0165 | 9731.711 | 23.73349 | 0.000971 | 5 |
| **1990** | 2.585122 | 6.335597 | 34.56881 | 280.5656 | 11382.21 | 23.25872 | 0.000967 | 2 |
| **1991** | 2.485237 | 6.596235 | 36.59618 | 281.5988 | 11602.36 | 24.00874 | 0.001338 | 2 |
| **1992** | 2.87541 | 2.97637 | 38.95076 | 282.0296 | 12079.94 | 24.86766 | 0.001673 | 2 |
| **1993** | 3.037324 | 0.28697 | 39.56726 | 288.6618 | 12295.21 | 26.20494 | 0.002128 | 2 |
| **1994** | 3.408134 | 3.771827 | 40.21174 | 287.7124 | 13067.86 | 28.95216 | 0.001588 | 3 |
| **1995** | 3.167296 | 7.345332 | 40.27832 | 316.5086 | 14264.43 | 28.82791 | 0.001565 | 2 |
| **1996** | 3.306597 | 4.234504 | 41.79417 | 332.2363 | 15234.46 | 29.27256 | 0.00173 | 2 |
| **1997** | 3.607143 | 3.090097 | 43.89212 | 338.6986 | 15425.42 | 29.56858 | 0.001849 | 2 |
| **1998** | 3.642579 | 5.274366 | 46.90565 | 345.8759 | 13316.58 | 29.73845 | 0.0021 | 3 |
| **1999** | 3.954111 | 4.655731 | 49.0854 | 351.5826 | 13974.36 | 31.28826 | 0.002063 | 3 |
| **2000** | 4.175134 | 1.859661 | 52.14167 | 355.9734 | 16137.99 | 34.60292 | 0.001682 | 3 |
| **2001** | 4.478928 | 1.585395 | 55.80667 | 348.7569 | 15221.9 | 46.15293 | 0.001403 | 4 |
| **2002** | 6.007967 | 3.195375 | 57.888 | 347.2186 | 15506.87 | 49.05333 | 0.001644 | 4 |
| **2003** | 6.148025 | 4.52763 | 58.15004 | 372.9805 | 16662.8 | 50.86148 | 0.001826 | 4 |
| **2004** | 6.336227 | 4.240429 | 59.51266 | 400.4725 | 18718.8 | 52.41147 | 0.001933 | 4 |
| **2005** | 7.157726 | 5.074715 | 64.32748 | 421.1233 | 20902.68 | 54.52846 | 0.001765 | 4 |
| **2006** | 8.768041 | 5.172374 | 68.93323 | 427.2912 | 22914.57 | 58.46538 | 0.002633 | 5 |
| **2007** | 9.591867 | 6.78645 | 68.87488 | 467.1364 | 24656.95 | 58.41405 | 0.005685 | 4 |
| **2008** | 11.23837 | 8.789101 | 68.59828 | 537.6385 | 27544.17 | 58.87268 | 0.005914 | 3 |
| **2009** | 11.77378 | 6.520954 | 69.03907 | 597.691 | 22599.06 | 62.85963 | 0.003179 | 3 |
| **2010** | 10.81128 | 6.473623 | 69.64929 | 664.0846 | 25936.59 | 67.39763 | 0.002585 | 3 |
| **2011** | 10.78683 | 7.531911 | 74.1524 | 732.0675 | 29847.11 | 68.67066 | 0.003716 | 3 |
| **2012** | 12.16854 | 8.480115 | 81.86266 | 750.08 | 31140.18 | 69.73062 | 0.003929 | 3 |

## Appendix 2: Bangladesh's Data for Remittance-Growth Model

| Year | RGDPM | RREM | EAPOP | RGFCF | RGGFCEM | DCPSB | TRAD | RFDIM | RODAM |
|---|---|---|---|---|---|---|---|---|---|
| **1976** | 51409.11 | 96.06387 | 51.90765 | 8596.94 | 2100.241 | 2.965406 | 22.38227 | 27.75218 | 2549.36 |
| **1977** | 50740.08 | 384.194 | 51.90529 | 8889.93 | 2387.82 | 4.989643 | 19.4222 | 33.99903 | 3820.555 |
| **1978** | 55768.54 | 534.1757 | 51.91059 | 8926.47 | 3000.554 | 4.534053 | 21.03851 | 35.63165 | 4604.396 |
| **1979** | 58061.83 | 690.6324 | 51.93977 | 9015.25 | 3952.323 | 5.339446 | 21.90706 | -32.3245 | 4691.929 |
| **1980** | 57404.45 | 1203.934 | 52.00345 | 9298.416 | 3954.596 | 5.771342 | 23.37723 | 30.2524 | 4574.191 |
| **1981** | 56662.46 | 1166.01 | 52.1042 | 10656.41 | 2727.696 | 6.960694 | 19.7696 | 16.40147 | 3363.035 |
| **1982** | 47277.35 | 1432.554 | 52.23839 | 8770.204 | 2238.776 | 7.34381 | 21.14862 | 18.93878 | 3639.184 |
| **1983** | 41324.41 | 1597.236 | 52.40251 | 7239.281 | 1883.444 | 9.257546 | 20.8186 | 1.004422 | 2591.82 |
| **1984** | 41545.14 | 1126.034 | 52.59116 | 7041.794 | 1855.951 | 12.12486 | 16.23624 | -1.24414 | 2668.81 |
| **1985** | 41069.92 | 1021.283 | 52.80077 | 7168.465 | 1825.125 | 13.44084 | 18.78301 | -13.5366 | 2289.695 |
| **1986** | 37230.27 | 1054.69 | 53.03013 | 6467.875 | 1679.77 | 13.15682 | 17.57098 | 4.459186 | 2613.561 |
| **1987** | 37736.34 | 1249.472 | 53.28115 | 6364.058 | 1704.042 | 13.67809 | 17.2732 | 5.355199 | 2995.155 |
| **1988** | 37809.77 | 1199.532 | 53.55698 | 6570.009 | 1739.107 | 14.94358 | 18.32638 | 2.887594 | 2535.91 |
| **1989** | 36460.3 | 1098.362 | 53.8621 | 6500.717 | 1675.067 | 16.56707 | 19.01026 | 0.359235 | 2607.579 |
| **1990** | 38510.53 | 1086.739 | 54.19937 | 7169.246 | 1765.558 | 16.65563 | 19.65268 | 4.519019 | 2919.994 |
| **1991** | 37121.13 | 991.0675 | 54.56693 | 6737.808 | 1649.497 | 15.91993 | 18.88985 | 1.791117 | 2422.053 |
| **1992** | 36923.19 | 1123.272 | 54.96253 | 6760.17 | 1738.86 | 14.54555 | 19.93401 | 4.585257 | 2240.224 |
| **1993** | 38510.05 | 1208.029 | 55.38721 | 7137.954 | 1970.279 | 15.29431 | 23.12158 | 16.84841 | 1658.784 |
| **1994** | 37784.04 | 1336.369 | 55.8417 | 7215.858 | 1914.744 | 16.27119 | 22.86587 | 12.94448 | 2023.792 |
| **1995** | 39546.3 | 1281.639 | 56.3243 | 7736.777 | 1873.472 | 20.88176 | 28.20949 | 2.022581 | 1367.044 |
| **1996** | 40666 | 1344.661 | 56.83398 | 8130.447 | 1790.831 | 21.59652 | 29.77754 | 13.52983 | 1228.07 |
| **1997** | 41050.29 | 1468.353 | 57.36502 | 8435.618 | 1776.58 | 22.78517 | 30.01163 | 134.0671 | 973.7976 |
| **1998** | 40627.27 | 1421.81 | 57.90575 | 8443.796 | 1846.02 | 23.23599 | 31.6062 | 168.2537 | 1029.444 |
| **1999** | 40230.66 | 1493.959 | 58.44254 | 8385.076 | 1733.939 | 23.20286 | 31.8524 | 148.5555 | 1008.293 |
| **2000** | 40732.94 | 1582.76 | 58.96642 | 8728.204 | 1733.057 | 24.34046 | 33.20735 | 225.5528 | 943.48 |
| **2001** | 39980.6 | 1660.789 | 59.47573 | 8560.678 | 1670.871 | 27.41577 | 36.88216 | 61.96894 | 823.6585 |
| **2002** | 39223.56 | 2194.118 | 59.97269 | 8453.498 | 1826.548 | 29.75348 | 33.32301 | 40.18077 | 695.7239 |
| **2003** | 40950.02 | 2347.33 | 60.45811 | 8936.201 | 2041.355 | 29.77486 | 34.24911 | 197.3121 | 1025.881 |
| **2004** | 42800.75 | 2490.491 | 60.93435 | 9442.426 | 2172.807 | 31.72031 | 36.27828 | 311.9565 | 982.5226 |
| **2005** | 43410.39 | 2815.704 | 61.40412 | 9648.506 | 2178.594 | 33.44447 | 39.62709 | 530.7851 | 860.6996 |
| **2006** | 42387.21 | 3305.228 | 61.86644 | 9292.375 | 2088.473 | 35.82406 | 44.21832 | 424.5821 | 743.6697 |
| **2007** | 43870.66 | 3727.742 | 62.32273 | 9508.311 | 2147.315 | 36.98949 | 46.47912 | 370.8354 | 860.7362 |
| **2008** | 46892 | 4619.516 | 62.78017 | 9950.628 | 2171.209 | 38.95205 | 49.09108 | 521.6612 | 1069.872 |
| **2009** | 49445.48 | 5096.475 | 63.24685 | 10549.92 | 2277.897 | 41.26945 | 45.98003 | 354.9918 | 593.8187 |
| **2010** | 52157.75 | 4897.852 | 63.72655 | 11060.2 | 2431.905 | 46.82826 | 43.4224 | 414.4688 | 638.7171 |
| **2011** | 54084.43 | 5008.328 | 64.21745 | 11677.53 | 2685.817 | 48.57763 | 54.5113 | 472.1253 | 618.2143 |
| **2012** | 51695.78 | 5295.986 | 64.71382 | 11551.51 | 2431.237 | 49.16416 | 55.29305 | 471.9786 | 807.2053 |

## Appendix 3: Data of India for Remittance Determinants Model

| Year | REMGDP | INF | EXR | PCGDPhome | PCGDPhost | M2GDP | Mig/Pop | PR |
|---|---|---|---|---|---|---|---|---|
| **1976** | 0.614577 | 5.981859 | 8.960413 | 164.1086 | 14495.81 | 27.54754 | 6.59E-06 | 3 |
| **1977** | 0.755891 | 5.637229 | 8.738576 | 189.6168 | 15606.05 | 28.97302 | 3.51E-05 | 2 |
| **1978** | 0.833718 | 2.460282 | 8.19284 | 209.3519 | 14839.03 | 32.40749 | 0.000103 | 2 |
| **1979** | 0.923093 | 15.72804 | 8.125791 | 227.9164 | 19125.44 | 34.78487 | 0.000252 | 2 |
| **1980** | 1.454146 | 11.50832 | 7.862945 | 271.2496 | 24141.53 | 33.87253 | 0.000384 | 2 |
| **1981** | 1.168923 | 10.82758 | 8.658523 | 275.321 | 24208.82 | 33.86294 | 0.00038 | 2 |
| **1982** | 1.2817 | 8.095863 | 9.455132 | 279.2209 | 20320.06 | 35.48291 | 0.000307 | 2 |
| **1983** | 1.197748 | 8.55286 | 10.0989 | 296.9176 | 17208.88 | 35.61148 | 0.000291 | 2 |
| **1984** | 1.062984 | 7.923233 | 11.36258 | 282.2862 | 16233.13 | 37.49865 | 0.00026 | 2 |
| **1985** | 1.04367 | 7.193785 | 12.36875 | 302.6456 | 14724.31 | 38.84708 | 0.000205 | 2 |
| **1986** | 0.884106 | 6.7894 | 12.61083 | 317.11 | 11448.12 | 40.94313 | 0.000137 | 2 |
| **1987** | 0.938768 | 9.327893 | 12.9615 | 347.8096 | 11850.13 | 41.89938 | 0.000149 | 2 |
| **1988** | 0.767185 | 8.232515 | 13.91708 | 361.9319 | 11448.68 | 41.77145 | 0.000199 | 2 |
| **1989** | 0.867713 | 8.436809 | 16.2255 | 353.8204 | 12314.25 | 42.07841 | 0.000148 | 2 |
| **1990** | 0.729847 | 10.6683 | 17.5035 | 375.8908 | 13224.05 | 41.45675 | 0.000165 | 3 |
| **1991** | 1.196726 | 13.75182 | 22.74243 | 310.0838 | 12115.24 | 42.66956 | 0.000223 | 3 |
| **1992** | 0.987998 | 8.965152 | 25.91808 | 324.4951 | 14156.45 | 43.38361 | 0.000461 | 4 |
| **1993** | 1.239573 | 9.861783 | 30.49329 | 308.5348 | 14151.98 | 44.10991 | 0.000476 | 4 |
| **1994** | 1.758691 | 9.980045 | 31.37374 | 354.8549 | 14300.12 | 45.2283 | 0.000453 | 4 |
| **1995** | 1.697491 | 9.062702 | 32.42708 | 383.5509 | 15096.1 | 42.79482 | 0.000435 | 2 |
| **1996** | 2.192592 | 7.575018 | 35.43317 | 410.8184 | 16542.03 | 43.91923 | 0.000426 | 2 |
| **1997** | 2.441383 | 6.476271 | 36.31329 | 427.2362 | 17207.11 | 46.64202 | 0.00042 | 2 |
| **1998** | 2.210962 | 8.010168 | 41.25937 | 425.4453 | 15045.96 | 48.05851 | 0.000352 | 2 |
| **1999** | 2.382751 | 3.068396 | 43.05543 | 455.4735 | 16568.69 | 50.18484 | 0.000195 | 2 |
| **2000** | 2.703151 | 3.64497 | 44.94161 | 457.2835 | 20518.66 | 53.70334 | 0.000233 | 2 |
| **2001** | 2.889542 | 3.215616 | 47.18641 | 466.2142 | 19387.5 | 56.74395 | 0.000263 | 2 |
| **2002** | 3.003183 | 3.715684 | 48.61032 | 486.6405 | 20151.17 | 61.5403 | 0.000341 | 2 |
| **2003** | 3.395962 | 3.867798 | 46.58328 | 565.3355 | 22715.76 | 62.09038 | 0.000426 | 2 |
| **2004** | 2.598497 | 5.725413 | 45.31647 | 649.7106 | 26476.96 | 63.52173 | 0.000428 | 2 |
| **2005** | 2.652205 | 4.236925 | 44.09998 | 740.1143 | 31700.92 | 64.46119 | 0.000487 | 2 |
| **2006** | 2.985264 | 6.422584 | 45.30701 | 830.1632 | 35949.35 | 67.42788 | 0.000592 | 2 |
| **2007** | 3.004501 | 5.756243 | 41.34853 | 1068.679 | 38182.42 | 70.9988 | 0.000698 | 2 |
| **2008** | 4.082787 | 8.664665 | 43.50518 | 1042.084 | 45779.93 | 75.78002 | 0.000722 | 2 |
| **2009** | 3.603699 | 6.063829 | 48.40527 | 1147.239 | 33365.75 | 77.71508 | 0.000513 | 2 |
| **2010** | 3.130304 | 8.983813 | 45.72581 | 1417.074 | 37191.99 | 76.18663 | 0.000532 | 2 |
| **2011** | 3.324242 | 8.53972 | 46.67047 | 1539.606 | 45312.97 | 76.44505 | 0.000513 | 2 |
| **2012** | 3.702527 | 7.17255 | 53.43723 | 1503.004 | 48052.15 | 75.62587 | 0.000604 | 2 |

## Appendix 4: Data of India for Remittance-Growth Model

| YEAR | RGDPM | RREM | EAPOP | RGFCF | RGGFCEM | DCPSB | TRAD | RFDIM | RODAM |
|---|---|---|---|---|---|---|---|---|---|
| **1976** | 845172.2 | 119.3266 | 56.50792 | 227095.1 | 140265.5 | 17.57941 | 12.58058 | -100.623 | 22779.49 |
| **1977** | 946275.8 | 140.3234 | 56.65022 | 251074.7 | 144225.4 | 17.73084 | 12.43012 | -434.666 | 11919.09 |
| **1978** | 1043769 | 674.9643 | 56.78885 | 282538 | 162954.8 | 19.35598 | 12.68063 | 212.7017 | 13300.03 |
| **1979** | 1004985 | 113.0029 | 56.93011 | 309163.2 | 179134.9 | 20.59555 | 14.66168 | 537.4754 | 15085.05 |
| **1980** | 1097640 | 290.566 | 57.07801 | 337590.5 | 191097.7 | 20.1894 | 15.11943 | 786.5865 | 21721.16 |
| **1981** | 1028482 | 135.3043 | 57.23503 | 321203.5 | 174964.9 | 20.85965 | 14.25724 | 807.477 | 17327.29 |
| **1982** | 986977.1 | 110.0589 | 57.399 | 329006.3 | 177775.9 | 22.29688 | 13.88247 | 586.9008 | 13318.85 |
| **1983** | 988704.5 | 289.1549 | 57.56417 | 310596.3 | 171429.7 | 22.49812 | 13.45464 | 41.05063 | 13323.33 |
| **1984** | 890493.8 | 184.7799 | 57.72298 | 285175.4 | 157864.3 | 23.86407 | 13.76793 | 129.2798 | 11193.99 |
| **1985** | 910431.2 | 196.6764 | 57.87162 | 310236.2 | 172996.7 | 24.14032 | 12.67771 | 675.3347 | 10102.39 |
| **1986** | 912955 | 246.2167 | 58.00857 | 318108.4 | 180042.9 | 25.35633 | 12.00868 | 689.2537 | 11650.16 |
| **1987** | 935836.4 | 352.2892 | 58.13914 | 336942.7 | 191533.3 | 24.9449 | 12.36792 | 1142.508 | 9123.49 |
| **1988** | 919055.5 | 458.1226 | 58.27434 | 324921.1 | 181053.6 | 24.83951 | 13.25795 | 448.8945 | 9584.402 |
| **1989** | 845984.5 | 469.9655 | 58.42802 | 325918.3 | 174397 | 26.13155 | 14.90671 | 1200.996 | 8429.455 |
| **1990** | 828824.1 | 461.6246 | 58.60925 | 340180.9 | 169343.9 | 24.48703 | 15.23902 | 1034.753 | 6115.791 |
| **1991** | 613141.7 | 198.0445 | 58.82005 | 238739.4 | 122853.7 | 23.41118 | 16.69495 | 282.3294 | 10505.07 |
| **1992** | 600407.2 | 232.7737 | 59.05664 | 231370.7 | 115531.3 | 24.27257 | 18.11541 | 949.6566 | 8321.056 |
| **1993** | 529611.5 | 837.6745 | 59.31471 | 197105.3 | 106107.1 | 23.42132 | 19.31285 | 1777.134 | 4721.285 |
| **1994** | 564276.7 | 1027.871 | 59.58796 | 213164.9 | 107003.3 | 23.23979 | 19.7321 | 2851.493 | 6789.466 |
| **1995** | 569567 | 1114.173 | 59.87162 | 234365.3 | 107936.6 | 22.12281 | 22.47334 | 5697.812 | 4596.811 |
| **1996** | 577390.9 | 1312.19 | 60.16475 | 225382.1 | 105866 | 22.99911 | 21.55154 | 5917.309 | 4615.954 |
| **1997** | 573975.8 | 367.7637 | 60.46767 | 228101.4 | 111627.9 | 23.14936 | 22.22955 | 8142.023 | 3735.54 |
| **1998** | 538417.2 | 88.75833 | 60.7785 | 204086.8 | 107864.7 | 23.26967 | 23.29102 | 5295.803 | 3224.435 |
| **1999** | 568841.9 | 69.45513 | 61.09534 | 214782.7 | 114718.8 | 24.98471 | 24.38791 | 4164.518 | 2849.056 |
| **2000** | 560289.5 | 897.5888 | 61.41664 | 200130.4 | 110492.8 | 27.85113 | 26.43729 | 6617.725 | 2534.745 |
| **2001** | 562589.4 | 1337.483 | 61.74033 | 220377.8 | 108721.3 | 28.12617 | 25.54527 | 9744.087 | 3084.393 |
| **2002** | 575394.3 | 2024.458 | 62.06563 | 211832.4 | 106273.3 | 31.7497 | 29.00009 | 9596.966 | 2998.596 |
| **2003** | 653759.9 | 2079.428 | 62.39367 | 249419.7 | 116143.2 | 31.0812 | 30.06518 | 7103.448 | 1199.227 |
| **2004** | 721585.6 | 2617.369 | 62.72643 | 328139.3 | 124949.3 | 35.56805 | 36.85745 | 9139.501 | 1225.748 |
| **2005** | 800306.6 | 2048.185 | 63.06469 | 384392.4 | 137802.7 | 39.40357 | 41.30519 | 11043 | 2849.524 |
| **2006** | 855587.1 | 2235.271 | 63.40794 | 425009.7 | 140263.2 | 43.22063 | 45.29779 | 28664.76 | 1981.147 |
| **2007** | 1055856 | 2770.725 | 63.75354 | 548621.9 | 171443.7 | 44.81873 | 44.87619 | 33942.65 | 1870.847 |
| **2008** | 960209.7 | 4733.97 | 64.09737 | 491662.7 | 166128.4 | 48.53905 | 52.26949 | 53899.37 | 2628.853 |
| **2009** | 1009797 | 3236.564 | 64.43423 | 485271.6 | 182032.7 | 47.29669 | 45.47696 | 39848.4 | 2800.244 |
| **2010** | 1159379 | 3828.678 | 64.75983 | 528304 | 195367.2 | 49.58349 | 48.30832 | 27396.89 | 2806.36 |
| **2011** | 1175474 | 3745.936 | 65.07251 | 548450.1 | 196658.5 | 49.7329 | 54.07795 | 33528.73 | 2965.565 |
| **2012** | 1084347 | 4170.826 | 65.37147 | 474411.1 | 183665.8 | 51.02004 | 54.73235 | 20165.26 | 1401.427 |

## Appendix 5: Data of Nepal for Remittance Determinants Model

| YEAR | REMGDP | INF | EXR | PCGDPhome | PCGDPhost | M2GDP | mig/pop | PR |
|---|---|---|---|---|---|---|---|---|
| **1993** | 1.497937 | 10.77491 | 48.60717 | 187.2000443 | 8592.371981 | 34.84227 | 0.006901 | 3 |
| **1994** | 1.23239 | 4.815986 | 49.39752 | 202.6758936 | 8996.351069 | 36.24207 | 0.00678 | 3 |
| **1995** | 1.2911 | 6.300862 | 51.89033 | 213.7791254 | 9786.102023 | 38.0349 | 0.005906 | 3 |
| **1996** | 0.976652 | 7.823036 | 56.69195 | 214.137928 | 10510.13272 | 37.57735 | 0.003037 | 3 |
| **1997** | 1.005512 | 7.279093 | 58.00955 | 227.2195969 | 11749.71868 | 43.19523 | 0.001506 | 3 |
| **1998** | 1.390061 | 4.107851 | 65.97579 | 218.9925889 | 11022.80578 | 44.77937 | 0.001386 | 3 |
| **1999** | 1.658099 | 8.887047 | 68.23937 | 221.8425444 | 11929.4379 | 47.92581 | 0.001225 | 3 |
| **2000** | 2.029361 | 4.472434 | 71.0938 | 236.9828443 | 13818.50037 | 51.33647 | 0.001533 | 3 |
| **2001** | 2.446873 | 11.0174 | 74.94925 | 253.9433949 | 13378.38988 | 51.5259 | 0.002326 | 4 |
| **2002** | 11.21302 | 3.934622 | 77.87662 | 251.0438722 | 14261.29145 | 50.83245 | 0.004346 | 5 |
| **2003** | 12.18032 | 3.070305 | 76.14145 | 258.1178555 | 16292.74833 | 52.29434 | 0.004283 | 5 |
| **2004** | 11.309 | 4.166427 | 73.6736 | 291.8690418 | 19498.86158 | 54.23225 | 0.00428 | 6 |
| **2005** | 14.9051 | 6.11939 | 71.3675 | 321.4550186 | 22451.70209 | 54.19873 | 0.007262 | 5 |
| **2006** | 16.06896 | 7.360039 | 72.75561 | 352.8009747 | 25118.6055 | 57.13534 | 0.006447 | 5 |
| **2007** | 16.79181 | 7.603289 | 66.41503 | 397.9040179 | 28018.74925 | 60.86019 | 0.007882 | 4 |
| **2008** | 21.7381 | 5.619855 | 69.7617 | 477.9321764 | 31503.27874 | 75.4001 | 0.009488 | 4 |
| **2009** | 23.14061 | 15.90833 | 77.54521 | 485.9551548 | 24484.17321 | 80.66311 | 0.008287 | 4 |
| **2010** | 21.68849 | 15.14693 | 73.15555 | 595.7716261 | 27516.11709 | 73.24216 | 0.010955 | 4 |
| **2011** | 22.37049 | 10.81117 | 74.01968 | 694.1411512 | 32700.38575 | 75.84152 | 0.013062 | 4 |
| **2012** | 24.95688 | 6.562468 | 85.19716 | 699.0804821 | 33832.5229 | 77.9614 | 0.014001 | 4 |

## Appendix 6:Data of Nepal for Remittance-Growth Model

| YEAR | RGDPM | RREM | INF | OEXR | EAPOP | RGFCF | RGGFCEM | DCPSB | TRAD | RFDIM | RODAM | PR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1976** | 12661.28 | 18.504 | 0.544042 | 12.5 | 55.54562 | 3283.732 | 1739.316 | 3.529378 | 24.95113 | -0.64373 | 798.7029 | 6 |
| **1977** | 12493.19 | 21.464 | -3.56482 | 12.5 | 55.47318 | 3023.61 | 1476.075 | 4.684606 | 26.10532 | 1.2345 | 1134.586 | 6 |
| **1978** | 13255.16 | 18.11651 | 9.371207 | 12.1105 | 55.40102 | 3653.108 | 1631.366 | 5.604601 | 26.04399 | 5.593008 | 1033.888 | 6 |
| **1979** | 13908.95 | 25.25833 | 9.978363 | 12 | 55.32765 | 3581.645 | 2073.468 | 6.269187 | 27.75152 | 3.951554 | 1761.866 | 5 |
| **1980** | 13586.35 | 29.775 | 7.609547 | 12 | 55.25183 | 3523.113 | 1497.873 | 8.396643 | 30.2728 | 3.445587 | 1837.532 | 3 |
| **1981** | 14719.72 | 39.24991 | 7.937356 | 12.33633 | 55.17848 | 3702.02 | 1655.102 | 8.995496 | 32.51914 | -2.37673 | 1841.658 | 3 |
| **1982** | 14170.36 | 32.24897 | 9.34741 | 13.24383 | 55.10803 | 3908.268 | 1886.553 | 8.454886 | 30.39886 | -0.27754 | 1820.573 | 3 |
| **1983** | 12892.21 | 37.79241 | 12.28869 | 14.54525 | 55.03124 | 3924.199 | 2038.483 | 7.907879 | 31.54621 | -4.93944 | 1628.946 | 3 |
| **1984** | 12783.06 | 37.30995 | 6.37795 | 16.45942 | 54.93629 | 3622.997 | 1911.424 | 8.199543 | 30.10155 | 7.60438 | 1552.334 | 3 |
| **1985** | 11644.68 | 37.85401 | 11.42183 | 18.24642 | 54.81898 | 4045.346 | 1821.031 | 9.306873 | 31.52879 | 4.815243 | 1708.448 | 3 |
| **1986** | 11076.6 | 38.11146 | 14.39257 | 21.22983 | 54.67275 | 3224.3 | 1613.105 | 10.25016 | 31.96504 | 7.283625 | 1836.532 | 3 |
| **1987** | 10195.75 | 59.24149 | 12.6968 | 21.81917 | 54.50968 | 3242.889 | 1508.871 | 10.14828 | 32.71989 | 7.813246 | 1968.994 | 3 |
| **1988** | 10751.84 | 69.06191 | 11.81531 | 23.28925 | 54.36471 | 3582.927 | 1612.446 | 11.56906 | 33.82904 | 3.507251 | 2106.207 | 4 |
| **1989** | 9769.767 | 59.89959 | 11.25837 | 27.18883 | 54.28143 | 3026.91 | 1674.194 | 12.81878 | 33.35093 | 1.990175 | 2359.21 | 4 |
| **1990** | 9080.328 | 59.48415 | 10.71589 | 29.36917 | 54.28573 | 2560.022 | 1375.757 | 12.47099 | 32.18875 | 26.0041 | 1851.106 | 2 |
| **1991** | 8721.914 | 57.1279 | 12.54464 | 37.255 | 54.38345 | 2733.61 | 1330.205 | 12.95458 | 34.67506 | 8.410277 | 1700.088 | 2 |
| **1992** | 6384.362 | 54.22836 | 18.48909 | 42.7175 | 54.55523 | 2108.614 | 857.6485 | 13.09025 | 41.69541 | 18.55495 | 1390.901 | 3 |
| **1993** | 6201.953 | 164.9172 | 10.77491 | 48.60717 | 54.77039 | 2336.135 | 933.7521 | 14.26362 | 47.18958 | 21.765 | 1090.873 | 3 |
| **1994** | 6574.536 | 139.1422 | 4.815986 | 49.39752 | 54.98967 | 2381.467 | 905.7981 | 18.29765 | 50.43207 | 24.97506 | 1237.824 | 3 |
| **1995** | 6693.292 | 146.5808 | 6.300862 | 51.89033 | 55.18633 | 2505.545 | 1049.822 | 22.58191 | 59.49052 | 28.18511 | 1106.141 | 3 |
| **1996** | 6377.593 | 104.2994 | 7.823036 | 56.69195 | 55.36077 | 2406.079 | 987.5561 | 22.83838 | 58.45777 | 45.25337 | 917.5062 | 3 |
| **1997** | 6466.974 | 112.3087 | 7.279093 | 58.00955 | 55.52028 | 2420.66 | 994.9178 | 23.36451 | 64.03553 | 52.35634 | 912.5613 | 3 |
| **1998** | 6132.951 | 137.795 | 4.107851 | 65.97579 | 55.65697 | 2154.113 | 923.097 | 28.2123 | 56.7096 | 24.54544 | 818.0548 | 3 |
| **1999** | 5838.135 | 158.555 | 8.887047 | 68.23937 | 55.76339 | 1824.755 | 853.5132 | 28.44902 | 52.56698 | 8.263735 | 661.8397 | 3 |
| **2000** | 6099.562 | 206.6907 | 4.472434 | 71.0938 | 55.83849 | 1967.93 | 911.554 | 30.28106 | 55.71059 | -0.89875 | 715.6803 | 3 |
| **2001** | 6007.048 | 265.3417 | 11.0174 | 74.94925 | 55.88154 | 2081.538 | 878.9126 | 29.08378 | 55.83717 | 37.639 | 703.4251 | 4 |
| **2002** | 5821.796 | 1188.808 | 3.934622 | 77.87662 | 55.90457 | 2074.264 | 890.4042 | 22.50918 | 46.23072 | -10.4297 | 600.1458 | 5 |
| **2003** | 5909.376 | 1278.092 | 3.070305 | 76.14145 | 55.93491 | 2090.663 | 909.2303 | 25.81267 | 44.24788 | 24.49544 | 773.3805 | 5 |
| **2004** | 6518.487 | 1325.839 | 4.166427 | 73.6736 | 56.00677 | 2384.748 | 1013.41 | 26.55398 | 46.14729 | -0.67266 | 685.1383 | 6 |
| **2005** | 6865.736 | 1828.175 | 6.11939 | 71.3675 | 56.14526 | 2445.94 | 1091.526 | 28.21497 | 44.06295 | 3.698799 | 639.8488 | 5 |
| **2006** | 7113.559 | 2050.467 | 7.360039 | 72.75561 | 56.35181 | 2644.072 | 1107.985 | 32.61416 | 44.76197 | -9.38011 | 742.9468 | 5 |
| **2007** | 7547.977 | 2313.493 | 7.603289 | 66.41503 | 56.6241 | 2902.614 | 1267.321 | 36.77122 | 44.57936 | 7.661176 | 804.9717 | 4 |
| **2008** | 8682.7 | 3311.69 | 5.619855 | 69.7617 | 56.97627 | 3332.934 | 1506.587 | 51.19787 | 46.03621 | 1.208424 | 845.8643 | 4 |
| **2009** | 7702.51 | 3263.385 | 15.90833 | 77.54521 | 57.42306 | 3011.478 | 1520.116 | 58.77493 | 47.07945 | 41.73573 | 933.9659 | 4 |
| **2010** | 8293.953 | 3468.878 | 15.14693 | 73.15555 | 57.97 | 3551.925 | 1598.224 | 54.21261 | 45.98491 | 87.79964 | 818.36 | 4 |
| **2011** | 8821.407 | 3859.111 | 10.81117 | 74.01968 | 58.61933 | 3694.239 | 1652.167 | 52.4993 | 41.82825 | 86.04448 | 809.6697 | 4 |
| **2012** | 8434.69 | 4007.793 | 6.562468 | 85.19716 | 59.35588 | 3334.961 | 1728.226 | 55.7132 | 43.65821 | 76.91839 | 643.5654 | 4 |

## Appendix 7: Data of Pakistan for Remittance Determinants Model

| Year | REMGDP | INF | EXR | PCGDPhome | PCGDPhost | M2GDP | Mig/Pop | PR |
|---|---|---|---|---|---|---|---|---|
| **1976** | 3.086834 | 11.85582 | 9.9 | 189.8215398 | 14495.8135 | 37.83939 | 0.000593 | 4 |
| **1977** | 5.765458 | 9.094895 | 9.9 | 208.6205634 | 15606.055 | 39.35625 | 0.001937 | 6 |
| **1978** | 7.347304 | 9.034884 | 9.9 | 238.0174403 | 14839.0276 | 40.03503 | 0.00173 | 6 |
| **1979** | 7.619334 | 6.588053 | 9.9 | 254.7496261 | 19125.437 | 43.11308 | 0.001529 | 6 |
| **1980** | 8.643514 | 9.062117 | 9.9 | 296.1793573 | 24141.5336 | 41.49679 | 0.00148 | 7 |
| **1981** | 7.356098 | 9.913533 | 9.9 | 339.6538193 | 24208.816 | 39.0148 | 0.00185 | 7 |
| **1982** | 8.423237 | 9.371654 | 11.84747 | 358.9417532 | 20320.0645 | 40.79248 | 0.001607 | 7 |
| **1983** | 10.24763 | 5.274082 | 13.11697 | 323.9200461 | 17208.8808 | 43.87687 | 0.001355 | 7 |
| **1984** | 8.284605 | 9.653549 | 14.04633 | 339.9252606 | 16233.1258 | 39.85505 | 0.001021 | 4 |
| **1985** | 8.146088 | 4.534945 | 15.92839 | 328.5902401 | 14724.3123 | 40.66128 | 0.000869 | 4 |
| **1986** | 7.669148 | 3.292005 | 16.64751 | 325.5058504 | 11448.1155 | 43.30971 | 0.000592 | 4 |
| **1987** | 6.538016 | 4.518199 | 17.3988 | 329.306304 | 11850.1278 | 45.31106 | 0.000654 | 3 |
| **1988** | 4.865674 | 9.617561 | 18.00329 | 367.8663662 | 11448.6756 | 41.36542 | 0.00078 | 3 |
| **1989** | 5.021795 | 8.585055 | 20.54149 | 372.4180321 | 12314.2485 | 38.98096 | 0.000889 | 4 |
| **1990** | 5.01436 | 6.451998 | 21.70738 | 360.1594114 | 13224.0533 | 39.1371 | 0.001024 | 4 |
| **1991** | 3.40733 | 13.0614 | 23.80077 | 397.9015206 | 12115.2356 | 39.1899 | 0.00125 | 4 |
| **1992** | 3.235553 | 10.05708 | 25.08279 | 414.6532951 | 14156.449 | 42.74812 | 0.001633 | 3 |
| **1993** | 2.809486 | 8.696474 | 28.10718 | 427.7859136 | 14151.9773 | 45.65696 | 0.001284 | 3 |
| **1994** | 3.370814 | 12.88933 | 30.56659 | 420.3677882 | 14300.1194 | 45.75916 | 0.000899 | 3 |
| **1995** | 2.823764 | 13.87464 | 31.64268 | 478.6192607 | 15096.1035 | 43.57085 | 0.000924 | 4 |
| **1996** | 2.027869 | 8.37361 | 36.07868 | 486.7648298 | 16542.0315 | 46.04129 | 0.00092 | 4 |
| **1997** | 2.734569 | 13.38351 | 41.11153 | 467.3241955 | 17207.1084 | 48.20324 | 0.001116 | 4 |
| **1998** | 1.884488 | 7.526037 | 45.04667 | 453.4948067 | 15045.9569 | 47.15023 | 0.000734 | 7 |
| **1999** | 1.581609 | 5.862286 | 49.50069 | 447.9561633 | 16568.6925 | 44.82026 | 0.000556 | 6 |
| **2000** | 1.453638 | 24.89115 | 53.64819 | 514.1579605 | 20518.6631 | 38.5947 | 0.000749 | 6 |
| **2001** | 2.020475 | 7.891155 | 61.92716 | 492.3816981 | 19387.4962 | 39.15125 | 0.000871 | 6 |
| **2002** | 4.915166 | 2.463093 | 59.72378 | 483.0318719 | 20151.1678 | 43.25191 | 0.000985 | 6 |
| **2003** | 4.761859 | 4.438397 | 57.752 | 546.1541484 | 22715.7628 | 46.42524 | 0.001404 | 6 |
| **2004** | 4.026424 | 7.749247 | 58.25786 | 631.4978143 | 26476.9584 | 48.36162 | 0.00112 | 6 |
| **2005** | 3.908601 | 7.026467 | 59.51448 | 693.1766897 | 31700.9154 | 49.18651 | 0.0009 | 6 |
| **2006** | 3.730765 | 19.0522 | 60.27134 | 853.0709659 | 35949.3462 | 44.55519 | 0.001138 | 6 |
| **2007** | 3.936064 | 7.274319 | 60.73852 | 929.5874437 | 38182.4247 | 47.43291 | 0.001751 | 4 |
| **2008** | 4.138694 | 13.20401 | 70.40803 | 1018.380734 | 45779.9309 | 43.5457 | 0.002577 | 4 |
| **2009** | 5.192555 | 20.66652 | 81.71289 | 986.954123 | 33365.7505 | 40.27346 | 0.002372 | 4 |
| **2010** | 5.469458 | 10.85025 | 85.19382 | 1023.195756 | 37191.9866 | 41.13944 | 0.002096 | 4 |
| **2011** | 5.738796 | 19.65612 | 86.34338 | 1212.978046 | 45312.968 | 37.4758 | 0.002594 | 4 |
| **2012** | 6.228158 | 5.634785 | 93.3952 | 1255.191071 | 48052.1528 | 39.91508 | 0.003564 | 4 |

## Appendix 8: Data of Pakistan for Remittance-Growth Model

| YEAR | RGDPM | RREM | EAPOP | RGFCF | RGGFCEM | DCPSB | TRAD | RFDIM | RODAM |
|---|---|---|---|---|---|---|---|---|---|
| **1976** | 176208.7 | 6400.222 | 52.82617 | 35752.22 | 22520.6 | 20.94842 | 30.09562 | 127.7836 | 15777.14 |
| **1977** | 183164.8 | 12308.85 | 52.85015 | 39713.8 | 23828.85 | 22.09419 | 28.30545 | 214.8641 | 8691.274 |
| **1978** | 197906.9 | 17410.94 | 52.88571 | 40975.1 | 25677.1 | 20.87031 | 27.71982 | 429.1667 | 8516.661 |
| **1979** | 205345.1 | 18443.65 | 52.9295 | 41098.09 | 25109.71 | 23.1506 | 33.44991 | 715.5081 | 8804.732 |
| **1980** | 226322.6 | 22467.73 | 52.97752 | 45824.44 | 26084.85 | 21.56655 | 36.5872 | 698.2191 | 12957.32 |
| **1981** | 244249.1 | 20273.11 | 53.03255 | 47282.94 | 28011.74 | 21.66307 | 35.32949 | 1060.039 | 8049.781 |
| **1982** | 244184.5 | 23967.98 | 53.08997 | 47909.31 | 29425.53 | 22.14043 | 31.71009 | 591.1432 | 8460.449 |
| **1983** | 216595.8 | 25600.18 | 53.13211 | 42370.74 | 28524.13 | 23.90788 | 34.89608 | 256.4774 | 6321.596 |
| **1984** | 214462.7 | 21181.3 | 53.13855 | 42144.65 | 30902.63 | 24.21806 | 33.69653 | 455.5855 | 5970.606 |
| **1985** | 205113.4 | 19715.54 | 53.09963 | 39931.04 | 29282.42 | 27.78218 | 33.23753 | 1021.015 | 5964.103 |
| **1986** | 203384.6 | 18366.67 | 53.01709 | 40773.21 | 30562.22 | 29.78608 | 34.56735 | 793.7884 | 6855.253 |
| **1987** | 203452.9 | 15638.61 | 52.90527 | 41799.03 | 32373.78 | 27.64355 | 34.23846 | 927.8881 | 5850.865 |
| **1988** | 214102.2 | 12335.37 | 52.7833 | 41765.5 | 39321.12 | 26.3686 | 35.25661 | 1228.896 | 8917.052 |
| **1989** | 205878.4 | 12326.25 | 52.67417 | 42465.03 | 41199.4 | 24.91286 | 35.63007 | 1286.818 | 8619.792 |
| **1990** | 192627.1 | 11241.22 | 52.59496 | 38782.69 | 33933.67 | 24.15733 | 38.90949 | 1374.222 | 6314.026 |
| **1991** | 193545.2 | 7762.182 | 52.54927 | 39803.56 | 32617.7 | 22.32179 | 35.55468 | 1295.191 | 7116.235 |
| **1992** | 188175.4 | 7202.224 | 52.53904 | 41592.43 | 28732.6 | 23.61733 | 37.88786 | 1540.019 | 4682.258 |
| **1993** | 183240.3 | 6019.076 | 52.57569 | 41210.19 | 28073.89 | 24.55221 | 38.74735 | 1450.615 | 4417.263 |
| **1994** | 163631.6 | 6478.784 | 52.67125 | 34539.95 | 23282.15 | 24.00602 | 35.32705 | 1559.346 | 5948.982 |
| **1995** | 167898.7 | 5644.768 | 52.83319 | 34051.76 | 23475.57 | 24.20712 | 36.13275 | 2382.339 | 2708.02 |
| **1996** | 161783.8 | 3835.329 | 53.0579 | 32865.43 | 23915.8 | 24.69398 | 38.33013 | 2753.85 | 3099.715 |
| **1997** | 140688.8 | 4578.64 | 53.34155 | 27363.98 | 19914.06 | 24.64622 | 36.85227 | 1920.868 | 2415.496 |
| **1998** | 130335.7 | 2958.827 | 53.68893 | 23621.6 | 17685.73 | 25.11394 | 34.01173 | 1277.446 | 2670.771 |
| **1999** | 124666.1 | 2414.475 | 54.10645 | 21267.58 | 15815.67 | 25.47432 | 32.31996 | 1289.659 | 1797.014 |
| **2000** | 117221.8 | 2496.951 | 54.59541 | 27269.56 | 14846.31 | 22.3361 | 28.12961 | 715.4055 | 1632.17 |
| **2001** | 106234.9 | 3289.954 | 55.16008 | 25501.58 | 12669.54 | 21.7755 | 30.37153 | 862.459 | 4375.122 |
| **2002** | 103677 | 7748.138 | 55.78897 | 24087.26 | 13752.16 | 21.67395 | 30.53763 | 1794.237 | 4590.107 |
| **2003** | 114287.8 | 8397.279 | 56.44975 | 26635.63 | 15505.01 | 24.59728 | 32.8445 | 1131.218 | 2270.93 |
| **2004** | 124840.7 | 7777.987 | 57.09995 | 28933.57 | 15837.99 | 28.73612 | 30.30013 | 2204.256 | 2838.699 |
| **2005** | 130364.7 | 7737.225 | 57.70969 | 34565.18 | 15528.14 | 28.64556 | 35.25329 | 3978.886 | 2918.832 |
| **2006** | 137264.1 | 8578.077 | 58.26419 | 40770.83 | 23995.93 | 26.76008 | 35.68173 | 7157.611 | 3652.408 |
| **2007** | 142052.4 | 9337.587 | 58.77154 | 40773.14 | 23424.23 | 27.73678 | 32.99043 | 8702.42 | 3533.229 |
| **2008** | 140052.2 | 9110.111 | 59.25192 | 38754.07 | 21461.06 | 28.60221 | 35.5942 | 7038.043 | 2005.687 |
| **2009** | 114562.3 | 9927.019 | 59.73507 | 30491.89 | 20109.74 | 22.62083 | 32.07185 | 2662.541 | 3153.437 |
| **2010** | 109068.3 | 9690 | 60.23934 | 25165.59 | 18276.81 | 21.28855 | 32.86893 | 2018 | 3013.03 |
| **2011** | 109941.1 | 10957.25 | 60.77157 | 23894.98 | 18580.94 | 18.02403 | 32.92472 | 1169.414 | 3134.061 |
| **2012** | 109528.8 | 11409.54 | 61.31783 | 24393.38 | 19171.29 | 16.80182 | 32.59296 | 699.5424 | 1644.775 |

## Appendix 9: Data of Sri Lanka for Remittance Determinants Model

| Year | REMGDP | INF | EXR | PCGDPhome | PCGDPhost | M2GDP | Mig/Pop | PR |
|---|---|---|---|---|---|---|---|---|
| **1986** | 5.089103 | 5.917282 | 28.01733 | 397.1731 | 10977.03 | 29.41975 | 0.000896 | 3 |
| **1987** | 5.238696 | 7.751492 | 29.44475 | 408.1211 | 11361.85 | 30.98412 | 0.000863 | 3 |
| **1988** | 5.125363 | 10.11703 | 31.80675 | 420.4092 | 10876.82 | 31.53954 | 0.00111 | 4 |
| **1989** | 5.123776 | 10.92316 | 36.04708 | 415.2908 | 11515.06 | 30.11581 | 0.001469 | 4 |
| **1990** | 4.989396 | 20.06327 | 40.06292 | 472.0865 | 12195.42 | 28.25875 | 0.002505 | 4 |
| **1991** | 4.911958 | 10.62401 | 41.3715 | 521.2465 | 11157.02 | 29.76287 | 0.003763 | 4 |
| **1992** | 5.645722 | 9.403697 | 43.82963 | 556.8123 | 13173.97 | 30.43672 | 0.007144 | 4 |
| **1993** | 6.116661 | 9.884459 | 48.32217 | 585.8937 | 13216.56 | 31.9499 | 0.007315 | 4 |
| **1994** | 6.103572 | 9.7705 | 49.41514 | 654.9441 | 13382.34 | 32.9834 | 0.003363 | 4 |
| **1995** | 6.208499 | 9.303528 | 51.25159 | 718.4438 | 14135.62 | 38.85184 | 0.009511 | 3 |
| **1996** | 6.12747 | 10.81742 | 55.27144 | 757.9482 | 15458.21 | 37.57914 | 0.008866 | 3 |
| **1997** | 6.244339 | 8.924575 | 58.99461 | 812.7925 | 16077.55 | 37.4793 | 0.008094 | 3 |
| **1998** | 6.479675 | 9.214064 | 64.45012 | 840.8738 | 14092.61 | 37.10671 | 0.008508 | 3 |
| **1999** | 6.84956 | 4.162763 | 70.63545 | 821.5965 | 15470.39 | 38.72811 | 0.009432 | 3 |
| **2000** | 7.138818 | 7.277341 | 77.00512 | 854.9267 | 19058.98 | 38.43891 | 0.009538 | 3 |
| **2001** | 7.52555 | 13.66475 | 89.38301 | 837.6988 | 17970.51 | 39.01797 | 0.009789 | 3 |
| **2002** | 7.654264 | 11.81257 | 95.66207 | 903.8964 | 18794.41 | 38.04899 | 0.01077 | 3 |
| **2003** | 7.614489 | 5.149138 | 96.52095 | 984.8102 | 21307.17 | 39.44431 | 0.010945 | 3 |
| **2004** | 7.693009 | 8.801492 | 101.1945 | 1063.161 | 24905.52 | 41.10926 | 0.011048 | 3 |
| **2005** | 8.094538 | 10.41873 | 100.4981 | 1242.404 | 29715.48 | 41.71578 | 0.011774 | 4 |
| **2006** | 7.665258 | 11.27703 | 103.9144 | 1423.477 | 33612.29 | 41.03538 | 0.01017 | 4 |
| **2007** | 7.750257 | 14.02844 | 110.6232 | 1614.411 | 35525.81 | 39.27227 | 0.010902 | 4 |
| **2008** | 7.182814 | 16.32702 | 108.3338 | 2013.911 | 41855.14 | 34.55262 | 0.012391 | 4 |
| **2009** | 7.931687 | 5.879883 | 114.9448 | 2057.114 | 30548.21 | 37.40197 | 0.012084 | 5 |
| **2010** | 8.318209 | 7.298948 | 113.0645 | 2400.016 | 33869.35 | 37.37423 | 0.012952 | 5 |
| **2011** | 8.707643 | 7.864868 | 110.5652 | 2835.69 | 41619.57 | 38.10817 | 0.012601 | 5 |
| **2012** | 10.10144 | 8.914684 | 127.6034 | 2921.736 | 44309.19 | 38.65851 | 0.013889 | 5 |

## Appendix 10: Data of Sri Lanka for Remittance Growth Model

| **YEAR** | RGDPM | RREM | EAPOP | RGFCF | RGGFCEM | DCPSB | TRAD | RFDIM | RODAM |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1976** | 60626.68 | 449.4987 | 58.66956 | 18953.56 | 12461.09 | 12.97487 | 60.42777 | 0.03469 | 5710.281 |
| **1977** | 60414.52 | 633.4097 | 58.97996 | 19453.15 | 12046.65 | 15.69369 | 63.97121 | -41.7603 | 6315.959 |
| **1978** | 36269.98 | 1192.772 | 59.25238 | 16681.49 | 7914.948 | 20.3115 | 74.31618 | 45.0568 | 9836.82 |
| **1979** | 38691.69 | 1657.673 | 59.50259 | 23478.51 | 8504.446 | 22.62584 | 79.46437 | 1294.661 | 8799.833 |
| **1980** | 38575.19 | 3318.871 | 59.74306 | 27588.75 | 7524.204 | 17.05097 | 87.0173 | 940.9738 | 8464.945 |
| **1981** | 35012.51 | 4257.26 | 59.97565 | 22426.87 | 6079.022 | 18.11152 | 76.99547 | 913.6285 | 6952.096 |
| **1982** | 33729.18 | 4841.2 | 60.20039 | 24348.03 | 6627.579 | 19.5277 | 73.61394 | 1063.727 | 6930.802 |
| **1983** | 31266.2 | 4323.91 | 60.4255 | 22054.36 | 6171.002 | 21.0129 | 67.76013 | 554.7209 | 6887.667 |
| **1984** | 30393.39 | 3788.539 | 60.65995 | 19574.99 | 5905.947 | 19.28889 | 63.54767 | 410.5508 | 5722.741 |
| **1985** | 29891.88 | 3617.962 | 60.91016 | 17564.85 | 7581.426 | 20.19554 | 63.97721 | 324.5421 | 5808.791 |
| **1986** | 30236.43 | 3744.938 | 61.17867 | 17354.38 | 7577.115 | 19.72414 | 59.04755 | 341.4793 | 6281.434 |
| **1987** | 29274.61 | 3733.582 | 61.46553 | 16575.15 | 7078.275 | 20.15662 | 60.88866 | 634.6477 | 5077.357 |
| **1988** | 27763.45 | 3346.503 | 61.77132 | 14695.35 | 6426.586 | 21.76821 | 62.91321 | 427.8019 | 5926.487 |
| **1989** | 25061.35 | 3002.425 | 62.09607 | 12620.05 | 6143.809 | 20.15995 | 64.01698 | 165.5582 | 5181.19 |
| **1990** | 23996.08 | 2766.412 | 62.43984 | 12133.38 | 5411.319 | 19.59439 | 68.24392 | 299.2648 | 5027.47 |
| **1991** | 24305.1 | 2720.149 | 62.79806 | 12523.78 | 5448.35 | 8.798534 | 67.59591 | 297.4864 | 5470.398 |
| **1992** | 23950.36 | 3026.101 | 63.16996 | 12608.26 | 5163.844 | 9.045788 | 72.80376 | 677.3911 | 3533.236 |
| **1993** | 23223.85 | 3126.094 | 63.56341 | 12877.61 | 4684.635 | 9.818922 | 77.14752 | 961.3809 | 3282.641 |
| **1994** | 23978.52 | 3260.026 | 63.9891 | 14228.16 | 5165.341 | 10.8233 | 79.43079 | 758.5519 | 2738.825 |
| **1995** | 24394.04 | 3424.561 | 64.45137 | 14114.6 | 6327.636 | 30.96606 | 81.63505 | 237.0488 | 2344.428 |
| **1996** | 23479.32 | 3109.507 | 64.95525 | 12123.67 | 5352.718 | 29.81175 | 78.87396 | 437.7161 | 1775.704 |
| **1997** | 23407.78 | 3140.445 | 65.48865 | 12251.44 | 5208.272 | 29.35721 | 80.13755 | 1433.128 | 1102.332 |
| **1998** | 22431.37 | 3118.579 | 66.01667 | 12089.72 | 4715.772 | 28.68103 | 78.49499 | 589.3795 | 1292.878 |
| **1999** | 21345.91 | 3121.226 | 66.49153 | 12431.89 | 4114.092 | 29.2391 | 78.75148 | 513.4474 | 762.5011 |
| **2000** | 20755.07 | 3195.795 | 66.87762 | 12550.76 | 4705.362 | 28.81873 | 88.63646 | 474.0715 | 754.4402 |
| **2001** | 17606.26 | 2845.453 | 67.16042 | 8318.77 | 3880.493 | 28.08135 | 80.89862 | 412.5101 | 819.6655 |
| **2002** | 17102.62 | 2869.369 | 67.34815 | 7524.904 | 4767.939 | 27.63106 | 76.33513 | 430.7079 | 752.2593 |
| **2003** | 17957.13 | 2964.221 | 67.45654 | 7800.699 | 4733.94 | 28.92118 | 75.33625 | 471.5539 | 1384.973 |
| **2004** | 18061.04 | 3046.434 | 67.51102 | 8964.625 | 5001.404 | 30.61744 | 79.48294 | 446.1646 | 970.4846 |
| **2005** | 19320.11 | 3391.396 | 67.53043 | 9792.224 | 5483.812 | 32.89705 | 73.60397 | 467.6281 | 1993.411 |
| **2006** | 20109.31 | 3380.913 | 67.52176 | 10970.31 | 6775.681 | 33.97185 | 71.26118 | 748.4984 | 1227.088 |
| **2007** | 20183.11 | 3377.233 | 67.48103 | 10772.37 | 6654.983 | 33.25393 | 68.60651 | 812.2168 | 828.084 |
| **2008** | 21836.07 | 3213.969 | 67.40344 | 11314.54 | 7241.199 | 28.69517 | 63.36904 | 826.6531 | 803.6075 |
| **2009** | 21308.63 | 3544.164 | 67.28098 | 10603.65 | 7869.282 | 24.71482 | 49.14914 | 429.1193 | 746.1896 |
| **2010** | 23399.45 | 4123.13 | 67.11086 | 12842.76 | 7718.114 | 26.6069 | 53.06158 | 477.559 | 579.82 |
| **2011** | 25899.35 | 4828.679 | 66.89223 | 15021.73 | 8201.092 | 30.64045 | 60.66338 | 895.7543 | 569.2826 |
| **2012** | 23865.89 | 5227.624 | 66.63627 | 14953.41 | 6975.077 | 31.08784 | 59.33226 | 820.0285 | 424.7762 |